ATTACHMENT B-1

Pre-Design Investigation Logs
(for locations that were re-sampled in April 2016)

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-15

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 76.2
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 20
Drillers: John Chase, Bobby Orsini
Abandonment Method: Bentonite Chips
Drilling Date: Start: 6/23/2015 **End:** 6/23/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: G. Barr, J. Kocis

N 392,374.82 E 900,716.13

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.) 76.2	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			0				FILL	(0'-0.3') Dry, brown, SILT, little fine sand, organics (ML)
							FILL	(0.3'-2.2') Dry, brown, SILT, little fine sand, trace fine gravel, trace clay (ML)
GP	S-1	60/46		0.0	0.019		FILL	(2.2'-4.4') Moist, brown, medium to fine SAND, some coarse to fine gravel, trace silt (SP)
			71.2				FILL	(4.4'-5') Moist, dark brown, medium to fine SAND, little silt, trace clay (SM)
			5				FILL	(5'-6') Wet, brown, medium to fine SAND, trace silt (SM)
							FILL	(6'-8') Wet, black, medium to fine granular material with metallic sheen, very fine black silt
GP	S-2	60/43		0.0	0.006		FILL	(8'-10') Wet, gray, SILT, some coarse to fine gravel Observed wet, gray, coarse to medium sand lense (ML) at 9.0 ft bgs
			66.2					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: G. Barr **Date:** 11/02/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

BOREHOLE LOG

SB-LF2-15

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			66.2					
GP	S-3	60/44	10	0.0	0.000		FILL	(10'-13') Wet, gray-black, medium to fine granular material and very fine silt
							ML	(13'-15') Moist, light brown, SILT, little medium to fine gravel, trace fine sand (TILL)
			61.2					
GP	S-4	60/48	15	0.0	0.000		ML	(15'-17') Moist, light brown SILT, little medium to fine gravel, trace fine sand (TILL)
							GM	(17'-20') Moist, gray, coarse to medium GRAVEL, little silt, trace fine sand (TILL)
			56.2					
			20					End of exploration at 20 ft bgs
			51.2					
			25					

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BOREHOLE LOG

SB-LF2-15B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 76.2
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 20
Drillers: John Chase, Bobby Orsini
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/26/2015 **End:** 06/26/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: G. Barr, J. Kocis

N 392,374.82 E 900,716.13

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			76.2 0					(0'-15') See SB-LF2-15 boring log for lithologic description.
			71.2 5					
			66.2					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Re-sample at 15-20 ft bgs due to potential smearing of shallower material on original samples. Offset ~1.5 East of original location. Soil boring SB-LF2-15A was not performed.

Reviewed by: **Date:**

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 6/6/16

BOREHOLE LOG

SB-LF2-15B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			66.2 10 61.2					
GP	S-1	60/36	15 56.2	0.0	0.000		ML	(15'-20') Moist, light brown, SILT and coarse to fine gravel, trace fine sand
			20 51.2 25					End of Boring at 20 ft bgs

GEOSYNTEC BL_NO BLOWS PID/JEROME_ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 6/6/16

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BOREHOLE LOG

SB-LF2-15C

Client: Mallinckrodt US LLC
Project Location: Orrington, Maine
Project Name: Orrington Remediation Site
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Drilling Method/Rig: DPT/Geoprobe 6620DT
Drillers: J. Emma, M. Rash
Drilling Date: Start: 7/20/2015 **End:** 7/20/2015
Borehole Coordinates:
N 392,374.82 E 900,716.13

Surface Elevation (ft.): 76.19
Total Depth (ft.): 6
Abandonment Method: Backfilled with bentonite chips
Field Screening Instrument: PID, Jerome MVA
Logged By: P. Donohue

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.) 76.2	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			0					(0-5') See SB-LF5-15 boring log for lithologic description.
			71.2					
GP	S-1	12/11	5	0.0	0.000		FILL	(5-6') Moist, dark brown-dark gray-black, coarse-fine SAND, little silt. (SW)
								End of Exploration at 6' BGS.
			66.2					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 5-6' BGS for Hg speciation. The Jerome MVA readings indicated represent the highest recorded values in that range.
Offset of SB-LF1-15, 1' north of original boring location.

Reviewed by: E. Ashley **Date:** 10/23/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-23

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 77.4
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 19
Drillers: John Chase, Bobby Orsini
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/24/2015 **End:** 06/24/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: G. Barr, J. Kocis

N 392,384.94 E 900,783.28

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			77.4					
GP	S-1	60/44	0	0.0	0.000		FILL	(0'-1') Moist, brown, medium to fine SAND, some silt little medium to fine gravel (SW-SM)
							FILL	(1'-4.6') Moist, brown-gray, medium to fine SAND, trace silt (SW)
			72.4				FILL	(4.6'-5') Moist, black, graphite-like material
GP	S-2	60/30	5	0.0	0.000		FILL	(5'-7.2') Wet, brown, SILT, some fine sand, little wood debris (ML)
							FILL	(7.2'-10') Moist, gray, coarse to fine GRAVEL, some silt, little fine sand (GM)
			67.4					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

VOCs and chloropicrin collected at 1-2 ft and 2-3 ft

Reviewed by: G. Barr **Date:** 11/02/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

BOREHOLE LOG

SB-LF2-23

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			67.4					
			10				FILL	(10'-12') Moist, gray-brown, SILT and medium to fine SAND, little medium to fine gravel, trace clay (ML/GM)
GP	S-3	60/42		0.0	0.000		ML	(12'-15') Moist, brown, SILT, some fine sand, little medium to fine gravel (TILL) Observed medium sand lense (SP) at 13.6-13.7 ft bgs
			62.4					
			15				ML	(15'-17') Moist, brown, SILT, some fine sand, little medium to fine gravel (TILL)
GP	S-4	60/44		0.0	0.000		GM	(17'-19') Moist, gray, coarse to fine GRAVEL, some fine sand, trace silt (TILL)
			57.4					
			20					End of exploration at 20 ft bgs.
			52.4					
			25					

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

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BOREHOLE LOG

SB-LF2-23B

Client: Mallinckrodt US LLC
Project Location: Orrington, Maine
Project Name: Orrington Remediation Site
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Drilling Method/Rig: DPT/Geoprobe 6620DT
Drillers: J. Emma, M. Rash
Drilling Date: Start: 7/20/2015 **End:** 7/20/2015
Borehole Coordinates:
N 392,384.94 E 900,783.28

Surface Elevation (ft.): 77.36
Total Depth (ft.): 3
Abandonment Method: Backfilled with bentonite chips
Field Screening Instrument: PID, Jerome MVA
Logged By: P. Donohue

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			77.4 0					(0-2') See SB-LF2-23 boring log for lithologic descriptions.
GP	S-1	12/12		0.0	0.000		FILL	(2-3') Dry, brown, coarse-fine SAND, trace medium-fine rounded gravel, trace silt. (SW)
			72.4 5 67.4					End of Exploration/advancement at 3' BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 2-3' BGS for Hg speciation. Offset of SB-LF2-23, 1' west of original boring location. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

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BOREHOLE LOG

SB-LF2-24

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 73.4
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 18
Drillers: John Chase, Eric Woodward
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/16/2015 **End:** 06/16/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: G. Barr, J. Kocis

N 392,470.45 E 900,808.17

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			73.4					
			0				FILL	(0'-0.4') Top Soil
							FILL	(0.4'-2') Dry, red brown-brown, fine SAND, some silt (SM)
GP	S-1	60/44		0.0	0.000		FILL	(2'-4.6') Dry, light brown, SAND with gravel and silt, trace clay (SM)
			68.4				FILL	(4.6'-5') Moist, gray, medium to fine SAND, some clay, trace gravel (SC)
			5				FILL	(5'-8.3') Moist, gray, medium to fine SAND, some clay, some gravel (SC)
GP	S-2	60/42		0.0	0.000		FILL	(8.3'-8.5') Moist, dark gray, SILT, wood debris (ML)
							FILL	(8.5'-10') Moist, red brown, SILT, wood debris (ML)
			63.4					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
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BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: G. Barr **Date:** 11/02/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

BOREHOLE LOG

SB-LF2-24

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			63.4					
GP	S-3	60/42	10	0.0	0.000		FILL	(10'-11') Moist, dark brown, SILT, trace organics (OL)
							FILL	(11'-13') Moist, dark brown, SILT, trace organics (OL)
							FILL	(13'-13.5') Moist, gray, CLAY (CL)
							FILL	(13.5'-14') Moist, gray, CLAY, some silt, some gravel, little fine sand (CL)
							GW	(14'-15') Moist, light gray-brown, GRAVEL, some coarse to fine sand, some silt (TILL)
			58.4					
GP	S-4	60/30	15	0.0	0.000		GW	(15'-16') Moist, light gray-brown, GRAVEL, some coarse to fine sand, some silt (TILL)
							SW	(16'-18') Moist, light gray, medium to fine SAND (TILL)
			53.4					
			20					End of exploration at 20 ft bgs.
			48.4					
			25					

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-24B

Client: Mallinckrodt US LLC
Project Location: Orrington, Maine
Project Name: Orrington Remediation Site
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Drilling Method/Rig: DPT/Geoprobe 6620DT
Drillers: J. Emma, M. Rash
Drilling Date: Start: 7/20/2015 **End:** 7/20/2015
Borehole Coordinates:
N 392,470.45 E 900,808.17

Surface Elevation (ft.): 73.37
Total Depth (ft.): 3
Abandonment Method: Backfilled with bentonite chips
Field Screening Instrument: PID, Jerome MVA
Logged By: P. Donohue

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			73.4 0					(0-2') See SB-LF2-24 boring logs for lithologic descriptions.
GP	S-1	12/12		0.0	0.000		FILL	(2-3') Moist, brown, SILT, some fine sand, little coarse-fine sub-angular and angular gravel, trace clay. (ML)
			68.4 5 63.4					End of Exploration at 3' BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
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HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 2-3' BGS for Hg speciation. Offset of SB-LF2-24. 1' east of original boring location. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-25

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 78.4
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 20
Drillers: John Chase, Bobby Orsini
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/22/2015 **End:** 06/22/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: J.Gillen, J.Kocis

N 392,419.77 E 900,799.72

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			78.4					
GP	S-1	60/41	0	0.0	0.000		FILL	(0'-1.25') Moist, brown, medium to fine SAND and SILT trace fine gravel, organics (SM)
							FILL	(1.25'-2.5') Moist, brown, SILT and coarse to fine SAND, little medium to fine gravel (ML)
							FILL	(2.5'-5') Moist, brown, coarse to fine SAND, trace silt (SW-SM) Observed a tan clay seam at 3.75 ft bgs and black sand material at 5 ft bgs
			73.4					
GP	S-2	60/43	5	0.0	0.000		FILL	(5'-6.75') Wet, black, medium to fine graphite-like material
							FILL	(6.75'-8.75') Wet, gray-brown, medium to fine SAND, trace silt, trace medium gravel (SP-SM)
							FILL	(8.75'-10') Wet, brown, SILT, some some coarse to fine sand, trace fine gravel, trace organics (ML) Observed an organic seam at 9.75 ft bgs
			68.4					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
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FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Jerome reading for 5-6.75 ft bgs = 0.017 mg/m3
Driller notes hole"tightened" at ~12 to 14 ft
Jerome reading at 11.5 ft bgs= 0.003 mg/m3
Native material encountered at 12.5 ft
Sampling ended at 17 ft

Reviewed by: J. Gillen **Date:** 11/18/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/30/15

BOREHOLE LOG

SB-LF2-25

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			68.4					
GP	S-3	60/47	10	0.0	0.000		FILL	(10'-12.5') Wet, gray-blck, coarse to fine SAND, little gravel little silt (SP-SM)
							ML	(12.5'-15') Wet, gray-brown, SILT, some coarse to fine sand, trace fractured rock (TILL)
			63.4					
GP	S-4	60/46	15	0.0	0.000		ML	(15'-18') Moist, brown-gray, SILT, some coarse to fine sand, trace medium to fine gravel, trace fractured rock (TILL)
							ML	(18'-20') Moist, brown-gray, SILT, some coarse to fine sand, some medium to fine gravel, little fractured rock (TILL)
			58.4					
			20					End of exploration at 20 ft bgs.
			53.4					
			25					

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/30/15

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-26

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 77.9
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 25
Drillers: John Chase, Eric Woodward
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/18/2015 **End:** 06/18/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: G. Barr, J. Kocis

N 392,399.30 E 900,806.92

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			77.9					
GP	S-1	60/48	0	0.0	0.000		FILL	(0'-2') Dry, light brown, SILT, little gravel, trace fine sand, trace clay (ML)
							FILL	(2'-3.3') Dry, dark yellowish brown, medium to fine SAND, trace fine gravel (SP)
							FILL	(3.3'-3.8') Black, medium to fine coarse granular material with metallic sheen
							FILL	(3.8'-5') Moist, yellowish brown-grayish brown fine SAND, trace coarse to fine gravel (SP/SC) Observed a clay layer at 4.0 ft bgs
			72.9					
GP	S-2	60/36	5	0.0	0.000		FILL	(5'-6') Moist, grayish brown, coarse to fine SAND and CLAY, some coarse to fine gravel, trace organics (SW/SC)
							FILL	(6'-7.5') Moist, dark brown, wood debris, little gravel
							FILL	(7.5'-10') Moist-wet, light gray, fine SAND, some coarse to fine gravel, little silt, little clay (SW)
			67.9					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Borehole reading 08:53 PID:0.0, Jerome:0.0, 4-gas: 0.0,0.0,20.9,0.0
~10 ft bgs increase pressure on Geoprobe
~19-20 ft bgs, very high pressure increase on Geoprobe

Reviewed by: G. Barr **Date:** 11/02/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

BOREHOLE LOG

SB-LF2-26

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			67.9					
GP	S-3	60/40	10	0.0	0.000		FILL	(10'-11.4') Wet, light gray, fine SAND, some coarse to fine gravel, some silt, little clay (SW)
							FILL	(11.4-15) Moist, yellowish brown, SILT, some clay, some coarse to fine gravel (ML)
			62.9					
GP	S-4	60/60	15	0.0	0.000		FILL	(15'-16') Moist, yellowish brown, SILT, some clay, some coarse to fine gravel (ML)
							FILL	(16'-20') Moist, gray, SILT, some coarse to fine gravel, little clay (ML)
			57.9					
GP	S-5	60/54	20	0.0	0.000		ML	(20'-25') Moist to wet, gray, SILT, some coarse to fine gravel, little medium to fine sand, trace clay (TILL)
			52.9					
			25					End of exploration at 25ft bgs

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

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BOREHOLE LOG

SB-LF2-26B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 77.84
Drilling Method/Rig: DPT/Geoprobe 6620DT
Total Depth (ft.): 22
Drillers: J. Emma, J. Haines
Abandonment Method: Backfilled with bentonite chips
Drilling Date: Start: 7/17/2015 **End:** 7/17/2015
Field Screening Instrument: PID, Jerome MVA
Borehole Coordinates:
Logged By: P. Donohue

N 392,397.77 E 900,807.02

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			77.8 0					(0-10') See SB-LF2-26 boring log for lithologic description.
			72.8 5					
			67.8					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 21-22' BGS for VOCs, chloropicrin, PCBs, and cadmium. Offset of SB-LF2-26, 1' from original boring location. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

BOREHOLE LOG

SB-LF2-26B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			67.8 10 62.8 15 57.8 20					(10-21') See SB-LF2-26 boring log for lithologic description.
GP	S-1	12/12		0.0	0.000		ML	(21-22') Moist, gray-dark gray, SILT, some clay, little coarse-fine angular and rounded gravel, little coarse-fine sand. (ML)
			52.8 25					End of Exploration at 22' BGS.

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BOREHOLE LOG

SB-LF2-28

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 78.8
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 15
Drillers: John Chase, Eric Woodward
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/18/2015 **End:** 06/18/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: G. Barr, J. Kocis

N 392,444.98 E 900,845.65

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			78.8					
GP	S-1	60/46	0	0.0	0.000		FILL	(0'-2.5') Dry, brown, SILT, some fine sand, little medium to fine gravel (ML)
							FILL	(2.5'-2.8') Granular black material
							FILL	(2.8'-3.8') Moist, dark brown, medium to fine SAND, trace fine gravel (SW)
							FILL	(3.8'-5') Moist, dark brown, fine SAND and SILT, some medium to fine gravel (ML)
			73.8					
GP	S-2	60/34	5	0.0	0.000		FILL	(5'-6') Moist, dark brown, medium to fine SAND, trace coarse to fine gravel (SP)
							FILL	(6'-10') Moist, yellow-brown, SILT, little fine gravel, little clay (ML) Observed wood debris at 8.5-9 ft and 9.8-10 ft bgs
			68.8					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Reviewed by: G. Barr **Date:** 11/02/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

BOREHOLE LOG

SB-LF2-28

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			68.8					
GP	S-3	60/29	10	0.0	0.000		FILL	(10'-13') Moist, yellow-brown, SILT, little fine gravel, little clay (ML)
			63.8				FILL	(13'-15') Moist, light gray-brown, SILT and fine SAND, some coarse to fine gravel (ML)
			15					End of exploration at 15 ft bgs.
			58.8 / 20					
			53.8 / 25					

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-28B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 78.77
Drilling Method/Rig: DPT/Geoprobe 6620DT
Total Depth (ft.): 17
Drillers: J. Emma, M. Rash
Abandonment Method: Backfilled with bentonite chips
Drilling Date: Start: 7/20/2015 **End:** 7/20/2015
Field Screening Instrument: PID, Jerome MVA
Borehole Coordinates:
Logged By: P. Donohue

N 392,444.98 E 900,845.65

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			78.8 0					(0-10') See boring log SB-LF2-28 for lithologic description.
			73.8 5					
			68.8					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 16-17' BGS for VOCs, chloropicrin, PCBs, and cadmium. Offset of SB-LF2-28, 1' from original boring location. Due to low recovery, it took 4 offset attempts to collect enough volume for analysis. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

BOREHOLE LOG

SB-LF2-28B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			68.8 10 63.8 15					(10-16') See boring log SB-LF2-28 for lithologic description.
GP	S-1	12/4		0.0	0.000		SM	(16-17') Moist-wet, gray, coarse-fine SAND and SILT, some coarse-fine angular gravel. (SM)
			58.8 20 53.8 25					End of Exploration at 17' BGS.

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BOREHOLE LOG

SB-LF2-32

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 78.7
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 20
Drillers: John Chase, Bobby Orsini
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/19/2015 **End:** 06/19/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: J. Gillen, J. Kocis

N 392,440.87 E 900,887.25

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			78.7					
GP	S-1	60/42	0	0.0			FILL	(0'-1') Dry, brown, medium to fine SAND, some silt, trace organics (SM)
							FILL	(1'-2.3') Moist, brown, coarse to fine SAND, some silt, trace medium gravel (SM)
							FILL	(2.3'-5') Moist, brown-gray, medium to fine SAND, little silt, trace fine gravel (SM)
			73.7					
GP	S-2	60/37	5	0.0			FILL	(5'-8.2') Moist, brown-gray, medium to fine SAND, little silt, trace fine gravel (SM)
							FILL	(8.2'-9.75') Moist, brown-gray, SILT, some coarse to fine sand, trace fine gravel (ML) Observed rock at 9.75 ft bgs
			68.7				FILL	(9.75'-10') Moist, brown-gray, coarse to fine SAND, some silt (SM)

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Driller notes increase in tightness at 16' and again at 18'
Till encountered at 13'
Sampling ended at 17'

Reviewed by: J. Gillen **Date:** 11/18/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

BOREHOLE LOG

SB-LF2-32

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			68.7					
			10				FILL	(10'-11.5') Moist, gray-brown, coarse to fine SAND, little silt, trace fine gravel (SW-SM)
GP	S-3	60/42		0.0			FILL	(11.5'-13') Wet, gray, coarse to fine SAND and SILT, trace fine to medium gravel (SM)
							ML	(13'-15') Wet, brown-gray, SILT and medium to fine SAND, trace fine gravel (TILL) Observed stone at 14.5 ft bgs
			63.7					
			15				ML	(15.'-15.2') Wet, brown-gray, SILT, and medium to fine sand, trace fine gravel (TILL)
							SM	(15.2'-16.3') Wet, gray-brown, coarse to fine SAND, little silt (TILL)
GP	S-4	60/41		0.0			ML	(16.3'-19') Wet, brown-gray, SILT, and coarse to fine sand, trace fine gravel (TILL) Observed rock at 17.4 ft bgs and 19 ft bgs
							ML	(19'-20') Wet, gray-brown, SILT, some coarse to fine sand (TILL)
			58.7					
			20					End of exploration at 20 ft bgs.
			53.7					
			25					

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BOREHOLE LOG

SB-LF2-32B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 78.68
Drilling Method/Rig: DPT/Geoprobe 6620DT
Total Depth (ft.): 17
Drillers: J. Emma, M. Rash
Abandonment Method: Backfilled with bentonite chips
Drilling Date: Start: 7/20/2015 **End:** 7/20/2015
Field Screening Instrument: PID, Jerome MVA
Borehole Coordinates:
Logged By: P. Donohue

N 392,440.87 E 900,887.25

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			78.7 0					(0-10') See SB-LF2-32 boring log for lithologic descriptions.
			73.7 5					
			68.7					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 16-17' BGS for VOCs, chloropicrin, PCBs, and cadmium. Offset of SB-LF2-32, 1' from original boring location. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

BOREHOLE LOG

SB-LF2-32B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			68.7 10 63.7 15					(10-16') See SB-LF2-32 boring log for lithologic descriptions.
GP	S-1	12/12		0.0	0.000		ML	(16-17') Moist, gray-tan, SILT, some coarse-fine angular and rounded gravel, some medium-fine sand, little clay. (ML)
			58.7 20 53.7 25					End of Exploration at 17' BGS.

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

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BOREHOLE LOG

SB-LF2-35

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 75.3
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 25
Drillers: John Chase, Bobby Orsini
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/17/2015 **End:** 06/17/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: G. Barr, J. Kocis

N 392,486.25 E 900,909.15

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			75.3					
GP	S-1	60/54	0	0.0	0.000		FILL	(0'-0.7') Dry, brown, SILT, little fine sand, trace roots (ML)
							FILL	(0.7'-1.9') Dry, light brown-gray, SILT, little gravel, trace fine sand (ML)
							FILL	(1.9'-4.5') Dry, dark brown, fine SAND, some gravel, little silt, little clay (SP)
			70.3				FILL	(4.5'-5') Moist, dark gray, medium to fine SAND, little gravel, little silt, little clay (SM/SC)
GP	S-2	60/42	5	0.0	0.000		FILL	(5'-6') Moist, dark gray, SILT, some coarse to fine gravel, some clay, little fine sand (ML)
							FILL	(6'-7.3') Moist, dark yellowish brown, SILT, little clay, trace fine gravel (ML)
							FILL	(7.3'-9.2') Moist, light gray-brown, medium to fine SAND, little silt, trace fine gravel (SW/SM)
			65.3				FILL	(9.2'-10') Moist, dark brown, SILT, some clay, trace fine gravel, trace organics (OL)

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
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DTR - Dual Tube Rotary
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DTC - Drill Through Casing

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BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

0-5 ft bgs - pressure on Geoprobe
5-10 ft bgs - increased pressure
~12 ft bgs - very high pressure
15-20 ft bgs - very high pressure

Reviewed by: G. Barr **Date:** 11/02/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

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BOREHOLE LOG

SB-LF2-35

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			65.3					
GP	S-3	60/36	10	0.0	0.000		SW	(10'-12.5') Moist-wet, yellowish brown-grayish brown, fine SAND, little silt
							SW	(12.5'-15') Moist-wet, gray-reddish brown, coarse to fine SAND, and coarse to fine gravel, little silt, little clay (TILL)
			60.3					
GP	S-4	60/60	15	0.0	0.000		SW	(15'-18') Moist, dark grayish brown, coarse to fine SAND, some gravel (TILL)
							GW	(18'-20') Wet, dark brown, coarse to fine GRAVEL, some fine sand, little silt, little clay (TILL)
			55.3					
GP	S-5	60/	20	0.0	0.000		GW	(20'-21.2') Wet, dark brown, coarse to fine GRAVEL, some fine sand, little silt, little clay (TILL)
							SC	(21.2'-25') Wet, gray, fine SAND, little clay (TILL)
			50.3					
			25					End of exploration at 25 ft bgs.

CDM Smith Geosyntec consultants

BOREHOLE LOG

SB-LF2-35B

Client: Mallinckrodt US LLC
Project Location: Orrington, Maine
Project Name: Orrington Remediation Site
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Drilling Method/Rig: DPT/Geoprobe 6620DT
Drillers: J. Emma, M. Rash
Drilling Date: Start: 7/20/2015 **End:** 7/20/2015
Borehole Coordinates:
N 392,486.25 E 900,909.15

Surface Elevation (ft.): 75.3
Total Depth (ft.): 16
Abandonment Method: Backfilled with bentonite chips
Field Screening Instrument: PID, Jerome MVA
Logged By: P. Donohue

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			75.3 0					(0-10') See SB-LF2-35 boring log for lithologic descriptions.
			70.3 5					
			65.3					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 15-16' BGS for VOCs, chloropicrin, PCBs, and cadmium. The Jerome MVA readings indicated represent the highest recorded values in that range.
Offset of SB-LF1-35, 1' from original boring location.

Reviewed by: E. Ashley **Date:** 10/23/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

BOREHOLE LOG

SB-LF2-35B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			65.3					
			10					(10-15') See LB-LF2-35 boring log for lithologic descriptions.
			60.3					
GP	S-1	12/12	15	0.0	0.000		SWG	(15-16') Wet-saturated, gray, coarse-fine SAND and coarse-fine angular GRAVEL, little silt. (SWG)
								End of Exploration at 16' BGS.
			55.3 / 20					
			50.3 / 25					

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-36

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 78.0
Drilling Method/Rig: Direct Push/Geoprobe 7822DT
Total Depth (ft.): 20
Drillers: John Chase, Bobby Orsini
Abandonment Method: Bentonite Chips
Drilling Date: Start: 06/25/2015 **End:** 06/25/2015
Field Screening Instrument: PID and Jerome meters
Borehole Coordinates:
Logged By: G. Barr, J. Kocis

N 392,452.66 E 900,909.56

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			78.0					
GP	S-1	60/36	0	0.0	0.000		FILL	(0'-2.3') Moist, brown, SILT, little fine sand, little medium to fine gravel, organics (ML)
							FILL	(2.3'-5') Moist, brown, medium to fine SAND, trace medium to fine gravel, trace silt (SP-SM)
			73.0					
GP	S-2	60/36	5	0.0	0.000		FILL	(5'-7.3') Wet, brown, medium to fine SAND, little medium to fine gravel, little silt (SP-SM)
							FILL	(7.3'-9') Moist, brown, SILT, little clay, trace fine sand (ML)
							FILL	(9'-10') Moist, brown, medium to fine SAND, little fine gravel, trace silt (SP-SM)
			68.0					

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

VOCs and Chloropicrin samples collected at 6-7 ft bgs and 7-8 ft bgs
off-set after 5 ft bgs - 1 ft bgs North

Reviewed by: G. Barr **Date:** 11/02/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

BOREHOLE LOG

SB-LF2-36

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: BR0292

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			68.0					
			10				FILL	(10'-12.2') Wet, gray, SILT, trace fine sand (ML)
GP	S-3	60/26.4		0.0	0.000		GM-GC	(12.2'-14.4') Moist, gray-brown, coarse to fine GRAVEL, little fine sand, trace silt, trace clay (TILL)
			63.0				CL	(14.4'-15') Moist, gray, CLAY, trace fine sand, trace silt (TILL)
			15				GM-GC	(15'-19') Wet, gray, medium to fine GRAVEL, little fine sand, trace silt (TILL)
GP	S-3	60/24		0.0	0.000			
			58.0				SP	(19'-20') Moist, brown-gray, fine SAND, trace silt (TILL)
			20				SP	(20'-25') Wet, brown, medium to fine SAND (TILL)
GP	S-4	60/4		0.0	0.000			
			53.0					
			25					End of exploration at 25 ft bgs.

GEOSYNTEC BL_NO BLOWS PID/JEROME ORRINGTON TEMPLATE.GPJ CDM_MA.GDT 11/24/15

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-43

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 71.44
Drilling Method/Rig: DPT/Geoprobe 6620DT
Total Depth (ft.): 20
Drillers: J. Emma, M. Rash
Abandonment Method: Backfilled with bentonite chips
Drilling Date: Start: 7/8/2015 **End:** 7/8/2015
Field Screening Instrument: PID, Jerome MVA
Borehole Coordinates:
Logged By: P. Donohue

N 392,396.76 E 900,667.82

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			71.4					
GP	S-1	60/32	0	0.0	0.000		FILL	(0-1') Moist, reddish brown, fine SAND and SILT, trace clay, trace roots. (SM)
				0.0			FILL	(1-4.5') Moist-wet, gray-olive, SILT, some clay, little fine sand. (ML)
				0.0				
				0.0				
				0.0				
			66.4				FILL	(4.5-5') Moist, gray, coarse-fine SAND, little silt. (SW)
GP	S-2	60/46	5	0.0	0.000		FILL	(5-6') Same as 4.5-5' BGS.
				0.9			FILL	(6-7') Wet, dark gray-black, medium-fine SAND, little silt, trace medium-fine angular gravel. (SP)
				0.5			FILL	(7-9.5') Wet, dark gray-olive gray, SILT, little clay, little medium-fine rounded gravel, little medium-fine sand. (ML)
				0.0				
				0.0				
			61.4				FILL	(9.5-10') Wet, light tan, with orange streaks, SILT, some coarse-fine angular gravel with clay, little medium-fine sand. (ML)

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled continuously for Hg (XRF/DMA) to 20' BGS. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015

BOREHOLE LOG

SB-LF2-43

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			61.4					
GP	S-3	60/59	10	0.0	0.000		FILL	(10-12.5') Same as 9.5-10' BGS, wet-saturated. Driller noted tighter drilling conditions at 12' BGS, increasing to 20' BGS.
				0.0				
				0.0			ML	(12.5-15') Wet, gray-light gray, SILT, some clay, little coarse-fine sand, little medium-fine angular gravel. (ML)
				0.0				
				0.0				
			56.4					
GP	S-4	60/40	15	0.0	0.000		ML	(15-20') Same as 12.5-15' BGS.
				0.0				
				0.0				
				0.0				
			51.4					
			20					End of Exploration at 20' BGS.
			46.4					
			25					

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

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BOREHOLE LOG

SB-LF2-57

Client: Mallinckrodt US LLC
Project Location: Orrington, Maine
Project Name: Orrington Remediation Site
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Drilling Method/Rig: DPT/Geoprobe 6620DT
Drillers: J. Emma, J. Haines
Drilling Date: Start: 7/17/2015 **End:** 7/17/2015
Borehole Coordinates:
N 392,346.87 E 900,649.73

Surface Elevation (ft.): 75.9
Total Depth (ft.): 15
Abandonment Method: Backfilled with bentonite chips
Field Screening Instrument: PID, Jerome MVA
Logged By: P. Donohue

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.) 75.9	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
GP	S-1	60/24	0	0.0	0.000		FILL	(0-0.5') Dry, dark brown, coarse-fine SAND, trace silt, trace fine sub-angular gravel, trace organics. (SW)
				0.0			FILL	(0.5-4') Dry, brown-light tan, medium-fine SAND, little silt, little medium-fine angular gravel. (SP)
				0.0				
				0.0				
				0.0			FILL	(4-5') Dry-moist, gray-brown, coarse-fine SAND and coarse-fine angular GRAVEL trace silt. (SW)
			70.9					
GP	S-2	60/9	5	0.0	0.000			(5-10') Insufficient Recovery. See SB-LF2-57A for lithologic description details.
				0.0				
				0.0				
				0.0				
			65.9	0.0				

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
DTR - Dual Tube Rotary
FR - Foam Rotary
MR - Mud Rotary
RC - Reverse Circulation
CT - Cable Tool
JET - Jetting
D - Driving
DTC - Drill Through Casing

SAMPLING TYPES:
AS - Auger/Grab Sample
CS - California Sampler
BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled continuously for Hg (XRF/DMA) to 15' BGS. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015

GEOSYNTEC BL_NO BLOWS PID/JEROME LF2.GPJ CDM_MA.GDT 10/19/15

BOREHOLE LOG

SB-LF2-57

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			65.9					
GP	S-3	60/60	10	0.0	0.000		ML	(10-13.5') Moist, brown-tan, SILT and medium-fine SAND, little coarse-fine angular and sub-angular gravel. Driller noted tighter conditions at 12' BGS. (ML)
				0.0				
				0.0				
				0.0			ML	(13.5-15') Moist, gray, SILT, some coarse-fine sand, some coarse-fine angular gravel, little clay. (ML)
				0.0				
			60.9					
			15					End of Exploration at 15' BGS.
			55.9					
			20					
			50.9					
			25					

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BOREHOLE LOG

SB-LF2-57A

Client: Mallinckrodt US LLC
Project Location: Orrington, Maine
Project Name: Orrington Remediation Site
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Drilling Method/Rig: DPT/Geoprobe 6620DT
Drillers: J. Emma, J. Haines
Drilling Date: Start: 7/17/2015 **End:** 7/17/2015
Borehole Coordinates:
N 392,346.87 E 900,649.73

Surface Elevation (ft.): 75.9
Total Depth (ft.): 10
Abandonment Method: Backfilled with bentonite chips
Field Screening Instrument: PID, Jerome MVA
Logged By: P. Donohue

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			75.9 0					(0-5') See SB-LF2-57 for lithologic descriptions.
			70.9 5				FILL	(5-6') Moist, brown, coarse-fine SAND, little silt. (SW)
				0.0			FILL	(6-6.5') Wet, black, SILT, some clay, trace coarse-fine sand. (MH)
				0.0			FILL	(6.5-7') Wet, dark gray-brown, medium-fine SAND and SILT, trace fine angular gravel. (SM)
GP	S-1	60/50		0.0	0.000		ML	(7-10') Wet-moist, gray with black and red streaks, SILT and coarse-fine SAND, little clay, little medium-fine angular gravel. (ML)
				0.0				
				0.0				
			65.9 10					End of Exploration at 10' BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
HSA - Hollow Stem Auger
SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
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FR - Foam Rotary
MR - Mud Rotary
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SAMPLING TYPES:
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BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 5-10' BGS for Hg (XRF/DMA). Offset of SB-LF2-57, 1' from original boring location. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015

CDM Smith | Geosyntec consultants

BOREHOLE LOG

SB-LF2-57B

Client: Mallinckrodt US LLC
Project Name: Orrington Remediation Site
Project Location: Orrington, Maine
Project Number: 5000-110260

Drilling Contractor: Geosearch, Inc.
Surface Elevation (ft.): 75.9
Drilling Method/Rig: DPT/Geoprobe 6620DT
Total Depth (ft.): 8
Drillers: J. Emma, M. Rash
Abandonment Method: Backfilled with bentonite chips
Drilling Date: Start: 8/10/2015 **End:** 8/10/2015
Field Screening Instrument: PID, Jerome MVA
Borehole Coordinates:
Logged By: P. Donohue

N 392,346.87 E 900,649.73

Sample Type	Sample Number	Sample Recovery (Inches)	Elev. Depth (ft.)	PID Reading (ppmv)	Jerome Hg Reading (mg/m3)	Graphic Log	Stratum Designation	Material Description
			75.9 0					(0-7') No sample collected. See SB-LF2-57 boring logs for lithologic descriptions.
			70.9 5					
GP	S-1	12/12		0.0	0.000		SW	(7-8') Wet, tan-light brown, coarse-fine SAND, little silt, little fine sub-angular gravel, trace clay. (SW)
			65.9					End of Exploration at 8' BGS.

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
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SSA - Solid Stem Auger
HA - Hand Auger
AR - Air Rotary
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FR - Foam Rotary
MR - Mud Rotary
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JET - Jetting
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SAMPLING TYPES:
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BX - 1.5" Rock Core
NX - 2.1" Rock Core
GP - Geoprobe
HP - Hydro Punch
SS - Split Spoon
ST - Shelby Tube
WS - Wash Sample
OTHER:
AGS - Above Ground Surface

REMARKS

Sampled discretely from 7-8' BGS for VOCs, chloropicrin, PCBs, and cadmium. Offset of SB-LF2-56, 1' northeast of original boring location. The Jerome MVA readings indicated represent the highest recorded values in that range.

Reviewed by: E. Ashley **Date:** 10/23/2015