Water Quality

Ashville Commerce Center Phase 1
Water Quality Management Calculations

Per the Ohio E.P.A. "Post-Construction Storm Water Management Requirements"

Extended Dry Detention Basin

Water Quality Volume (WQ_v)

C * P * A/12

C= 0.8 (runoff coefficient, based on Table 1, Industrial & Commercial)
P= 0.75 (precipitation depth)
A= 19.78 (area in acres tributary to the pond)

WQ_v = 0.8 * 0.75 * 19.78 / 12 = 0.99 ac/ft (43,125 c.f.)
WQ_v = 43,125 * 1.20 = 51,750 c.f. (includes required 20% additional capacity)

Extended Detention Volume (ED_v)

Target Draw Down Time = 48 Hours (per Table 2)

ED_v = WQ_v (Water Quality Volume)
WQ_v = 43,125 * 1.20 = 51,750 c.f. (includes required 20% additional capacity)
ED_v Required = 51,750 c.f.
ED_v Provided – 52,087 c.f. (@ elev. 697.21)

Total storage provided (inc. flood storage) – 254,620 c.f. to elev. 700 (see below)

Contour Elevation	Contour Area	Volume
696	12,756	
		38,140
697	63,525	
		66,413
698	69,302	
		72,158
699	75,015	
		57,889
699.75 (overflow)	79,358	
		20,020
700	80,805	
Total	Volume =	254,620 c.f.

Forebay volume

Forebay Size –10% of Extended Detention Volume (ED_v)
Required Forebay size – 0.10 * 51,750 = 5,175 c.f.
Provided - 16,449 c.f. (see below)

Contour Elevation	Contour Area	Volume
693	2084	
		3160
694	4236	
		5627
695	7018	
		7662
696	8306	
Total	Volume =	16,449 c.f.

Micropool volume

Micropool Size – 10% of WQ_v
Required Micropool Size - 0.10 * 51,750 c.f. = 5,175 c.f.
Provided - 7,142 c.f. (see below)

Contour Elevation	Contour Area	Volume
693	766	
		1208
694	1650	
		2267
695	2884	
		3667
696	4450	
Total	Volume =	7,142 c.f.

Route 1-Year TR-55 hydrograph (0.80" runoff) through retention pond as designed for runoff control.

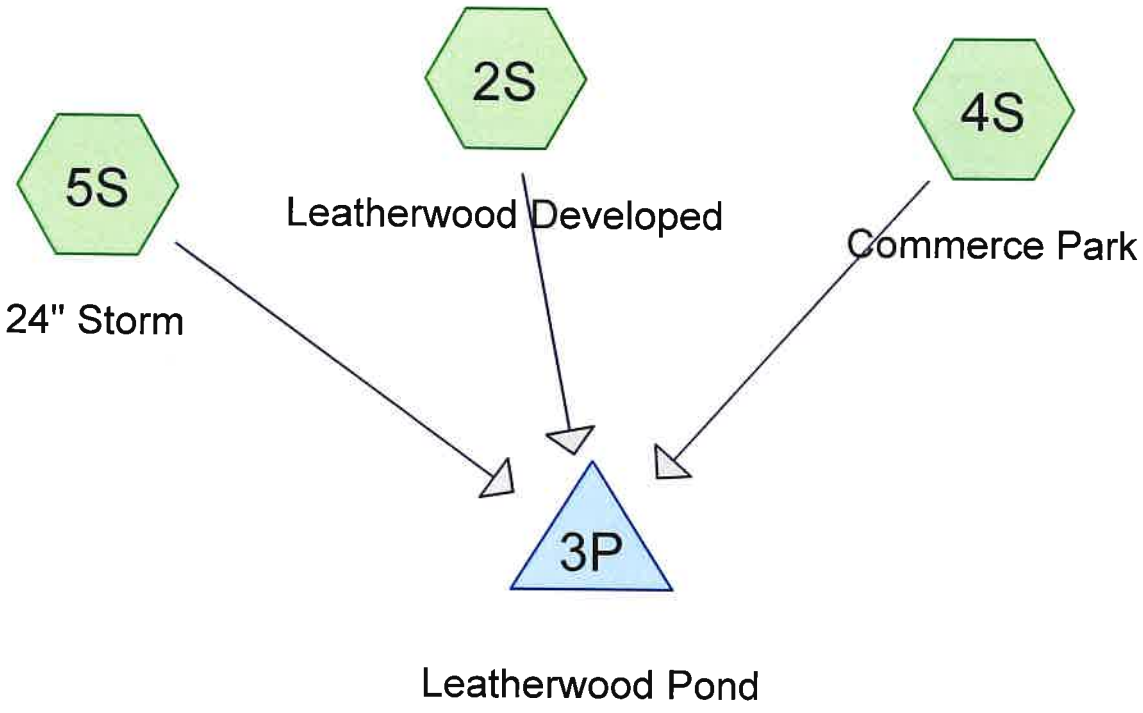
Top of Extended Detention Volume during draw down is reached at 3810 minutes into the outflow hydrograph.
Zero outflow occurs at 8330 minutes into the outflow hydrograph.
8330 minutes - 3810 minutes = 4520 minutes (75.33 hours)

75.33 hours > 48 hours, so Target Draw Down Time requirement has been met.

24"x36" Maps

APPENDIX G

PROPOSED SITE DETENTION CALCS



Subcat Reach Pond Link

Routing Diagram for DHL-Leatherwood
Prepared by Poggemeyer Design Group, Printed 10/19/2022

Project Notes

Rainfall events imported from "DHL-Ashly Pre exisitng.hcp"

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type II 24-hr		Default	24.00	1	2.20	2
2	2-Year	Type II 24-hr		Default	24.00	1	2.63	2
3	5-Year	Type II 24-hr		Default	24.00	1	3.24	2
4	10-Year	Type II 24-hr		Default	24.00	1	3.73	2
5	25-Year	Type II 24-hr		Default	24.00	1	4.44	2
6	50-Year	Type II 24-hr		Default	24.00	1	5.01	2
7	100-Year	Type II 24-hr		Default	24.00	1	5.63	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
15.720	91	(4S)
147.000	90	(5S)
7.800	80	>75% Grass cover, Good, HSG D (2S)
27.553	98	Paved roads w/curbs & sewers, HSG D (2S)
3.122	98	Water Surface, HSG D (2S)
201.195	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
38.475	HSG D	2S
162.720	Other	4S, 5S
201.195		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchme Numbers
0.000	0.000	0.000	0.000	162.720	162.720		4S, 5S
0.000	0.000	0.000	7.800	0.000	7.800	>75% Grass cover, Good	2S
0.000	0.000	0.000	27.553	0.000	27.553	Paved roads w/curbs & sewers	2S
0.000	0.000	0.000	3.122	0.000	3.122	Water Surface	2S
0.000	**0.000**	**0.000**	**38.475**	**162.720**	**201.195**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Leatherwood Runoff Area=38.475 ac 79.73% Impervious Runoff Depth>1.56"
Tc=60.0 min CN=94 Runoff=32.57 cfs 5.011 af

Subcatchment 4S: Commerce Park Runoff Area=15.720 ac 0.00% Impervious Runoff Depth>1.31"
Tc=74.0 min CN=91 Runoff=9.64 cfs 1.723 af

Subcatchment 5S: 24" Storm Runoff Area=147.000 ac 0.00% Impervious Runoff Depth>1.16"
Flow Length=8,000' Slope=0.0010 '/' Tc=261.9 min CN=90 Runoff=32.33 cfs 14.265 af

Pond 3P: Leatherwood Pond Peak Elev=691.01' Storage=532,867 cf Inflow=45.54 cfs 20.998 af
Outflow=9.47 cfs 9.394 af

Total Runoff Area = 201.195 ac Runoff Volume = 20.998 af Average Runoff Depth = 1.25"
84.75% Pervious = 170.520 ac 15.25% Impervious = 30.675 ac

Summary for Subcatchment 2S: Leatherwood Developed

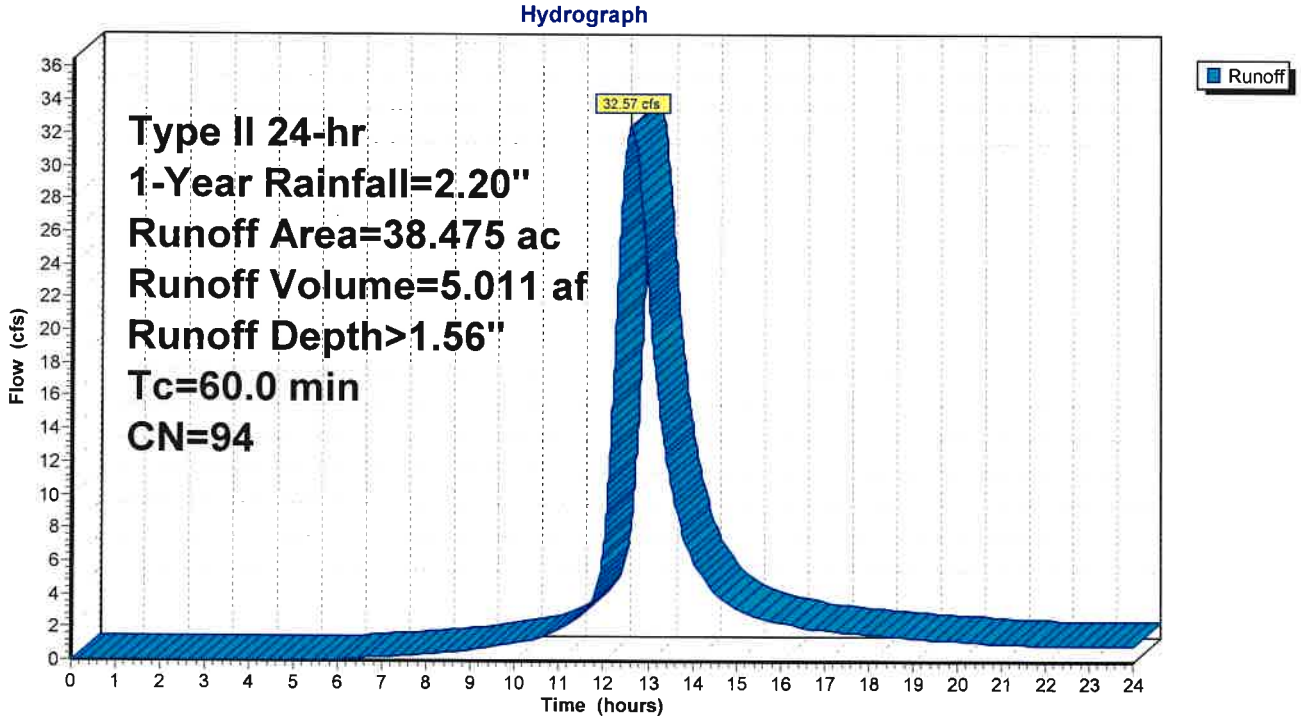
Runoff = 32.57 cfs @ 12.60 hrs, Volume= 5.011 af, Depth> 1.56"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (ac)	CN	Description
27.553	98	Paved roads w/curbs & sewers, HSG D
3.122	98	Water Surface, HSG D
7.800	80	>75% Grass cover, Good, HSG D
38.475	94	Weighted Average
7.800		20.27% Pervious Area
30.675		79.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0					**Direct Entry,**

Subcatchment 2S: Leatherwood Developed



Summary for Subcatchment 4S: Commerce Park

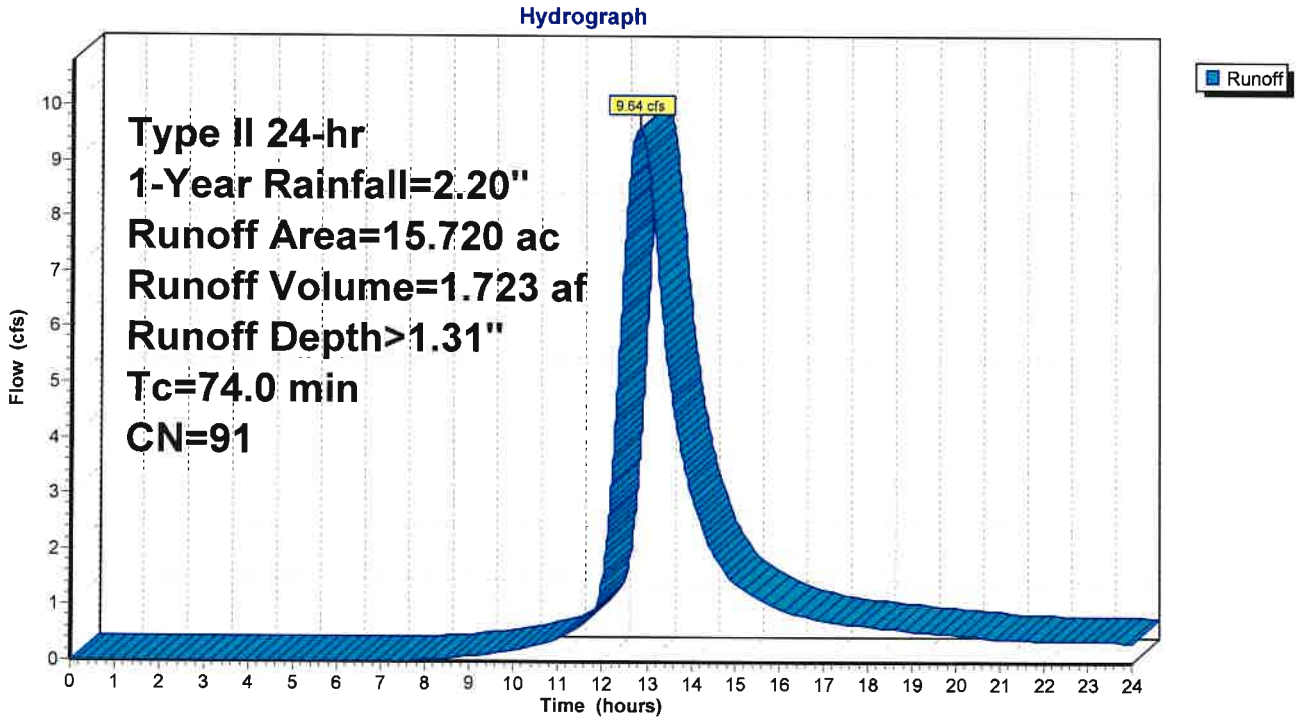
Runoff = 9.64 cfs @ 12.82 hrs, Volume= 1.723 af, Depth> 1.31"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

	Area (ac)	CN	Description
*	15.720	91	
	15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
74.0					**Direct Entry,**

Subcatchment 4S: Commerce Park



Summary for Subcatchment 5S: 24" Storm

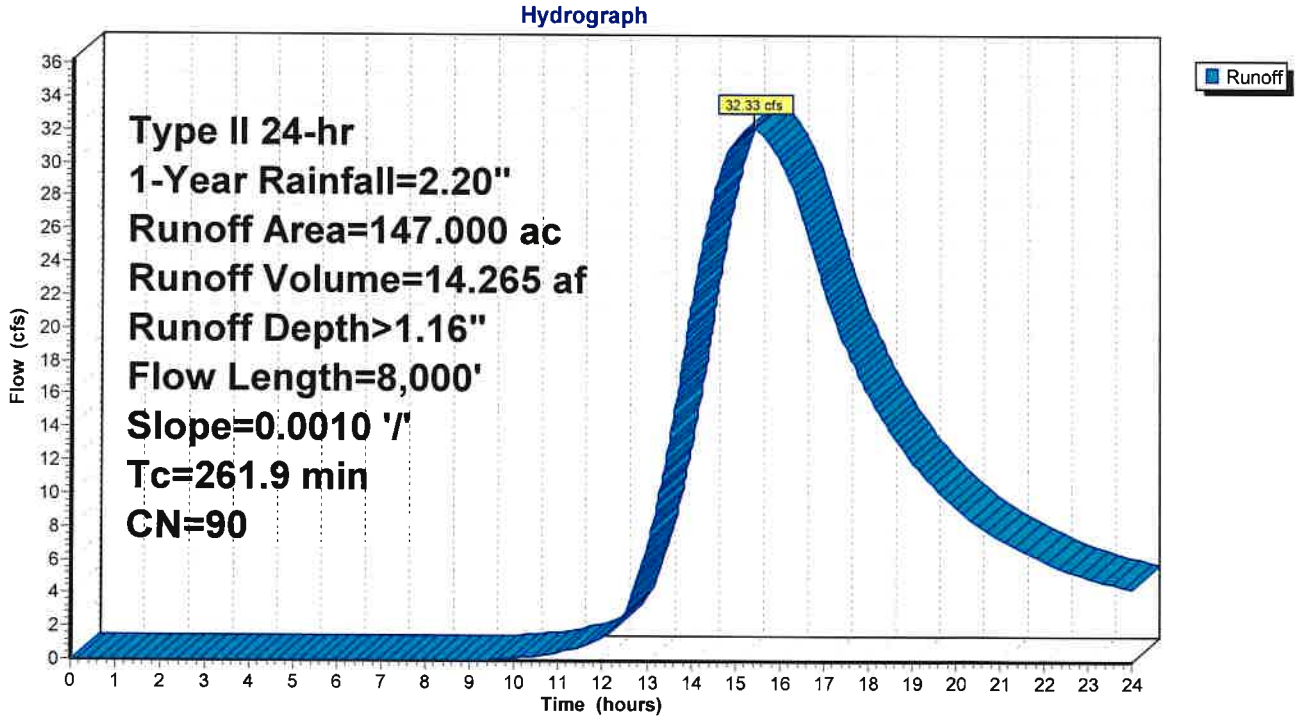
Runoff = 32.33 cfs @ 15.42 hrs, Volume= 14.265 af, Depth> 1.16"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=2.20"

	Area (ac)	CN	Description
*	147.000	90	
	147.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
261.9	8,000	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps

Subcatchment 5S: 24" Storm



Summary for Pond 3P: Leatherwood Pond

Inflow Area = 201.195 ac, 15.25% Impervious, Inflow Depth > 1.25" for 1-Year event
Inflow = 45.54 cfs @ 12.67 hrs, Volume= 20.998 af
Outflow = 9.47 cfs @ 12.26 hrs, Volume= 9.394 af, Atten= 79%, Lag= 0.0 min
Primary = 9.47 cfs @ 12.26 hrs, Volume= 9.394 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 691.01' @ 20.66 hrs Surf.Area= 107,159 sf Storage= 532,867 cf

Plug-Flow detention time= 275.6 min calculated for 9.390 af (45% of inflow)
Center-of-Mass det. time= 119.0 min (1,077.5 - 958.5)

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	1,739,943 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

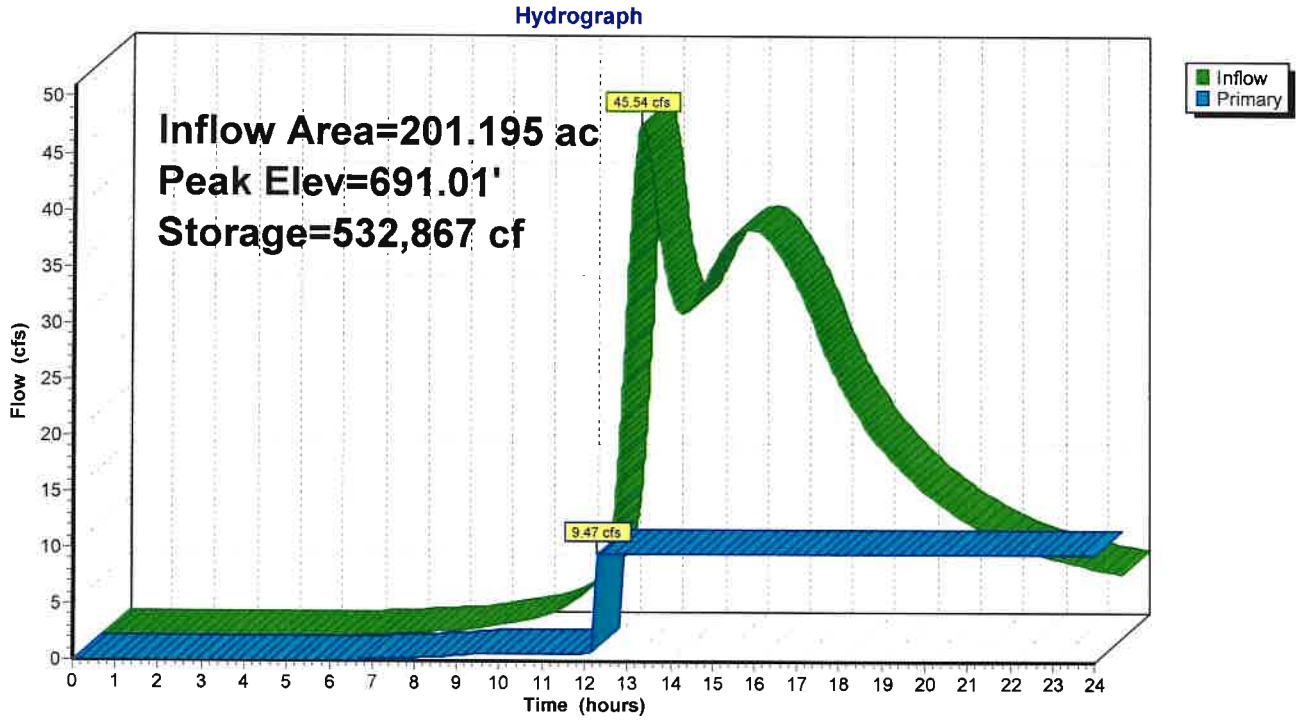
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	13,454	0	0
684.00	18,257	15,856	15,856
685.00	54,599	36,428	52,284
686.00	62,749	58,674	110,958
687.00	71,018	66,884	177,841
688.00	79,408	75,213	253,054
689.00	88,354	83,881	336,935
690.00	97,408	92,881	429,816
691.00	107,082	102,245	532,061
692.00	117,263	112,173	644,234
693.00	127,972	122,618	766,851
694.00	139,210	133,591	900,442
695.00	150,491	144,851	1,045,293
696.00	162,625	156,558	1,201,851
697.00	173,393	168,009	1,369,860
698.00	185,013	179,203	1,549,063
699.00	196,748	190,881	1,739,943

Device	Routing	Invert	Outlet Devices
#1	Primary	683.00'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 250.0 Head (feet)= 15.00 -Loss (feet)= 0.00 =Lift (feet)= 15.00
#2	Primary	684.74'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 4,000.0 Head (feet)= 15.00 -Loss (feet)= 0.51 =Lift (feet)= 14.49

#3 Primary 697.00' **30.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir**
Cv= 2.61 (C= 3.26)

Primary OutFlow Max=9.47 cfs @ 12.26 hrs HW=684.76' (Free Discharge)
- **1=Pump** (Pump Controls 0.56 cfs)
- **2=Pump** (Pump Controls 8.91 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 3P: Leatherwood Pond



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Leatherwood Runoff Area=38.475 ac 79.73% Impervious Runoff Depth>1.97"
Tc=60.0 min CN=94 Runoff=40.74 cfs 6.308 af

Subcatchment 4S: Commerce Park Runoff Area=15.720 ac 0.00% Impervious Runoff Depth>1.70"
Tc=74.0 min CN=91 Runoff=12.46 cfs 2.224 af

Subcatchment 5S: 24" Storm Runoff Area=147.000 ac 0.00% Impervious Runoff Depth>1.52"
Flow Length=8,000' Slope=0.0010 '/' Tc=261.9 min CN=90 Runoff=42.23 cfs 18.635 af

Pond 3P: Leatherwood Pond Peak Elev=693.06' Storage=774,113 cf Inflow=58.29 cfs 27.168 af
Outflow=9.47 cfs 9.643 af

Total Runoff Area = 201.195 ac Runoff Volume = 27.168 af Average Runoff Depth = 1.62"
84.75% Pervious = 170.520 ac 15.25% Impervious = 30.675 ac

Summary for Subcatchment 2S: Leatherwood Developed

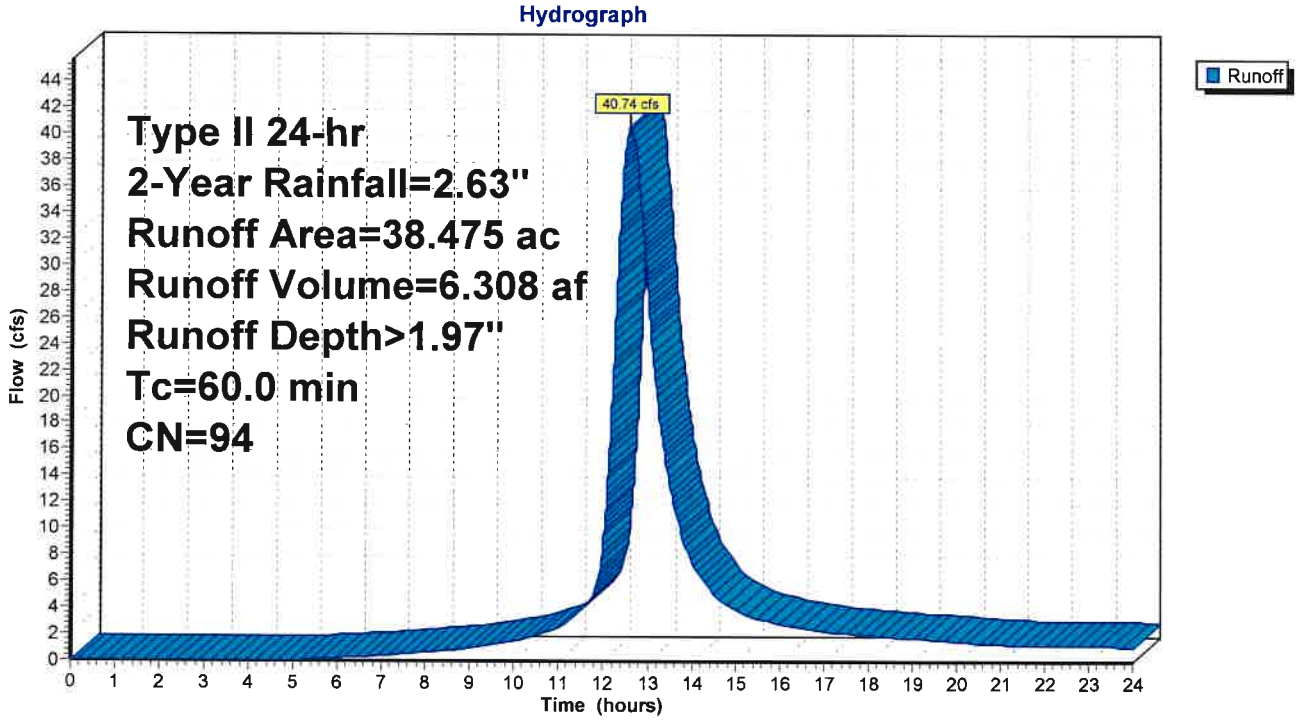
Runoff = 40.74 cfs @ 12.60 hrs, Volume= 6.308 af, Depth> 1.97"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (ac)	CN	Description
27.553	98	Paved roads w/curbs & sewers, HSG D
3.122	98	Water Surface, HSG D
7.800	80	>75% Grass cover, Good, HSG D
38.475	94	Weighted Average
7.800		20.27% Pervious Area
30.675		79.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0					**Direct Entry,**

Subcatchment 2S: Leatherwood Developed



Summary for Subcatchment 4S: Commerce Park

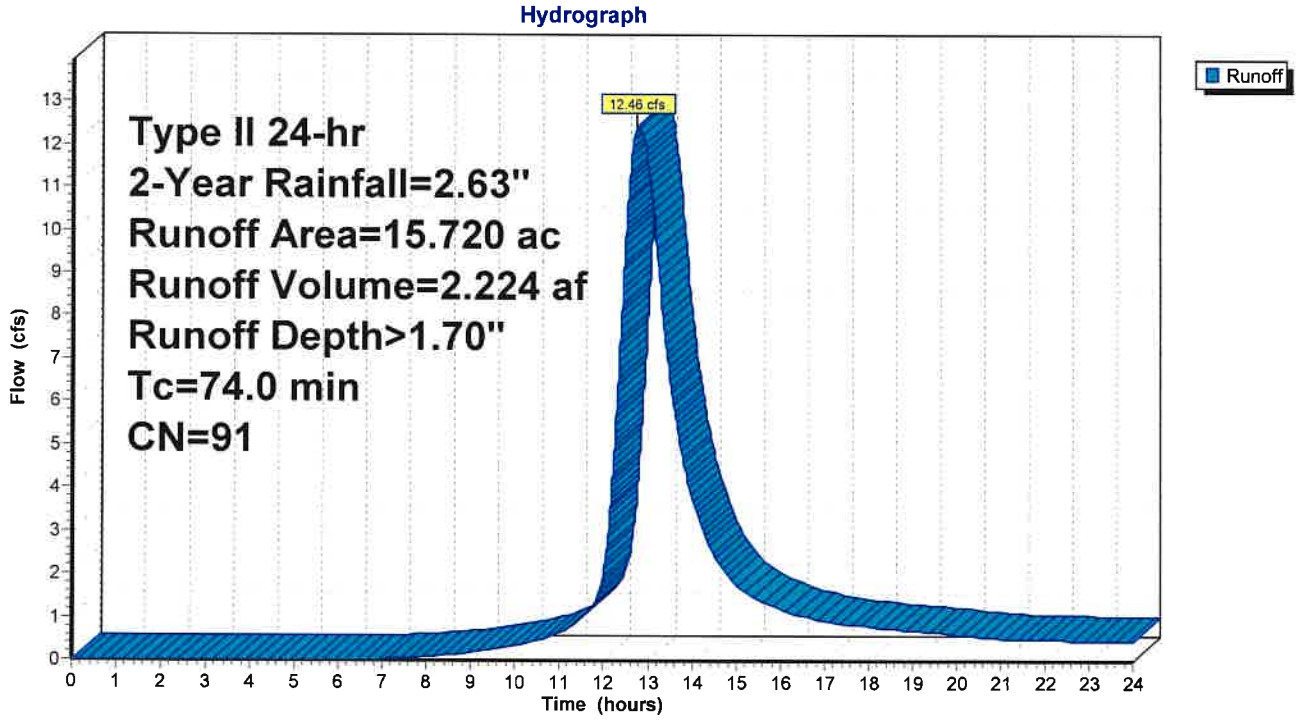
Runoff = 12.46 cfs @ 12.75 hrs, Volume= 2.224 af, Depth> 1.70"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

	Area (ac)	CN	Description
*	15.720	91	
	15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
74.0					**Direct Entry,**

Subcatchment 4S: Commerce Park



Summary for Subcatchment 5S: 24" Storm

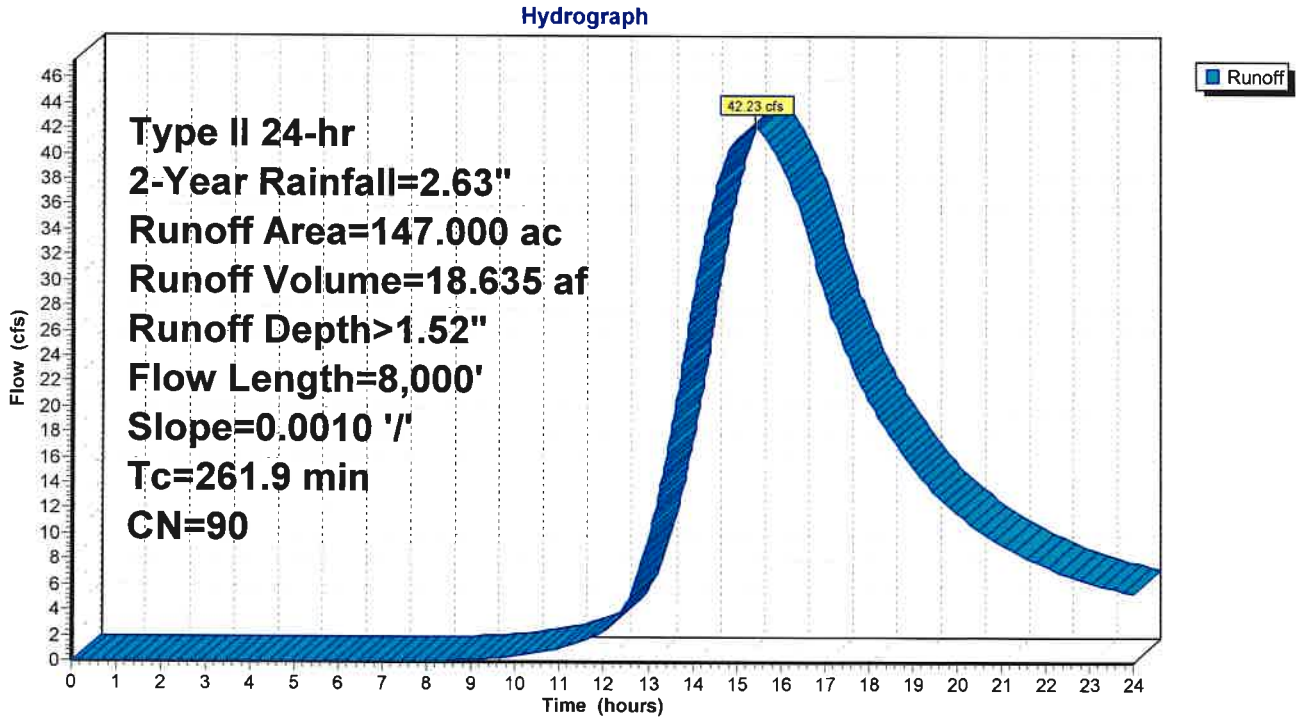
Runoff = 42.23 cfs @ 15.42 hrs, Volume= 18.635 af, Depth> 1.52"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Year Rainfall=2.63"

	Area (ac)	CN	Description
*	147.000	90	
	147.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
261.9	8,000	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps

Subcatchment 5S: 24" Storm



Summary for Pond 3P: Leatherwood Pond

Inflow Area = 201.195 ac, 15.25% Impervious, Inflow Depth > 1.62" for 2-Year event
Inflow = 58.29 cfs @ 12.67 hrs, Volume= 27.168 af
Outflow = 9.47 cfs @ 11.99 hrs, Volume= 9.643 af, Atten= 84%, Lag= 0.0 min
Primary = 9.47 cfs @ 11.99 hrs, Volume= 9.643 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 693.06' @ 21.84 hrs Surf.Area= 128,608 sf Storage= 774,113 cf

Plug-Flow detention time= 293.6 min calculated for 9.639 af (35% of inflow)
Center-of-Mass det. time= 113.6 min (1,067.3 - 953.7)

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	1,739,943 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

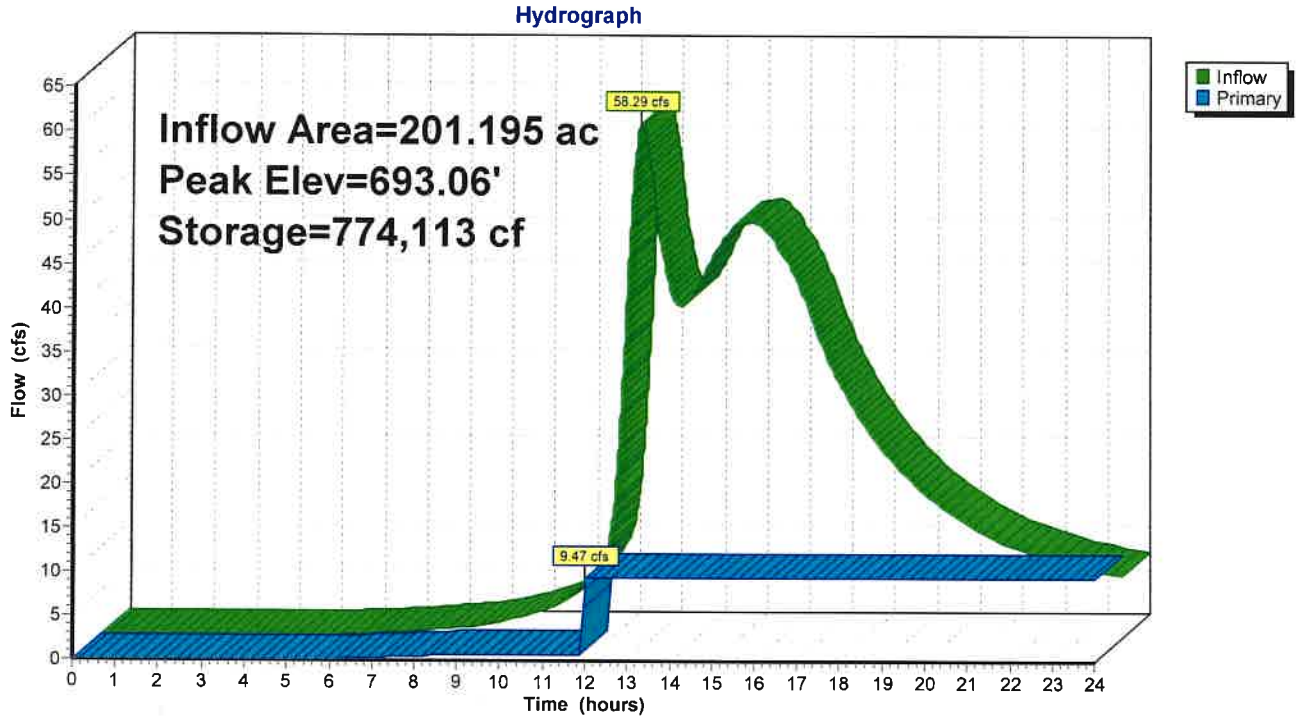
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	13,454	0	0
684.00	18,257	15,856	15,856
685.00	54,599	36,428	52,284
686.00	62,749	58,674	110,958
687.00	71,018	66,884	177,841
688.00	79,408	75,213	253,054
689.00	88,354	83,881	336,935
690.00	97,408	92,881	429,816
691.00	107,082	102,245	532,061
692.00	117,263	112,173	644,234
693.00	127,972	122,618	766,851
694.00	139,210	133,591	900,442
695.00	150,491	144,851	1,045,293
696.00	162,625	156,558	1,201,851
697.00	173,393	168,009	1,369,860
698.00	185,013	179,203	1,549,063
699.00	196,748	190,881	1,739,943

Device	Routing	Invert	Outlet Devices
#1	Primary	683.00'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 250.0 Head (feet)= 15.00 -Loss (feet)= 0.00 =Lift (feet)= 15.00
#2	Primary	684.74'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 4,000.0 Head (feet)= 15.00 -Loss (feet)= 0.51 =Lift (feet)= 14.49

#3 Primary 697.00' **30.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir**
Cv= 2.61 (C= 3.26)

Primary OutFlow Max=9.47 cfs @ 11.99 hrs HW=684.76' (Free Discharge)
- **1=Pump** (Pump Controls 0.56 cfs)
- **2=Pump** (Pump Controls 8.91 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 3P: Leatherwood Pond



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Leatherwood Runoff Area=38.475 ac 79.73% Impervious Runoff Depth>2.55"
Tc=60.0 min CN=94 Runoff=52.31 cfs 8.176 af

Subcatchment 4S: Commerce Park Runoff Area=15.720 ac 0.00% Impervious Runoff Depth>2.26"
Tc=74.0 min CN=91 Runoff=16.50 cfs 2.956 af

Subcatchment 5S: 24" Storm Runoff Area=147.000 ac 0.00% Impervious Runoff Depth>2.04"
Flow Length=8,000' Slope=0.0010 '/' Tc=261.9 min CN=90 Runoff=56.58 cfs 25.050 af

Pond 3P: Leatherwood Pond Peak Elev=695.56' Storage=1,131,603 cf Inflow=76.70 cfs 36.182 af
Outflow=9.47 cfs 10.215 af

Total Runoff Area = 201.195 ac Runoff Volume = 36.182 af Average Runoff Depth = 2.16"
84.75% Pervious = 170.520 ac 15.25% Impervious = 30.675 ac

Summary for Subcatchment 2S: Leatherwood Developed

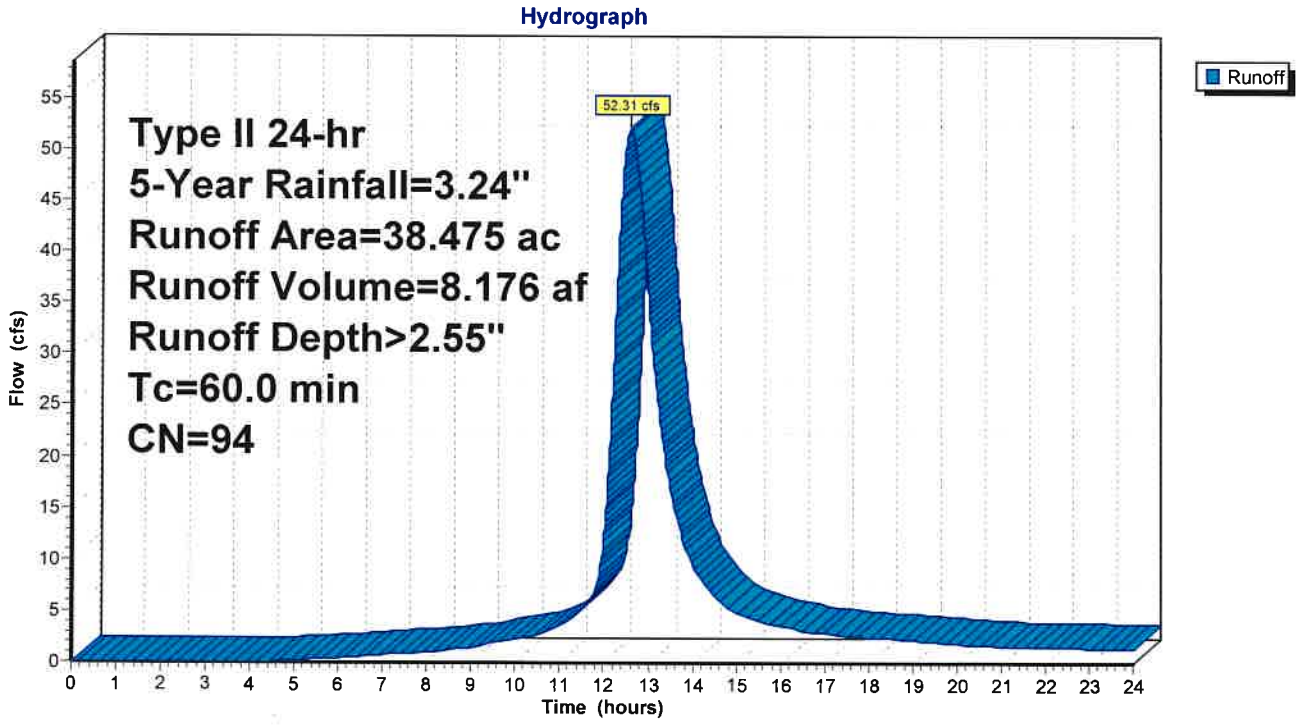
Runoff = 52.31 cfs @ 12.60 hrs, Volume= 8.176 af, Depth> 2.55"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (ac)	CN	Description
27.553	98	Paved roads w/curbs & sewers, HSG D
3.122	98	Water Surface, HSG D
7.800	80	>75% Grass cover, Good, HSG D
38.475	94	Weighted Average
7.800		20.27% Pervious Area
30.675		79.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0					**Direct Entry,**

Subcatchment 2S: Leatherwood Developed



Summary for Subcatchment 4S: Commerce Park

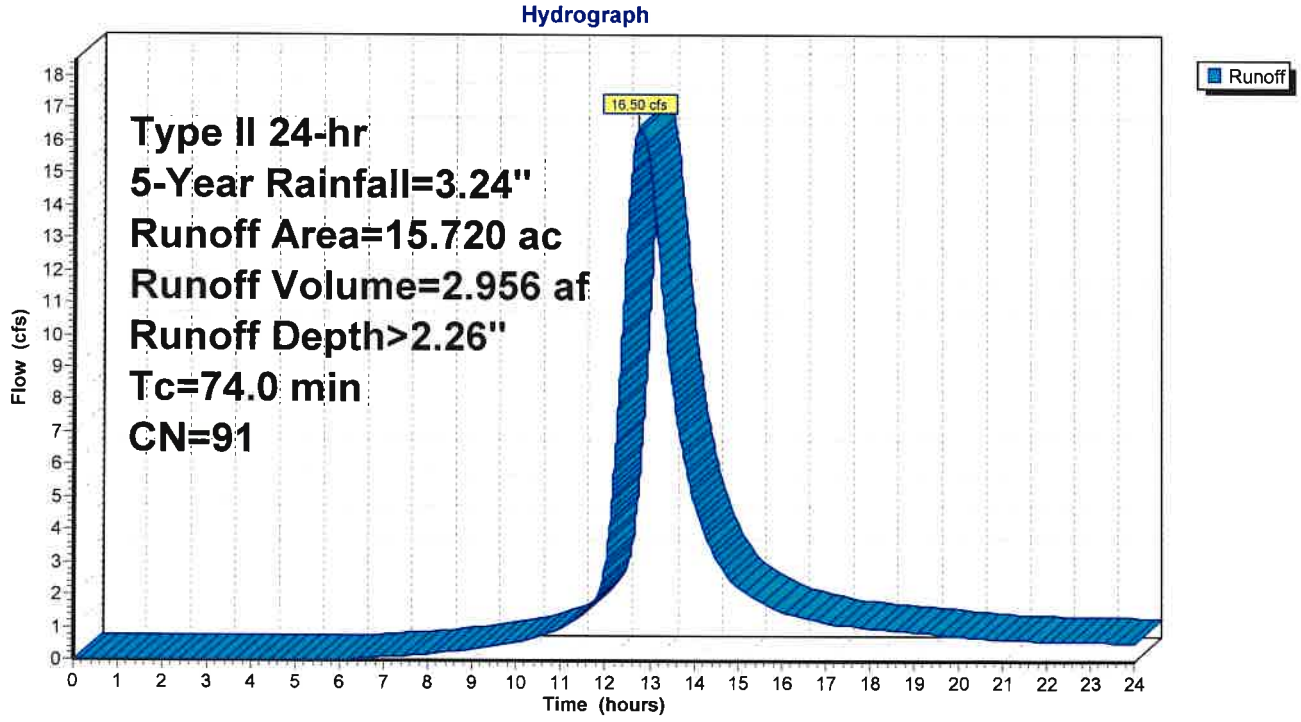
Runoff = 16.50 cfs @ 12.75 hrs, Volume= 2.956 af, Depth> 2.26"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

	Area (ac)	CN	Description
*	15.720	91	
	15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
74.0					**Direct Entry,**

Subcatchment 4S: Commerce Park



Summary for Subcatchment 5S: 24" Storm

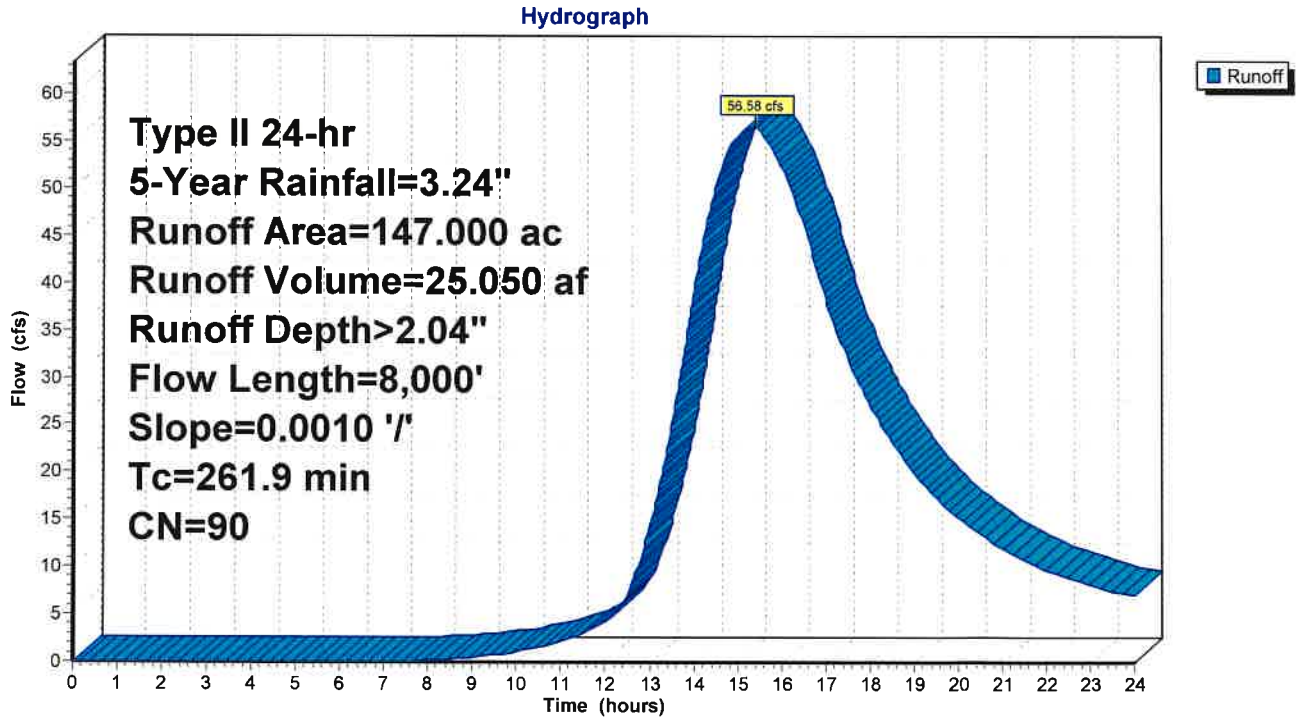
Runoff = 56.58 cfs @ 15.42 hrs, Volume= 25.050 af, Depth> 2.04"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-Year Rainfall=3.24"

	Area (ac)	CN	Description
*	147.000	90	
	147.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
261.9	8,000	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps

Subcatchment 5S: 24" Storm



Summary for Pond 3P: Leatherwood Pond

Inflow Area = 201.195 ac, 15.25% Impervious, Inflow Depth > 2.16" for 5-Year event
Inflow = 76.70 cfs @ 12.67 hrs, Volume= 36.182 af
Outflow = 9.47 cfs @ 11.49 hrs, Volume= 10.215 af, Atten= 88%, Lag= 0.0 min
Primary = 9.47 cfs @ 11.49 hrs, Volume= 10.215 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 695.56' @ 23.50 hrs Surf.Area= 157,296 sf Storage= 1,131,603 cf

Plug-Flow detention time= 298.8 min calculated for 10.210 af (28% of inflow)
Center-of-Mass det. time= 97.2 min (1,045.3 - 948.0)

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	1,739,943 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

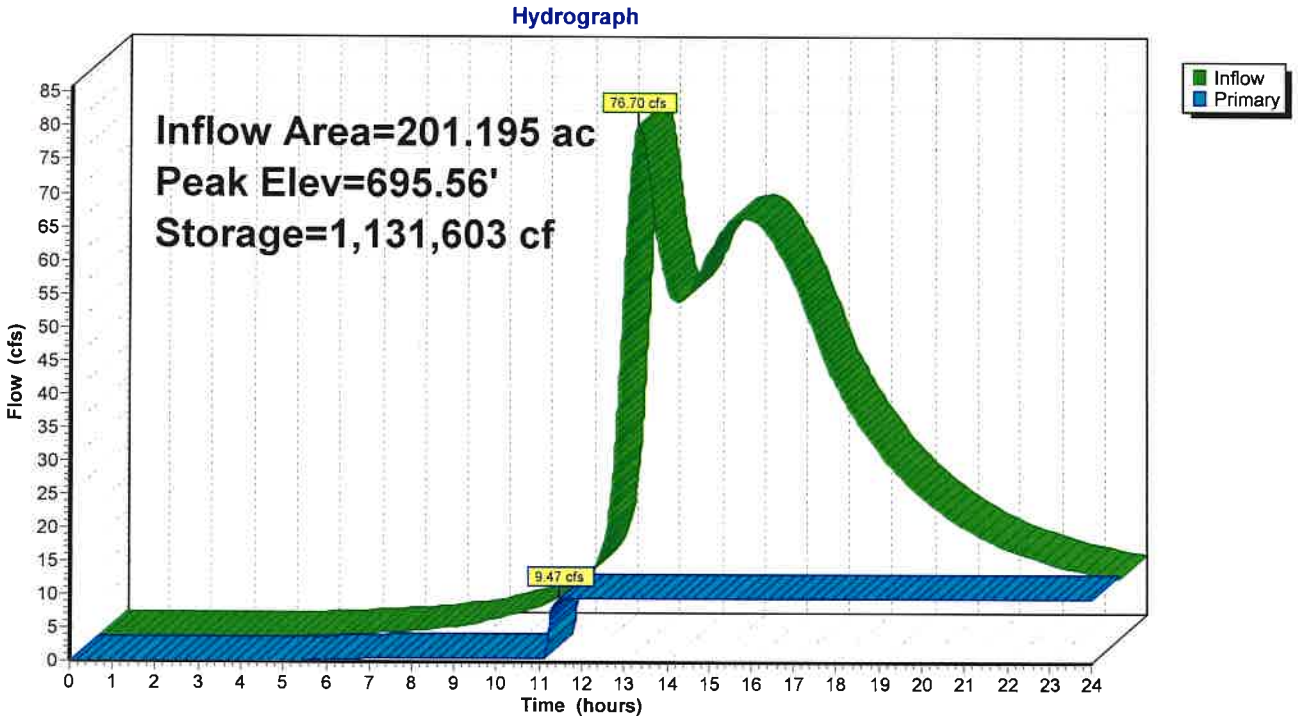
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	13,454	0	0
684.00	18,257	15,856	15,856
685.00	54,599	36,428	52,284
686.00	62,749	58,674	110,958
687.00	71,018	66,884	177,841
688.00	79,408	75,213	253,054
689.00	88,354	83,881	336,935
690.00	97,408	92,881	429,816
691.00	107,082	102,245	532,061
692.00	117,263	112,173	644,234
693.00	127,972	122,618	766,851
694.00	139,210	133,591	900,442
695.00	150,491	144,851	1,045,293
696.00	162,625	156,558	1,201,851
697.00	173,393	168,009	1,369,860
698.00	185,013	179,203	1,549,063
699.00	196,748	190,881	1,739,943

Device	Routing	Invert	Outlet Devices
#1	Primary	683.00'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 250.0 Head (feet)= 15.00 -Loss (feet)= 0.00 =Lift (feet)= 15.00
#2	Primary	684.74'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 4,000.0 Head (feet)= 15.00 -Loss (feet)= 0.51 =Lift (feet)= 14.49

#3 Primary 697.00' **30.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir**
Cv= 2.61 (C= 3.26)

Primary OutFlow Max=9.47 cfs @ 11.49 hrs HW=684.76' (Free Discharge)
└**1=Pump** (Pump Controls 0.56 cfs)
└**2=Pump** (Pump Controls 8.91 cfs)
└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 3P: Leatherwood Pond



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Leatherwood Runoff Area=38.475 ac 79.73% Impervious Runoff Depth>3.02"
Tc=60.0 min CN=94 Runoff=61.57 cfs 9.690 af

Subcatchment 4S: Commerce Park Runoff Area=15.720 ac 0.00% Impervious Runoff Depth>2.71"
Tc=74.0 min CN=91 Runoff=19.77 cfs 3.555 af

Subcatchment 5S: 24" Storm Runoff Area=147.000 ac 0.00% Impervious Runoff Depth>2.48"
Flow Length=8,000' Slope=0.0010 '/' Tc=261.9 min CN=90 Runoff=68.24 cfs 30.327 af

Pond 3P: Leatherwood Pond Peak Elev=697.15' Storage=1,396,726 cf Inflow=91.64 cfs 43.571 af
Outflow=13.83 cfs 11.696 af

Total Runoff Area = 201.195 ac Runoff Volume = 43.571 af Average Runoff Depth = 2.60"
84.75% Pervious = 170.520 ac 15.25% Impervious = 30.675 ac

Summary for Subcatchment 2S: Leatherwood Developed

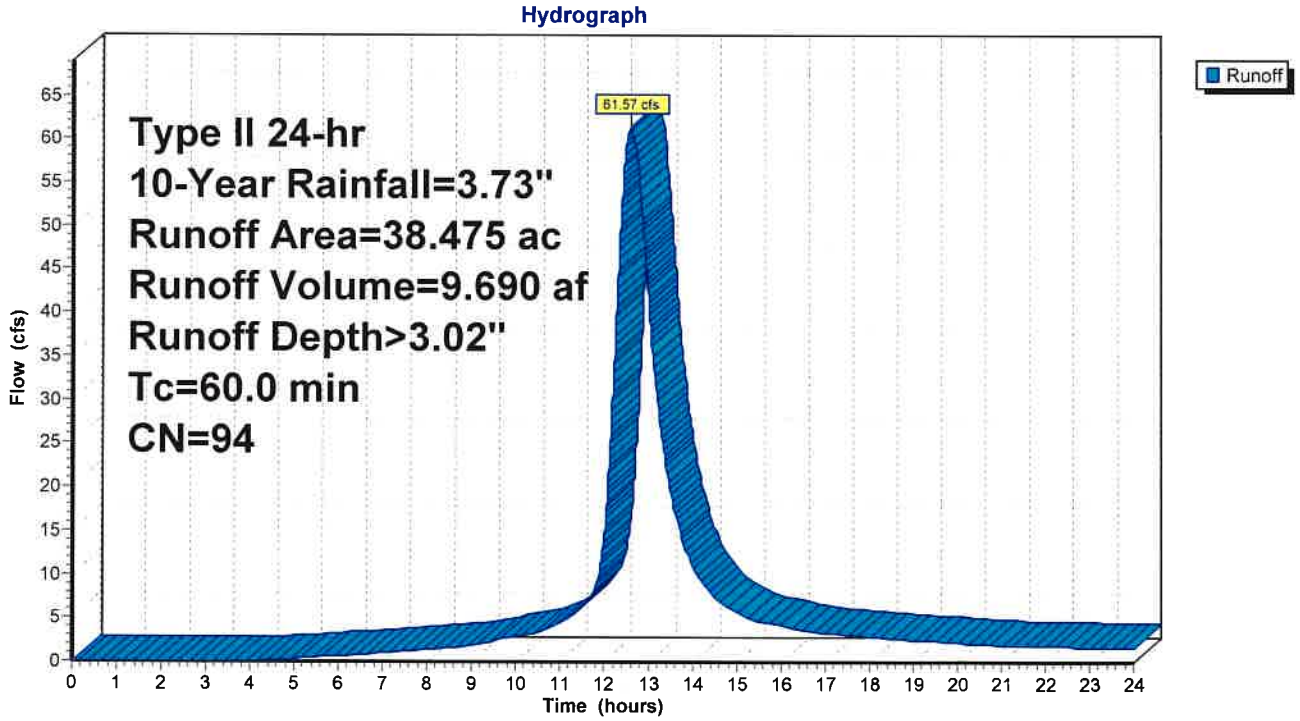
Runoff = 61.57 cfs @ 12.60 hrs, Volume= 9.690 af, Depth> 3.02"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.73"

Area (ac)	CN	Description
27.553	98	Paved roads w/curbs & sewers, HSG D
3.122	98	Water Surface, HSG D
7.800	80	>75% Grass cover, Good, HSG D
38.475	94	Weighted Average
7.800		20.27% Pervious Area
30.675		79.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0					**Direct Entry,**

Subcatchment 2S: Leatherwood Developed



Summary for Subcatchment 4S: Commerce Park

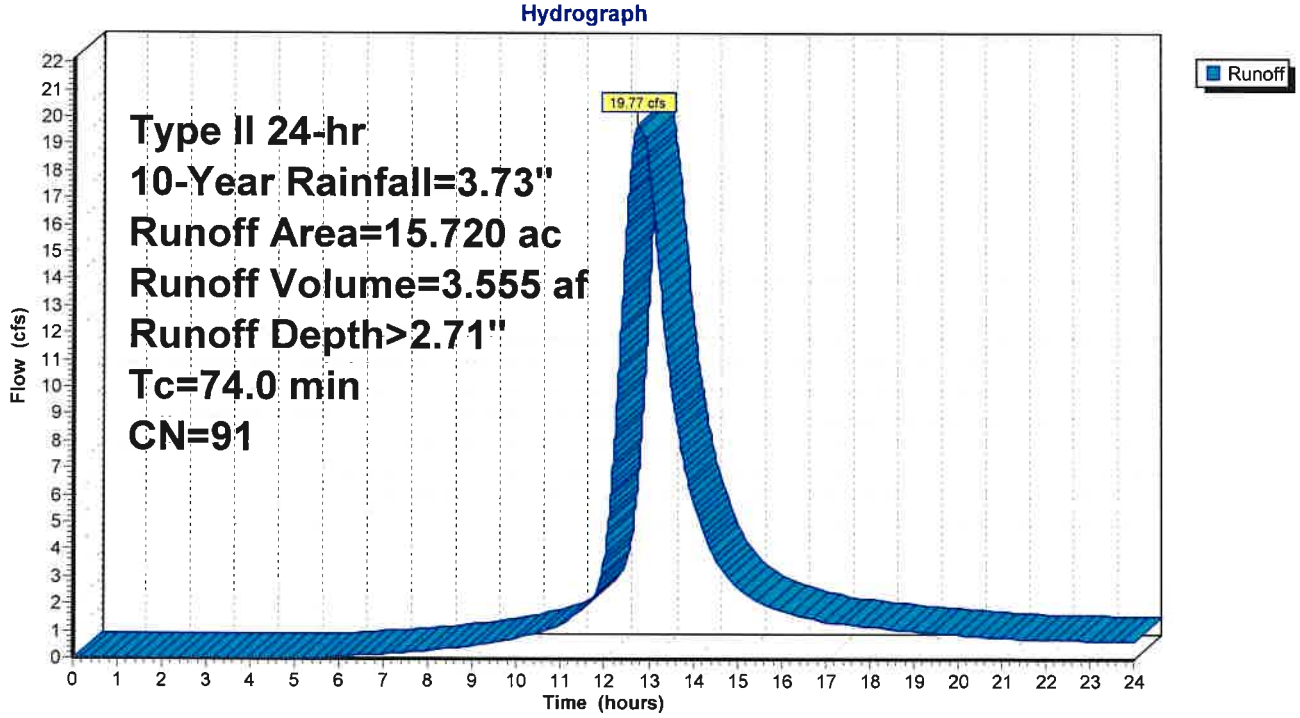
Runoff = 19.77 cfs @ 12.75 hrs, Volume= 3.555 af, Depth> 2.71"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.73"

	Area (ac)	CN	Description
*	15.720	91	
	15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
74.0					**Direct Entry,**

Subcatchment 4S: Commerce Park



Summary for Subcatchment 5S: 24" Storm

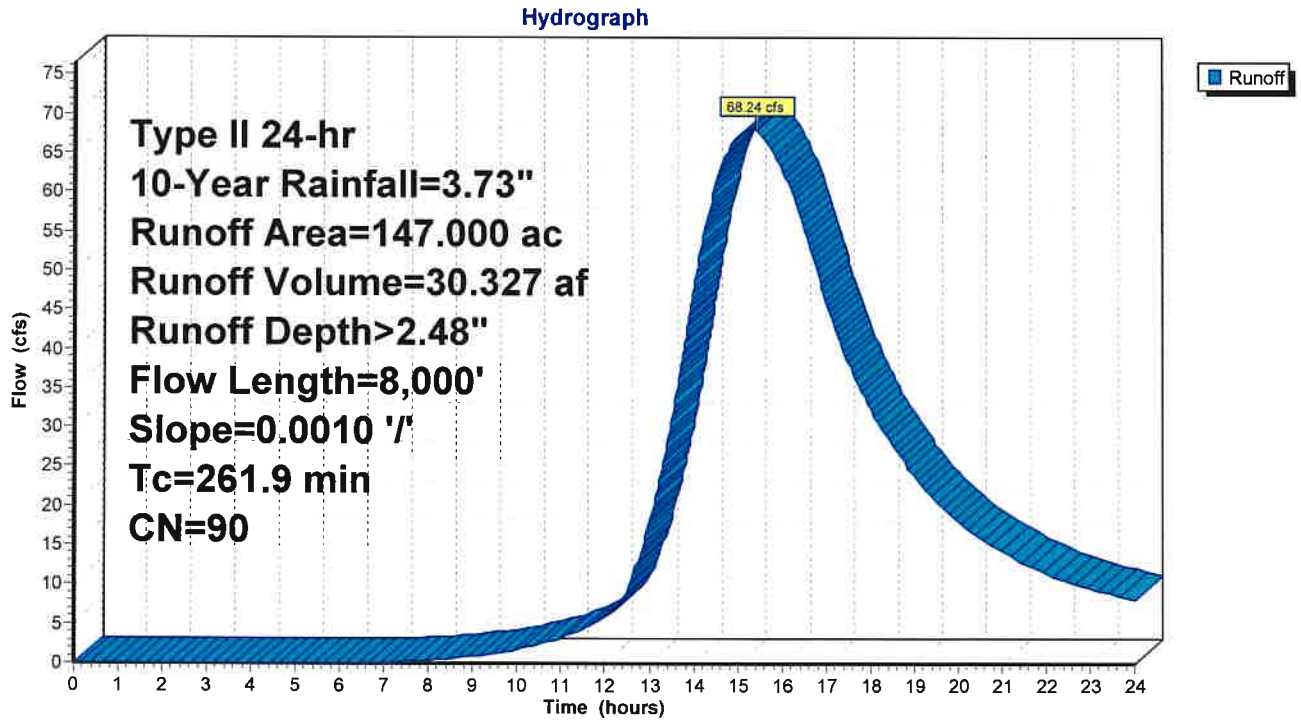
Runoff = 68.24 cfs @ 15.42 hrs, Volume= 30.327 af, Depth> 2.48"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.73"

	Area (ac)	CN	Description
*	147.000	90	
	147.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
261.9	8,000	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps

Subcatchment 5S: 24" Storm



Summary for Pond 3P: Leatherwood Pond

Inflow Area = 201.195 ac, 15.25% Impervious, Inflow Depth > 2.60" for 10-Year event
Inflow = 91.64 cfs @ 12.67 hrs, Volume= 43.571 af
Outflow = 13.83 cfs @ 22.01 hrs, Volume= 11.696 af, Atten= 85%, Lag= 560.5 min
Primary = 13.83 cfs @ 22.01 hrs, Volume= 11.696 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 697.15' @ 22.01 hrs Surf.Area= 175,184 sf Storage= 1,396,726 cf

Plug-Flow detention time= 317.7 min calculated for 11.692 af (27% of inflow)
Center-of-Mass det. time= 110.1 min (1,054.4 - 944.3)

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	1,739,943 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

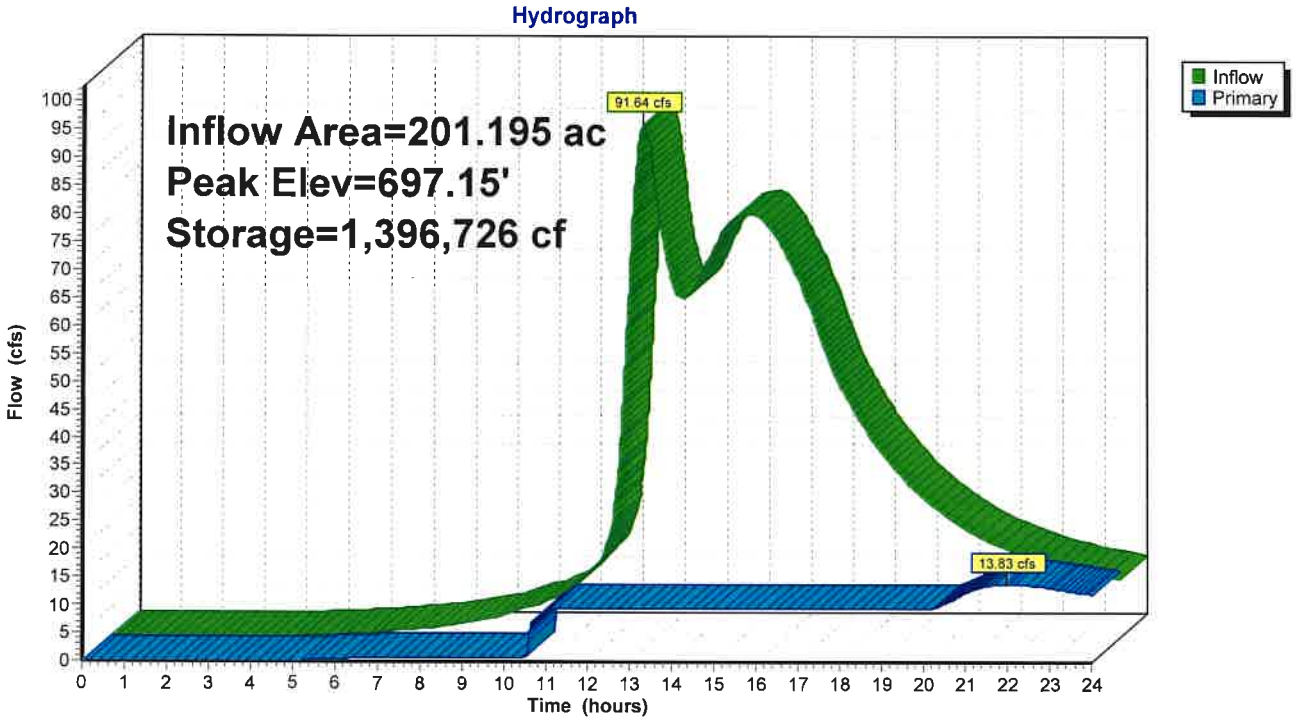
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	13,454	0	0
684.00	18,257	15,856	15,856
685.00	54,599	36,428	52,284
686.00	62,749	58,674	110,958
687.00	71,018	66,884	177,841
688.00	79,408	75,213	253,054
689.00	88,354	83,881	336,935
690.00	97,408	92,881	429,816
691.00	107,082	102,245	532,061
692.00	117,263	112,173	644,234
693.00	127,972	122,618	766,851
694.00	139,210	133,591	900,442
695.00	150,491	144,851	1,045,293
696.00	162,625	156,558	1,201,851
697.00	173,393	168,009	1,369,860
698.00	185,013	179,203	1,549,063
699.00	196,748	190,881	1,739,943

Device	Routing	Invert	Outlet Devices
#1	Primary	683.00'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 250.0 Head (feet)= 15.00 -Loss (feet)= 0.00 =Lift (feet)= 15.00
#2	Primary	684.74'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 4,000.0 Head (feet)= 15.00 -Loss (feet)= 0.51 =Lift (feet)= 14.49

#3 Primary 697.00' **30.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir**
Cv= 2.61 (C= 3.26)

Primary OutFlow Max=13.42 cfs @ 22.01 hrs HW=697.15' (Free Discharge)
- **1=Pump** (Pump Controls 0.56 cfs)
- **2=Pump** (Pump Controls 8.91 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Weir Controls 3.96 cfs @ 1.28 fps)

Pond 3P: Leatherwood Pond



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Leatherwood Runoff Area=38.475 ac 79.73% Impervious Runoff Depth>3.71"
Tc=60.0 min CN=94 Runoff=74.91 cfs 11.898 af

Subcatchment 4S: Commerce Park Runoff Area=15.720 ac 0.00% Impervious Runoff Depth>3.38"
Tc=74.0 min CN=91 Runoff=24.51 cfs 4.434 af

Subcatchment 5S: 24" Storm Runoff Area=147.000 ac 0.00% Impervious Runoff Depth>3.11"
Flow Length=8,000' Slope=0.0010 '/' Tc=261.9 min CN=90 Runoff=85.24 cfs 38.102 af

Pond 3P: Leatherwood Pond Peak Elev=697.64' Storage=1,483,727 cf Inflow=113.43 cfs 54.434 af
Outflow=43.53 cfs 22.250 af

Total Runoff Area = 201.195 ac Runoff Volume = 54.434 af Average Runoff Depth = 3.25"
84.75% Pervious = 170.520 ac 15.25% Impervious = 30.675 ac

Summary for Subcatchment 2S: Leatherwood Developed

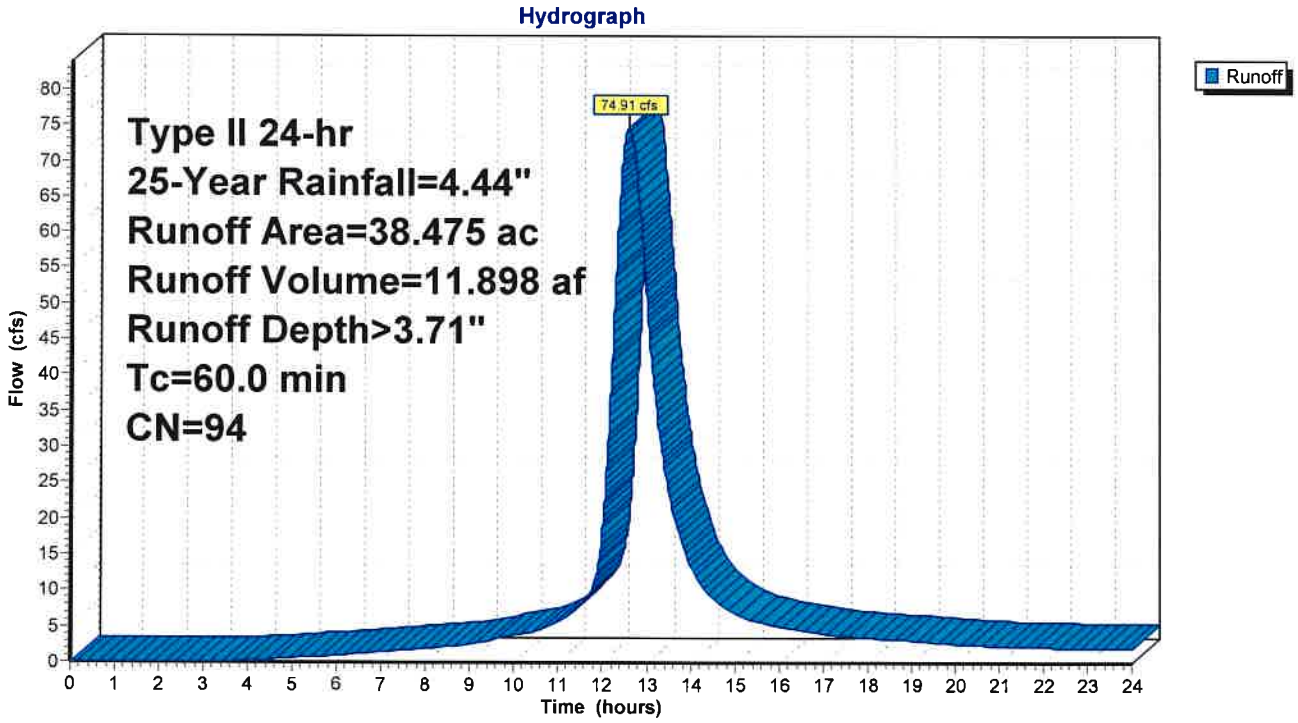
Runoff = 74.91 cfs @ 12.60 hrs, Volume= 11.898 af, Depth> 3.71"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (ac)	CN	Description
27.553	98	Paved roads w/curbs & sewers, HSG D
3.122	98	Water Surface, HSG D
7.800	80	>75% Grass cover, Good, HSG D
38.475	94	Weighted Average
7.800		20.27% Pervious Area
30.675		79.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0					**Direct Entry,**

Subcatchment 2S: Leatherwood Developed



Summary for Subcatchment 4S: Commerce Park

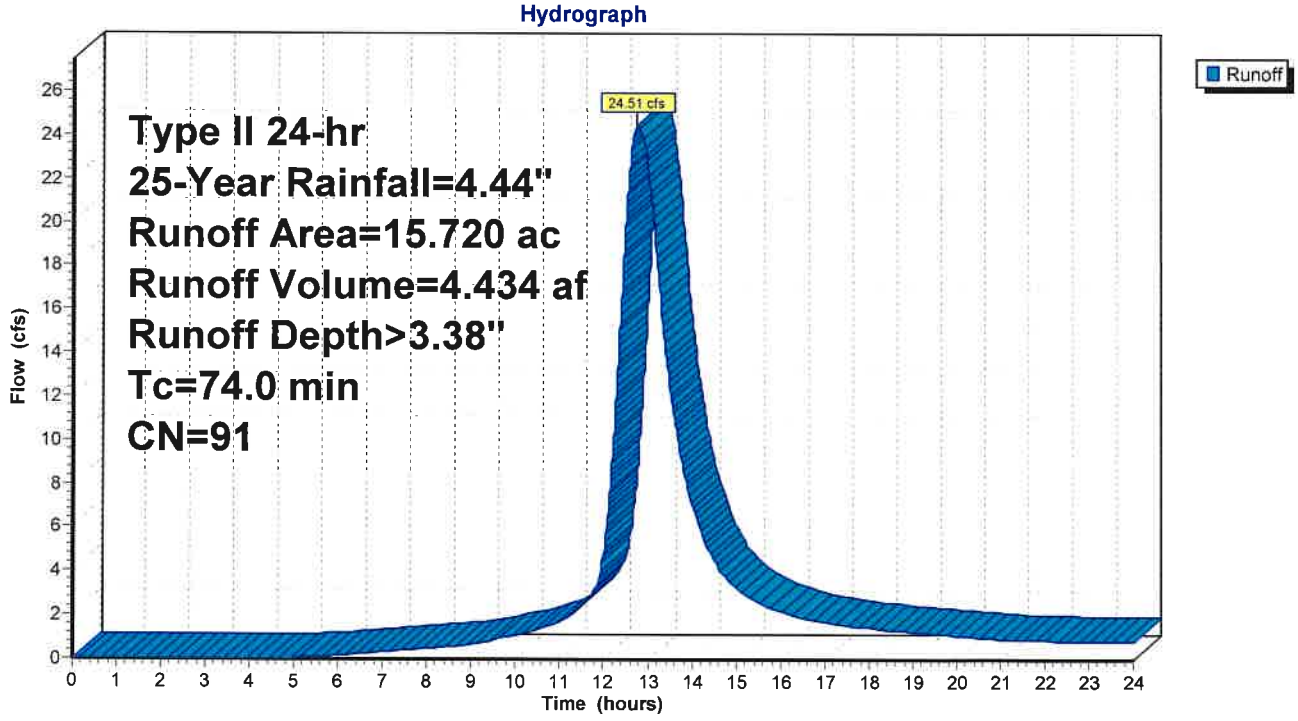
Runoff = 24.51 cfs @ 12.75 hrs, Volume= 4.434 af, Depth> 3.38"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

	Area (ac)	CN	Description
*	15.720	91	
	15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
74.0					**Direct Entry,**

Subcatchment 4S: Commerce Park



Summary for Subcatchment 5S: 24" Storm

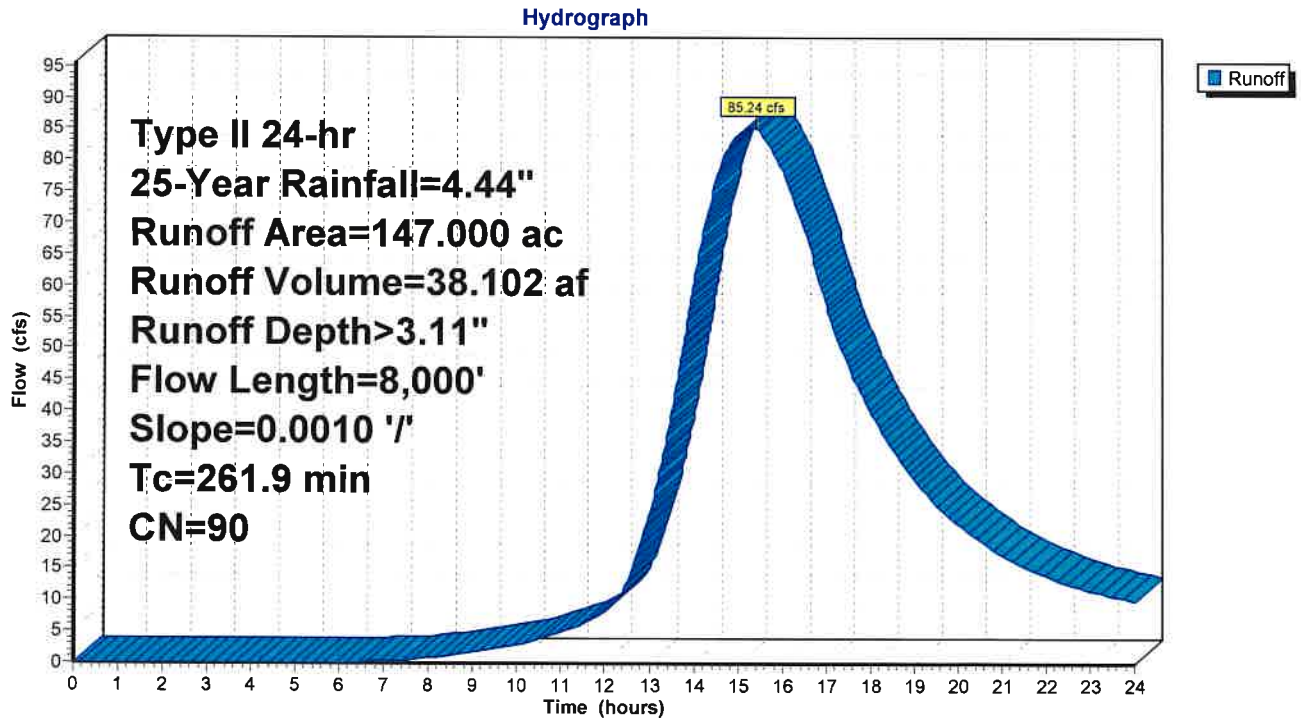
Runoff = 85.24 cfs @ 15.42 hrs, Volume= 38.102 af, Depth> 3.11"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=4.44"

	Area (ac)	CN	Description
*	147.000	90	
	147.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
261.9	8,000	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps

Subcatchment 5S: 24" Storm



Summary for Pond 3P: Leatherwood Pond

Inflow Area = 201.195 ac, 15.25% Impervious, Inflow Depth > 3.25" for 25-Year event
Inflow = 113.43 cfs @ 12.67 hrs, Volume= 54.434 af
Outflow = 43.53 cfs @ 18.08 hrs, Volume= 22.250 af, Atten= 62%, Lag= 324.4 min
Primary = 43.53 cfs @ 18.08 hrs, Volume= 22.250 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 697.64' @ 18.08 hrs Surf.Area= 180,863 sf Storage= 1,483,727 cf

Plug-Flow detention time= 317.4 min calculated for 22.250 af (41% of inflow)
Center-of-Mass det. time= 147.2 min (1,086.9 - 939.6)

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	1,739,943 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

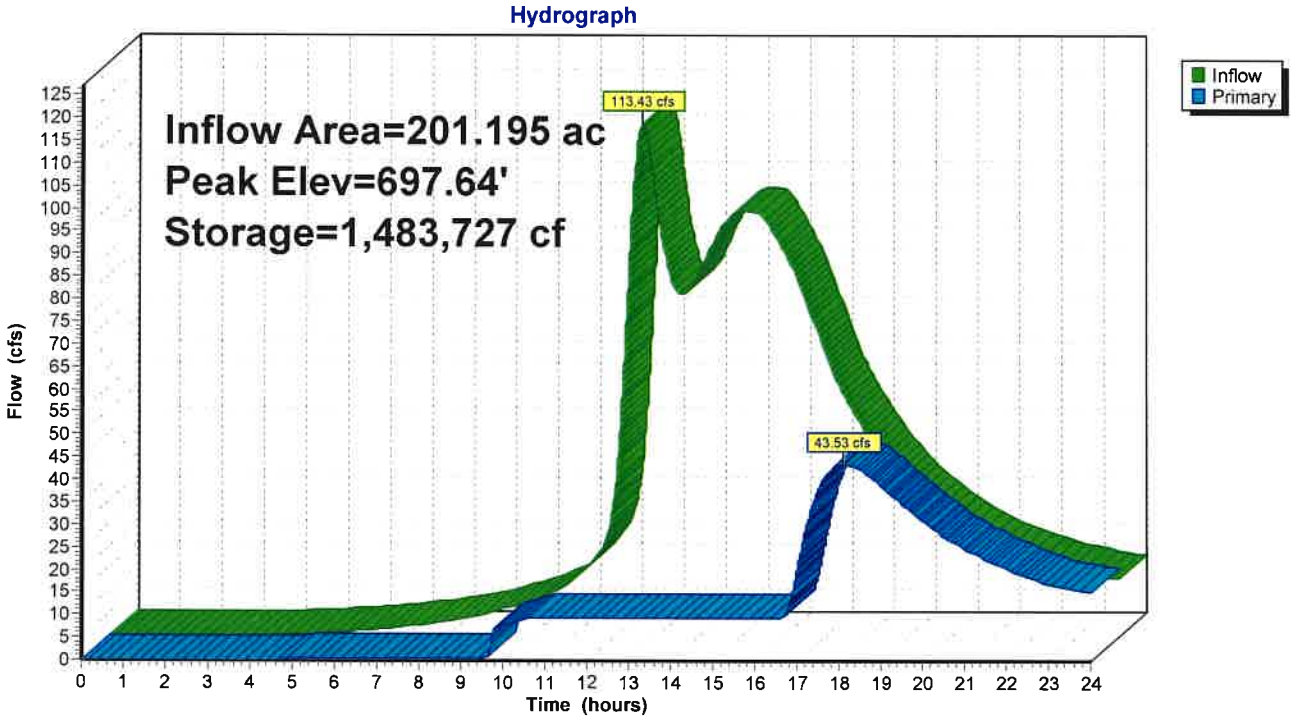
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	13,454	0	0
684.00	18,257	15,856	15,856
685.00	54,599	36,428	52,284
686.00	62,749	58,674	110,958
687.00	71,018	66,884	177,841
688.00	79,408	75,213	253,054
689.00	88,354	83,881	336,935
690.00	97,408	92,881	429,816
691.00	107,082	102,245	532,061
692.00	117,263	112,173	644,234
693.00	127,972	122,618	766,851
694.00	139,210	133,591	900,442
695.00	150,491	144,851	1,045,293
696.00	162,625	156,558	1,201,851
697.00	173,393	168,009	1,369,860
698.00	185,013	179,203	1,549,063
699.00	196,748	190,881	1,739,943

Device	Routing	Invert	Outlet Devices
#1	Primary	683.00'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 250.0 Head (feet)= 15.00 -Loss (feet)= 0.00 =Lift (feet)= 15.00
#2	Primary	684.74'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 4,000.0 Head (feet)= 15.00 -Loss (feet)= 0.51 =Lift (feet)= 14.49

#3 Primary 697.00' **30.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir**
Cv= 2.61 (C= 3.26)

Primary OutFlow Max=43.33 cfs @ 18.08 hrs HW=697.64' (Free Discharge)
- **1=Pump** (Pump Controls 0.56 cfs)
- **2=Pump** (Pump Controls 8.91 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Weir Controls 33.86 cfs @ 2.61 fps)

Pond 3P: Leatherwood Pond



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Leatherwood Runoff Area=38.475 ac 79.73% Impervious Runoff Depth>4.27"
Tc=60.0 min CN=94 Runoff=85.58 cfs 13.679 af

Subcatchment 4S: Commerce Park Runoff Area=15.720 ac 0.00% Impervious Runoff Depth>3.93"
Tc=74.0 min CN=91 Runoff=28.30 cfs 5.147 af

Subcatchment 5S: 24" Storm Runoff Area=147.000 ac 0.00% Impervious Runoff Depth>3.63"
Flow Length=8,000' Slope=0.0010 '/' Tc=261.9 min CN=90 Runoff=98.90 cfs 44.422 af

Pond 3P: Leatherwood Pond Peak Elev=697.94' Storage=1,538,130 cf Inflow=130.99 cfs 63.248 af
Outflow=69.71 cfs 30.891 af

Total Runoff Area = 201.195 ac Runoff Volume = 63.248 af Average Runoff Depth = 3.77"
84.75% Pervious = 170.520 ac 15.25% Impervious = 30.675 ac

Summary for Subcatchment 2S: Leatherwood Developed

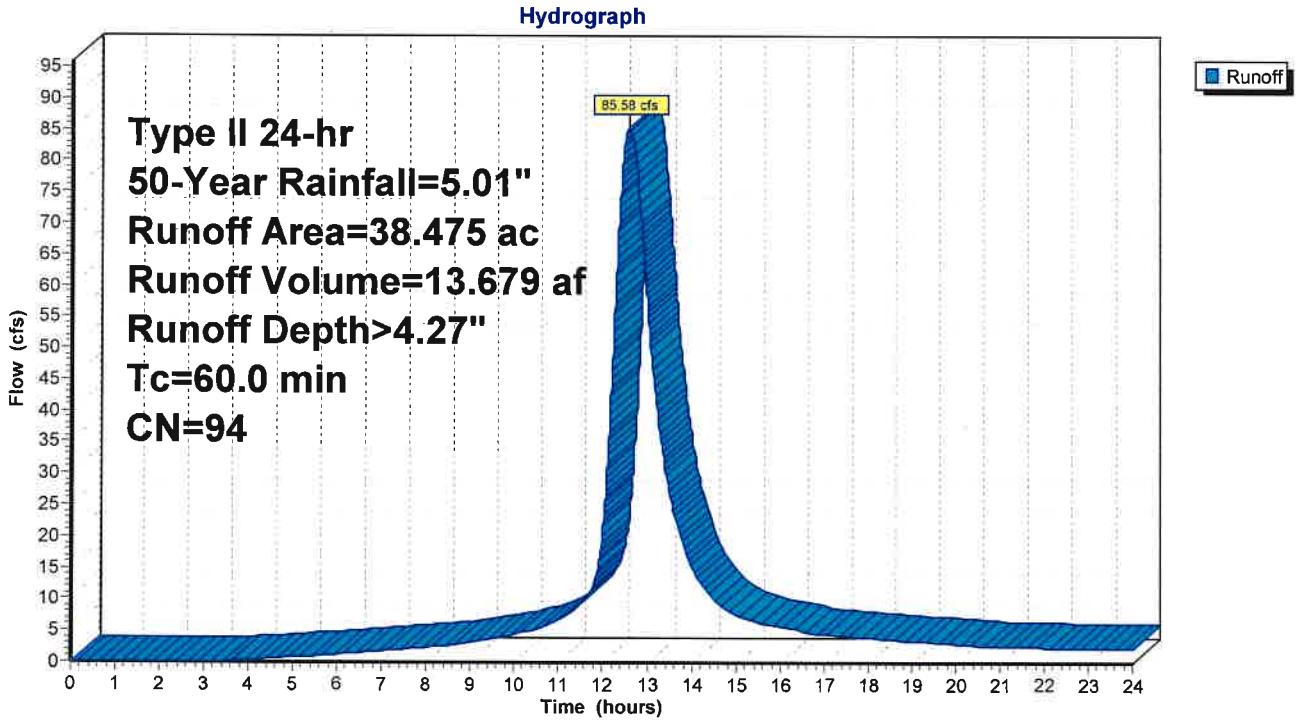
Runoff = 85.58 cfs @ 12.60 hrs, Volume= 13.679 af, Depth> 4.27"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.01"

Area (ac)	CN	Description
27.553	98	Paved roads w/curbs & sewers, HSG D
3.122	98	Water Surface, HSG D
7.800	80	>75% Grass cover, Good, HSG D
38.475	94	Weighted Average
7.800		20.27% Pervious Area
30.675		79.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0					**Direct Entry,**

Subcatchment 2S: Leatherwood Developed



Summary for Subcatchment 4S: Commerce Park

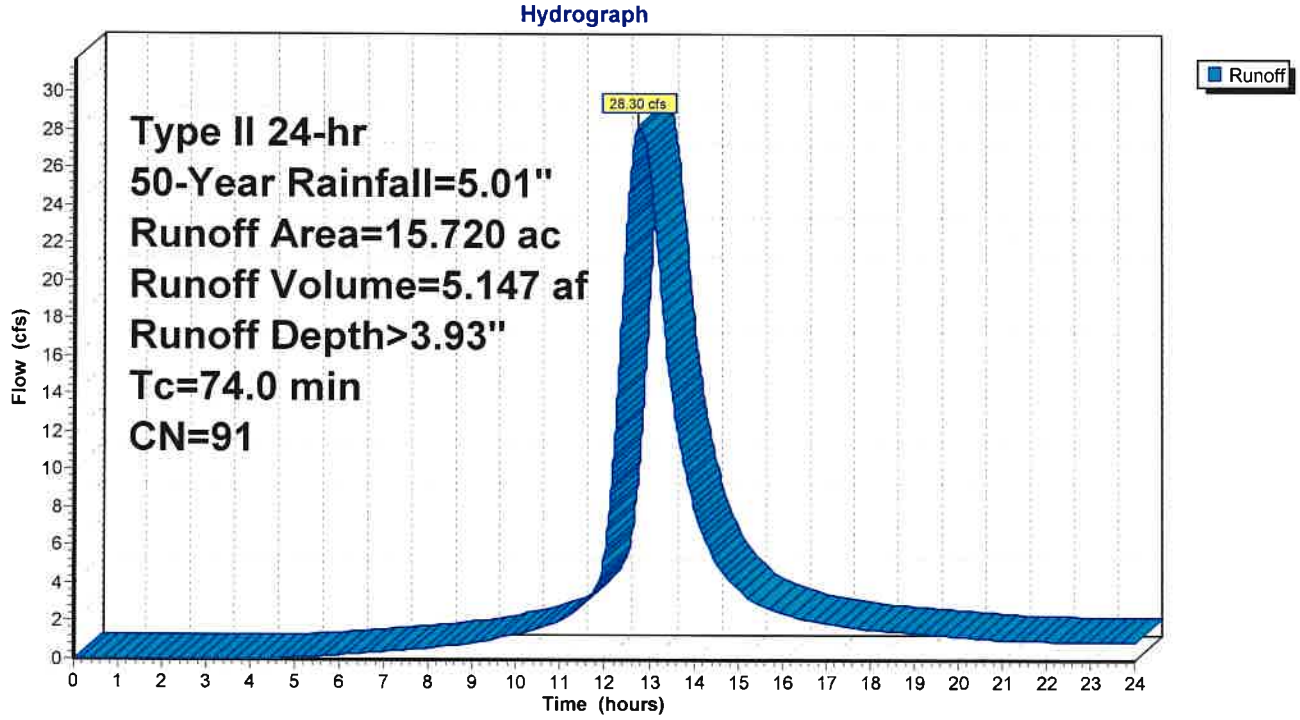
Runoff = 28.30 cfs @ 12.75 hrs, Volume= 5.147 af, Depth> 3.93"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.01"

	Area (ac)	CN	Description
*	15.720	91	
	15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
74.0					**Direct Entry,**

Subcatchment 4S: Commerce Park



Summary for Subcatchment 5S: 24" Storm

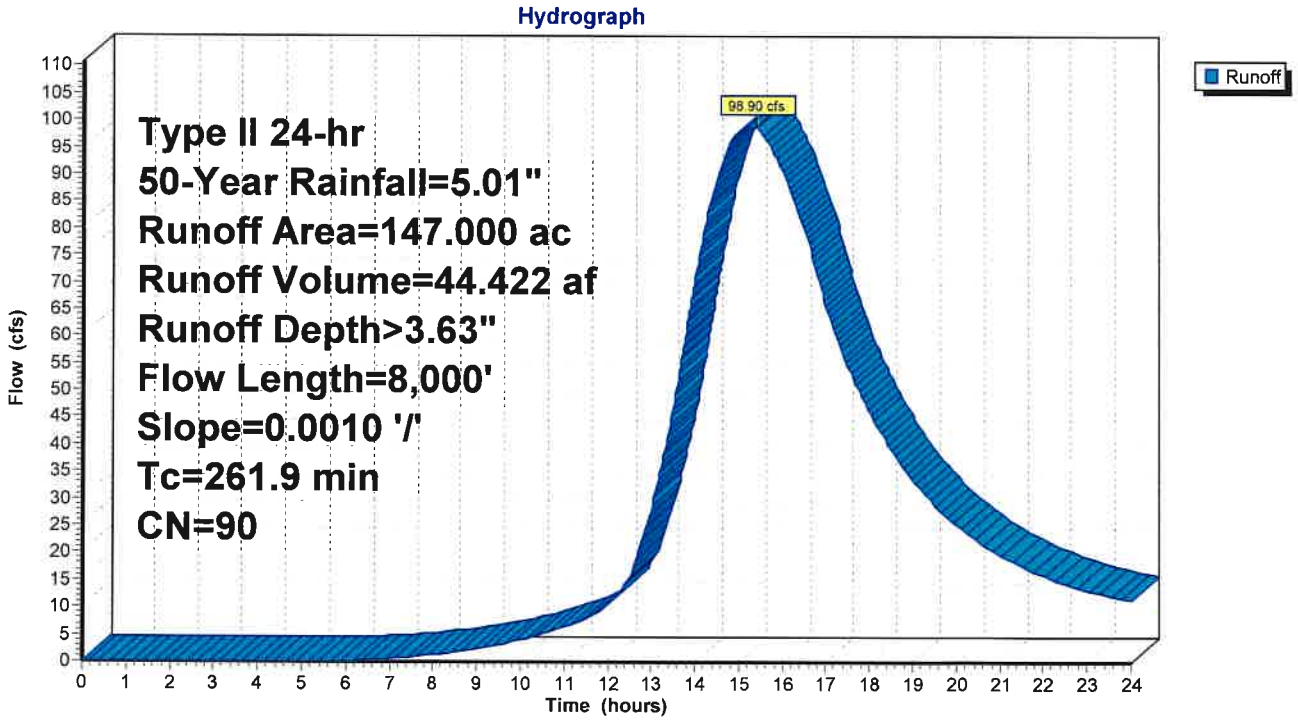
Runoff = 98.90 cfs @ 15.42 hrs, Volume= 44.422 af, Depth> 3.63"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-Year Rainfall=5.01"

	Area (ac)	CN	Description
*	147.000	90	
	147.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
261.9	8,000	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps

Subcatchment 5S: 24" Storm



Summary for Pond 3P: Leatherwood Pond

Inflow Area = 201.195 ac, 15.25% Impervious, Inflow Depth > 3.77" for 50-Year event
Inflow = 130.99 cfs @ 12.67 hrs, Volume= 63.248 af
Outflow = 69.71 cfs @ 17.08 hrs, Volume= 30.891 af, Atten= 47%, Lag= 264.8 min
Primary = 69.71 cfs @ 17.08 hrs, Volume= 30.891 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 697.94' @ 17.08 hrs Surf.Area= 184,325 sf Storage= 1,538,130 cf

Plug-Flow detention time= 287.5 min calculated for 30.878 af (49% of inflow)
Center-of-Mass det. time= 137.2 min (1,073.6 - 936.4)

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	1,739,943 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

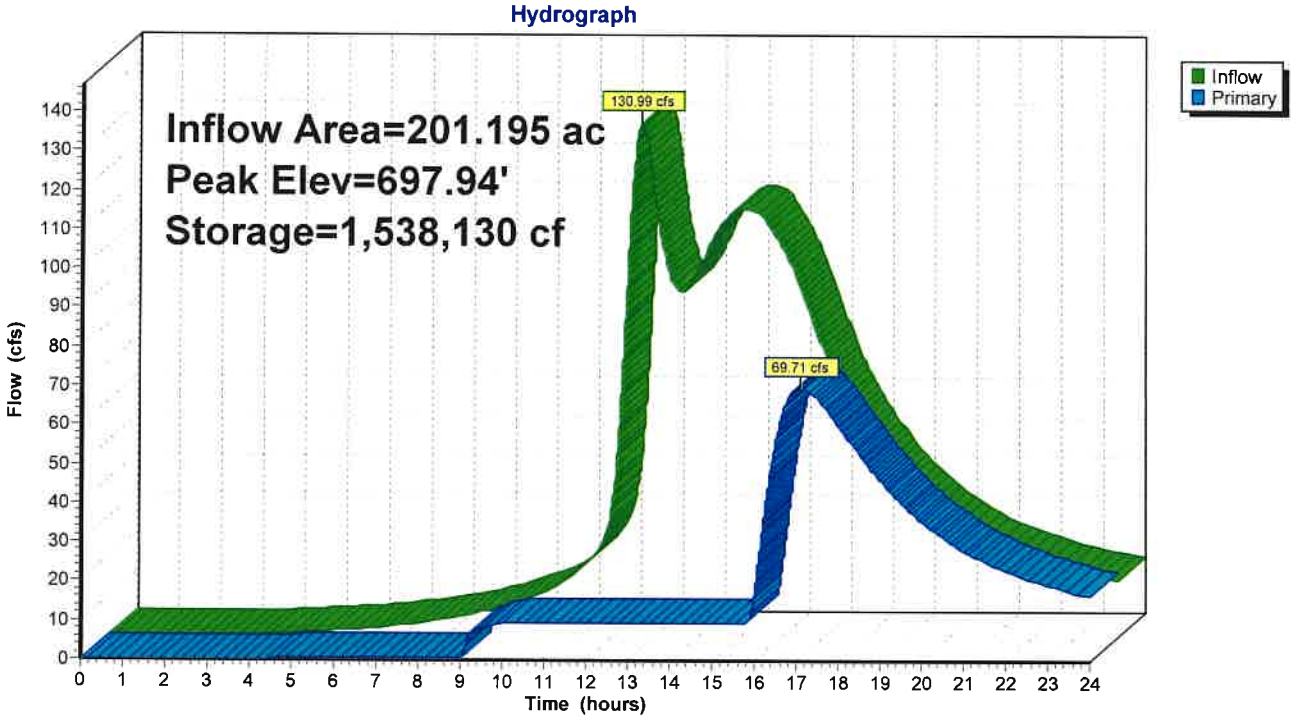
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	13,454	0	0
684.00	18,257	15,856	15,856
685.00	54,599	36,428	52,284
686.00	62,749	58,674	110,958
687.00	71,018	66,884	177,841
688.00	79,408	75,213	253,054
689.00	88,354	83,881	336,935
690.00	97,408	92,881	429,816
691.00	107,082	102,245	532,061
692.00	117,263	112,173	644,234
693.00	127,972	122,618	766,851
694.00	139,210	133,591	900,442
695.00	150,491	144,851	1,045,293
696.00	162,625	156,558	1,201,851
697.00	173,393	168,009	1,369,860
698.00	185,013	179,203	1,549,063
699.00	196,748	190,881	1,739,943

Device	Routing	Invert	Outlet Devices
#1	Primary	683.00'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 250.0 Head (feet)= 15.00 -Loss (feet)= 0.00 =Lift (feet)= 15.00
#2	Primary	684.74'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 4,000.0 Head (feet)= 15.00 -Loss (feet)= 0.51 =Lift (feet)= 14.49

#3 Primary 697.00' **30.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir**
Cv= 2.61 (C= 3.26)

Primary OutFlow Max=69.61 cfs @ 17.08 hrs HW=697.94' (Free Discharge)
- **1=Pump** (Pump Controls 0.56 cfs)
- **2=Pump** (Pump Controls 8.91 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Weir Controls 60.14 cfs @ 3.16 fps)

Pond 3P: Leatherwood Pond



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Leatherwood Runoff Area=38.475 ac 79.73% Impervious Runoff Depth>4.87"
Tc=60.0 min CN=94 Runoff=97.13 cfs 15.622 af

Subcatchment 4S: Commerce Park Runoff Area=15.720 ac 0.00% Impervious Runoff Depth>4.52"
Tc=74.0 min CN=91 Runoff=32.42 cfs 5.927 af

Subcatchment 5S: 24" Storm Runoff Area=147.000 ac 0.00% Impervious Runoff Depth>4.19"
Flow Length=8,000' Slope=0.0010 '/' Tc=261.9 min CN=90 Runoff=113.77 cfs 51.353 af

Pond 3P: Leatherwood Pond Peak Elev=698.21' Storage=1,588,179 cf Inflow=150.12 cfs 72.902 af
Outflow=97.48 cfs 40.385 af

Total Runoff Area = 201.195 ac Runoff Volume = 72.902 af Average Runoff Depth = 4.35"
84.75% Pervious = 170.520 ac 15.25% Impervious = 30.675 ac

Summary for Subcatchment 2S: Leatherwood Developed

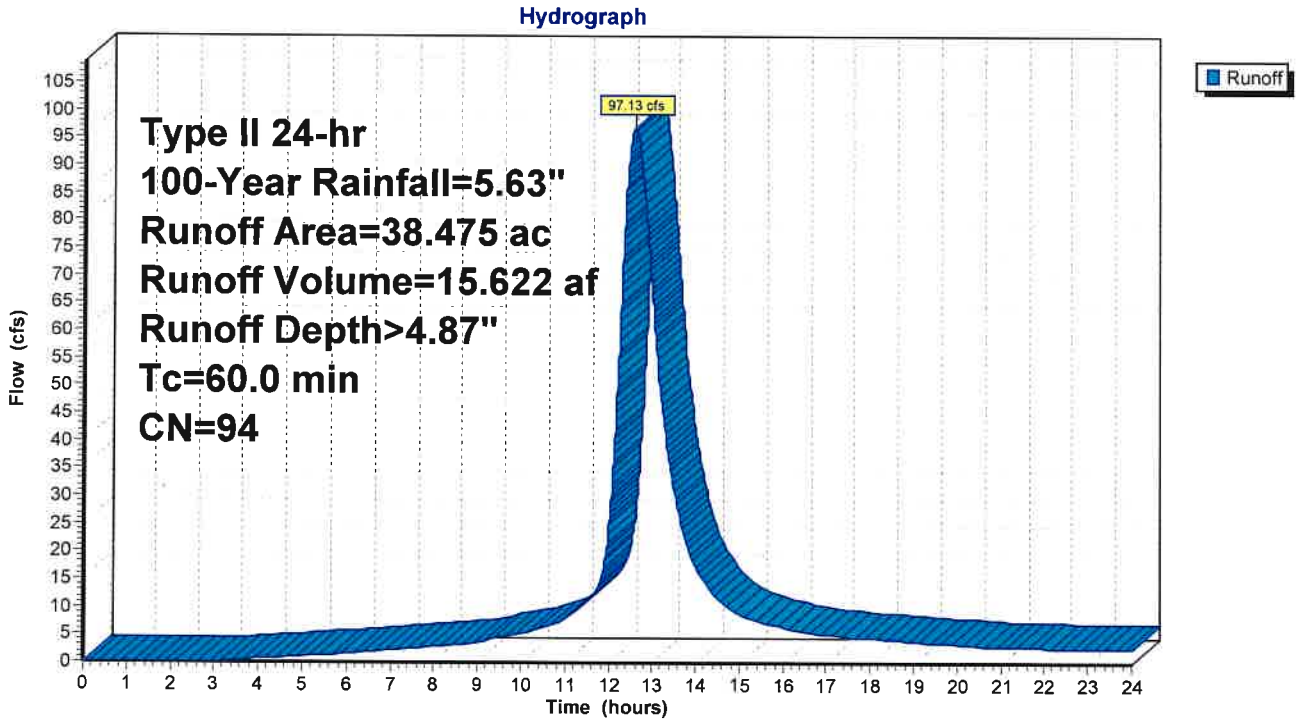
Runoff = 97.13 cfs @ 12.60 hrs, Volume= 15.622 af, Depth> 4.87"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (ac)	CN	Description
27.553	98	Paved roads w/curbs & sewers, HSG D
3.122	98	Water Surface, HSG D
7.800	80	>75% Grass cover, Good, HSG D
38.475	94	Weighted Average
7.800		20.27% Pervious Area
30.675		79.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0					**Direct Entry,**

Subcatchment 2S: Leatherwood Developed



Summary for Subcatchment 4S: Commerce Park

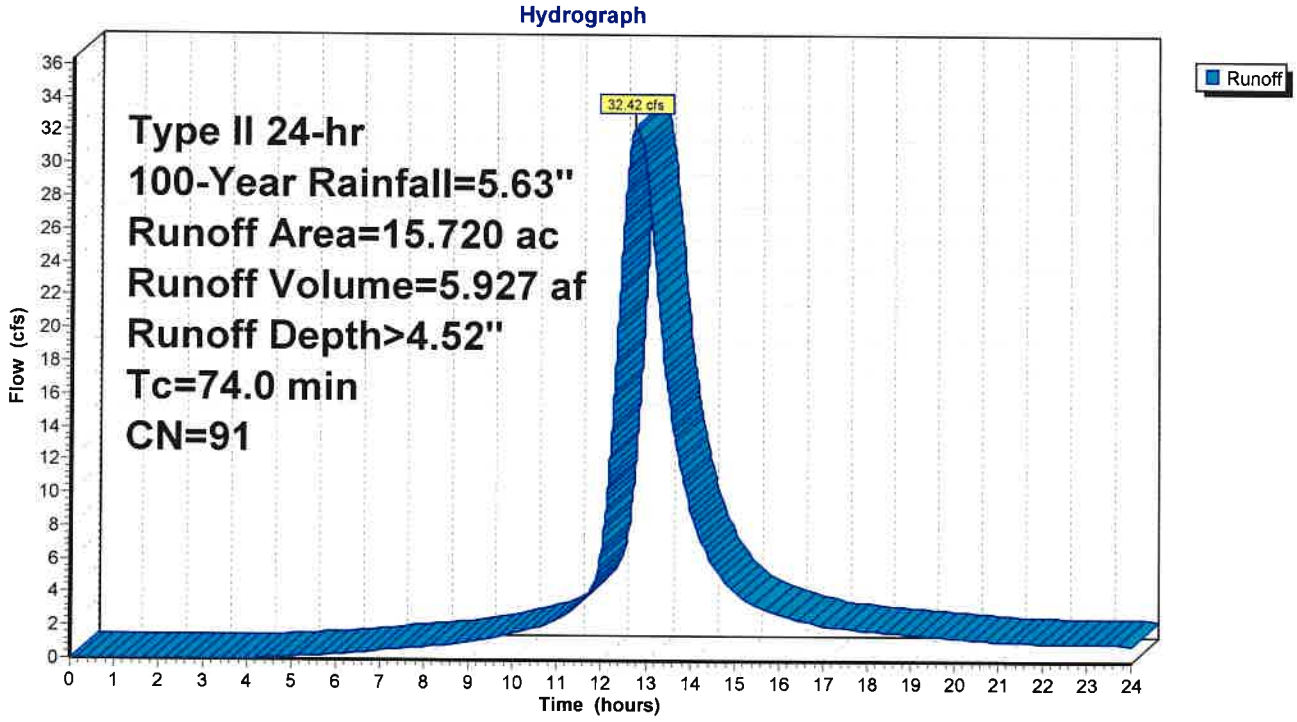
Runoff = 32.42 cfs @ 12.75 hrs, Volume= 5.927 af, Depth> 4.52"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	15.720	91	
	15.720		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
74.0					**Direct Entry,**

Subcatchment 4S: Commerce Park



Summary for Subcatchment 5S: 24" Storm

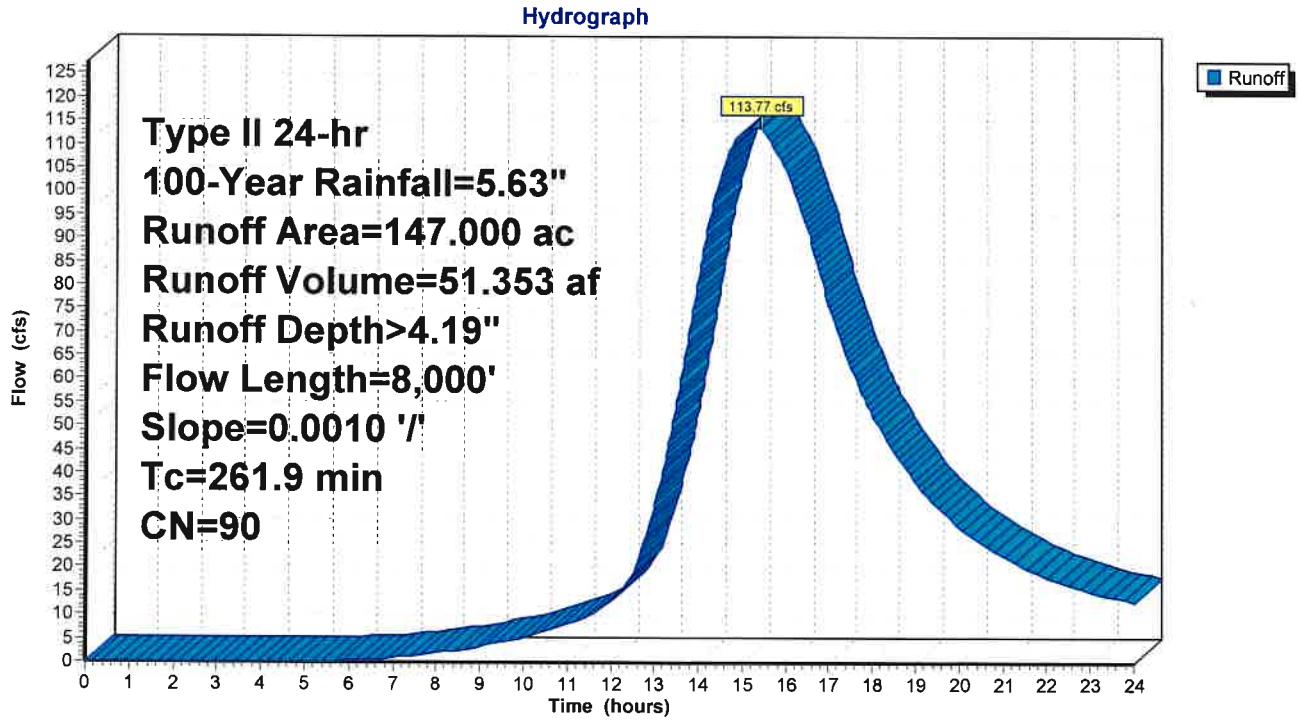
Runoff = 113.77 cfs @ 15.42 hrs, Volume= 51.353 af, Depth> 4.19"
Routed to Pond 3P : Leatherwood Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	147.000	90	
	147.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
261.9	8,000	0.0010	0.51		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps

Subcatchment 5S: 24" Storm



Summary for Pond 3P: Leatherwood Pond

Inflow Area = 201.195 ac, 15.25% Impervious, Inflow Depth > 4.35" for 100-Year event
Inflow = 150.12 cfs @ 12.67 hrs, Volume= 72.902 af
Outflow = 97.48 cfs @ 16.56 hrs, Volume= 40.385 af, Atten= 35%, Lag= 233.4 min
Primary = 97.48 cfs @ 16.56 hrs, Volume= 40.385 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 698.21' @ 16.56 hrs Surf.Area= 187,478 sf Storage= 1,588,179 cf

Plug-Flow detention time= 260.5 min calculated for 40.385 af (55% of inflow)
Center-of-Mass det. time= 125.7 min (1,059.2 - 933.4)

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	1,739,943 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

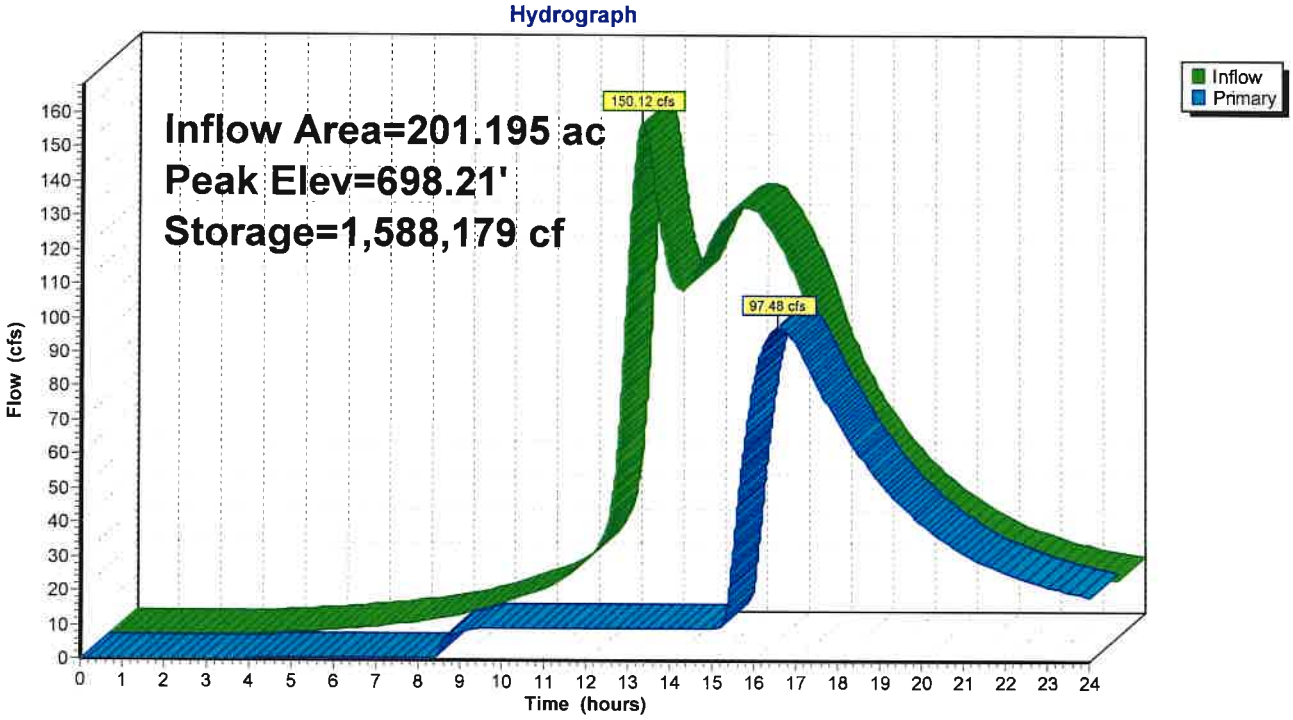
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	13,454	0	0
684.00	18,257	15,856	15,856
685.00	54,599	36,428	52,284
686.00	62,749	58,674	110,958
687.00	71,018	66,884	177,841
688.00	79,408	75,213	253,054
689.00	88,354	83,881	336,935
690.00	97,408	92,881	429,816
691.00	107,082	102,245	532,061
692.00	117,263	112,173	644,234
693.00	127,972	122,618	766,851
694.00	139,210	133,591	900,442
695.00	150,491	144,851	1,045,293
696.00	162,625	156,558	1,201,851
697.00	173,393	168,009	1,369,860
698.00	185,013	179,203	1,549,063
699.00	196,748	190,881	1,739,943

Device	Routing	Invert	Outlet Devices
#1	Primary	683.00'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 250.0 Head (feet)= 15.00 -Loss (feet)= 0.00 =Lift (feet)= 15.00
#2	Primary	684.74'	**Pump** Discharges@694.50' 24.0" Diam. x 450.0' Long Discharge, Hazen-Williams C= 130 Flow (gpm)= 4,000.0 Head (feet)= 15.00 -Loss (feet)= 0.51 =Lift (feet)= 14.49

#3 Primary 697.00' **30.0 deg x 20.0' long Sharp-Crested Vee/Trap Weir**
Cv= 2.61 (C= 3.26)

Primary OutFlow Max=97.44 cfs @ 16.56 hrs HW=698.21' (Free Discharge)
- **1=Pump** (Pump Controls 0.56 cfs)
- **2=Pump** (Pump Controls 8.91 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Weir Controls 87.98 cfs @ 3.58 fps)

Pond 3P: Leatherwood Pond



APPENDIX H

DRAINAGE MAPS

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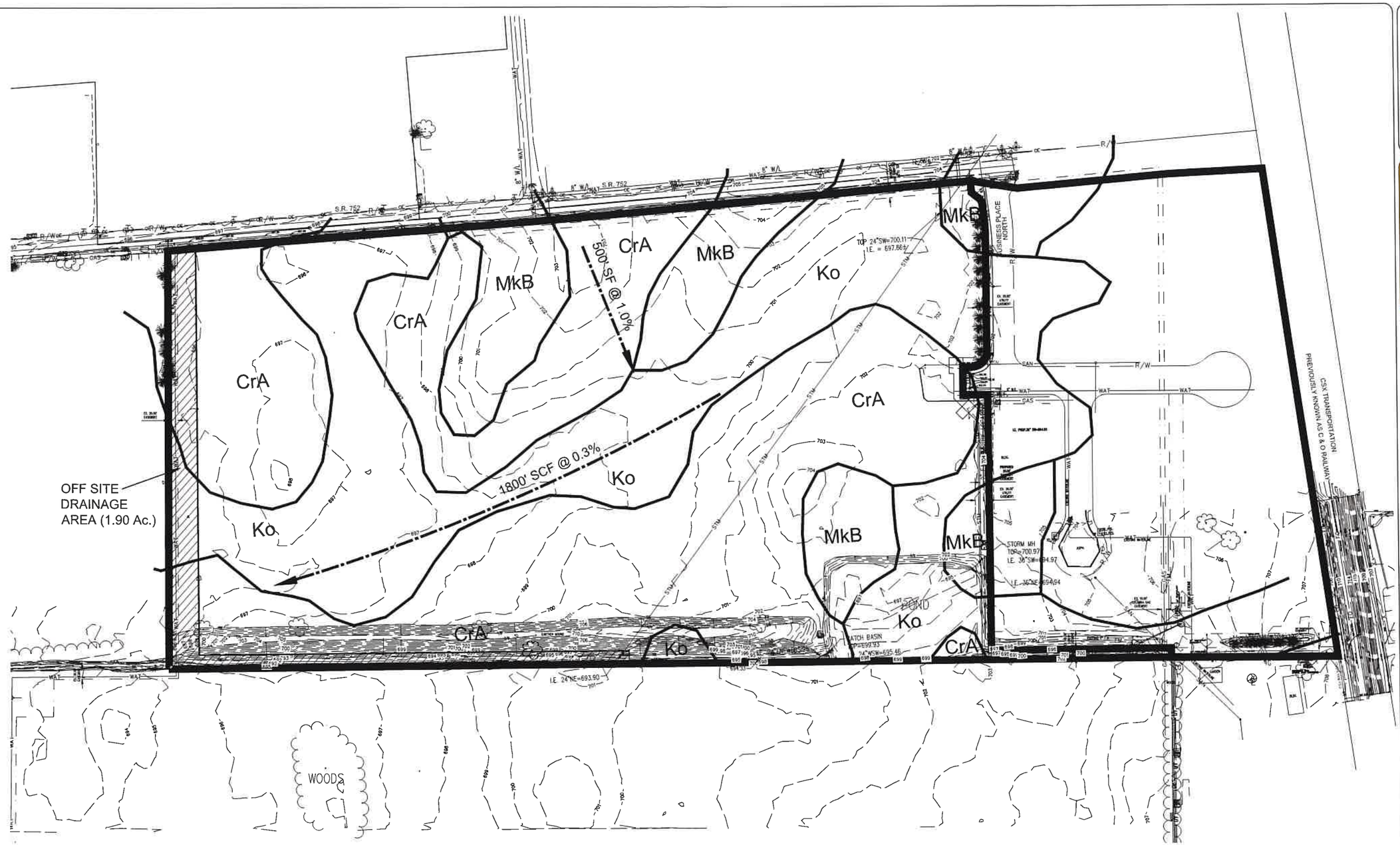


40.38 AC. (TOTAL)
1.90 AC. (OFF SITE)
38.48 AC. (NET)

SOIL TYPE LEGEND

		HSG	%
CRA 21.19 AC.	CROSBY SILT LOAM, SOUTHERN OHIO TILL PLAIN 0 TO 2 PERCENT SLOPES	C	52.5
KO 13.75 AC.	KOKOMO SILTY CLAY LOAM 0 TO 2 PERCENT SLOPES	B/D	34
MKB 5.44 AC.	MIAMIAN-KENDALLVILLE SILT LOAMS 2 TO 6 PERCENT SLOPES	C	13.5

GRAPHIC SCALE
200 0 200 400
(IN FEET)

OHIO811.org
Before You Dig
1-800-362-2764

REV.	DATE	DESCRIPTION

POGGEMEYER DESIGN GROUP
A KLEINFELDER COMPANY
1168 NORTH MAIN STREET
BOWLING GREEN, OH 43402
PH: (419) 352-7537

DHL SUPPLY CHAIN
ASHVILLE LOGISTICS PARK
ASHVILLE, OHIO

EXISTING DRAINAGE AND SOILS PLAN

DRAWN BY	CHECKED BY
MEK	KAM

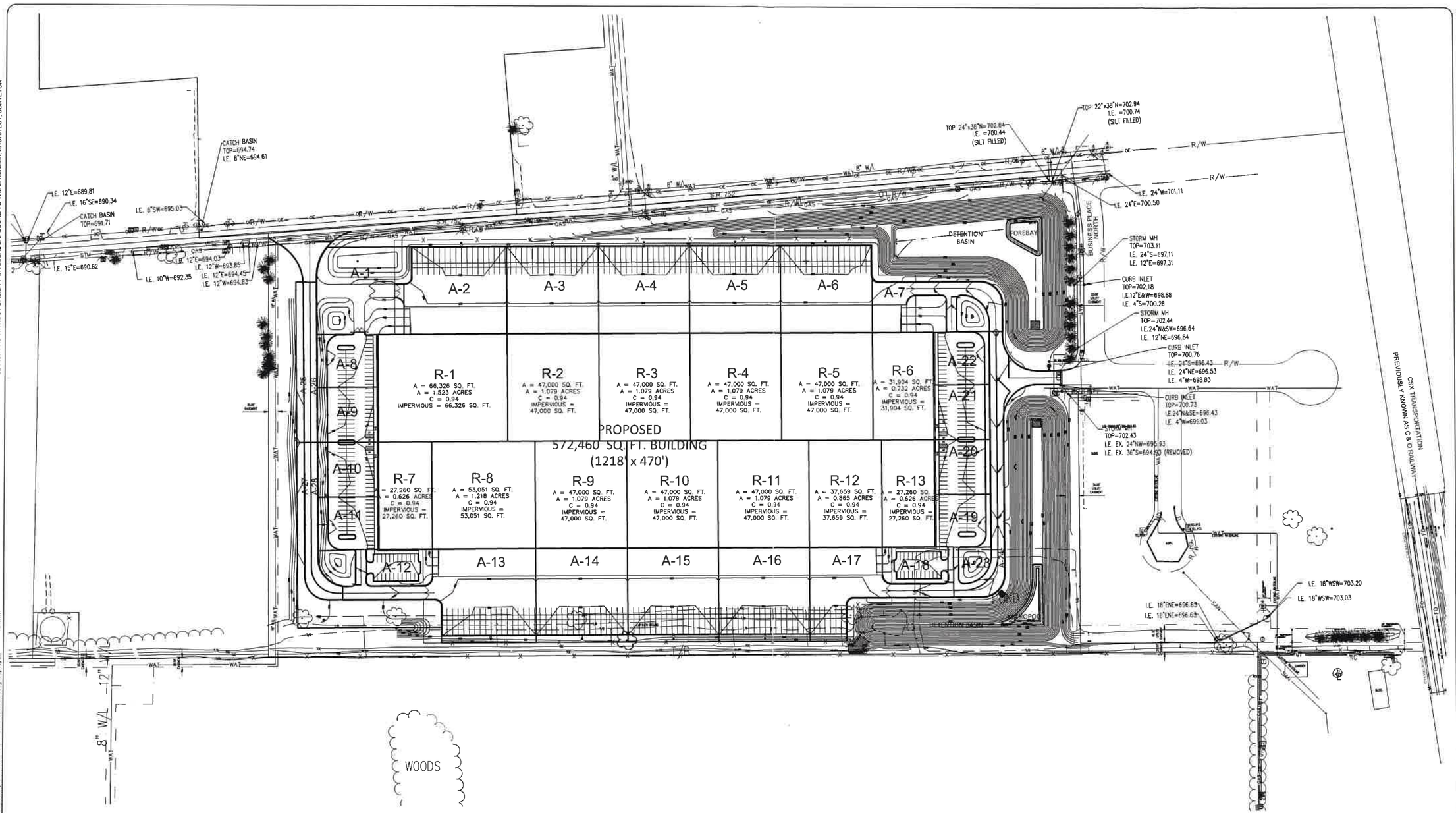
STATE OF OHIO
KENNETH A. MAAG
53316
REGISTERED PROFESSIONAL ENGINEER

D1

DATE
9/8/2022

PROJECT NUMBER
20224880.001A

FILE No. I:\Kleinfelder Projects 2022\DHL-Ashville-Leatherwood - 20224880.001A\DWL TOPOGRAPHY-20224880.001A.dwg 09/13/22 14:33-MKener



A-1 A = 37,036 SQ. FT. A = 0.850 ACRES C = 0.36 IMPERVIOUS = 8,068 SQ. FT.	A-4 A = 38,100 SQ. FT. A = 0.875 ACRES C = 0.94 IMPERVIOUS = 38,100 SQ. FT.	A-7 A = 31,117 SQ. FT. A = 0.714 ACRES C = 0.71 IMPERVIOUS = 19,790 SQ. FT.	A-10 A = 16,302 SQ. FT. A = 0.374 ACRES C = 0.79 IMPERVIOUS = 12,960 SQ. FT.	A-13 A = 58,262 SQ. FT. A = 1.338 ACRES C = 0.86 IMPERVIOUS = 55,257 SQ. FT.	A-16 A = 41,000 SQ. FT. A = 0.941 ACRES C = 0.94 IMPERVIOUS = 38,100 SQ. FT.	A-19 A = 14,036 SQ. FT. A = 0.322 ACRES C = 0.83 IMPERVIOUS = 12,029 SQ. FT.	A-22 A = 14,036 SQ. FT. A = 0.322 ACRES C = 0.83 IMPERVIOUS = 12,029 SQ. FT.	A-25 A = 10,689 SQ. FT. A = 0.245 ACRES C = 0.62 IMPERVIOUS = 5,437 SQ. FT.	A-28 A = 6,027 SQ. FT. A = 0.138 ACRES C = 0.94 IMPERVIOUS = 6,027 SQ. FT.
A-2 A = 41,444 SQ. FT. A = 0.951 ACRES C = 0.94 IMPERVIOUS = 41,444 SQ. FT.	A-5 A = 38,100 SQ. FT. A = 0.875 ACRES C = 0.94 IMPERVIOUS = 38,100 SQ. FT.	A-8 A = 15,767 SQ. FT. A = 0.362 ACRES C = 0.77 IMPERVIOUS = 12,172 SQ. FT.	A-11 A = 15,325 SQ. FT. A = 0.352 ACRES C = 0.74 IMPERVIOUS = 12,795 SQ. FT.	A-14 A = 41,000 SQ. FT. A = 0.941 ACRES C = 0.94 IMPERVIOUS = 38,100 SQ. FT.	A-17 A = 31,422 SQ. FT. A = 0.721 ACRES C = 0.94 IMPERVIOUS = 30,237 SQ. FT.	A-20 A = 14,580 SQ. FT. A = 0.335 ACRES C = 0.86 IMPERVIOUS = 12,960 SQ. FT.	A-23 A = 15,235 SQ. FT. A = 0.350 ACRES C = 0.72 IMPERVIOUS = 10,602 SQ. FT.	A-26 A = 5,411 SQ. FT. A = 0.124 ACRES C = 0.94 IMPERVIOUS = 5,411 SQ. FT.	
A-3 A = 38,100 SQ. FT. A = 0.875 ACRES C = 0.94 IMPERVIOUS = 38,100 SQ. FT.	A-6 A = 38,339 SQ. FT. A = 0.880 ACRES C = 0.94 IMPERVIOUS = 38,339 SQ. FT.	A-9 A = 16,302 SQ. FT. A = 0.374 ACRES C = 0.79 IMPERVIOUS = 12,960 SQ. FT.	A-12 A = 11,305 SQ. FT. A = 0.260 ACRES C = 0.67 IMPERVIOUS = 7,135 SQ. FT.	A-15 A = 41,000 SQ. FT. A = 0.941 ACRES C = 0.94 IMPERVIOUS = 38,100 SQ. FT.	A-18 A = 11,305 SQ. FT. A = 0.260 ACRES C = 0.67 IMPERVIOUS = 7,135 SQ. FT.	A-21 A = 14,580 SQ. FT. A = 0.335 ACRES C = 0.86 IMPERVIOUS = 12,960 SQ. FT.	A-24 A = 9,753 SQ. FT. A = 0.224 ACRES C = 0.94 IMPERVIOUS = 9,753 SQ. FT.	A-27 A = 30,977 SQ. FT. A = 0.711 ACRES C = 0.56 IMPERVIOUS = 6,520 SQ. FT.	

GRAPHIC SCALE
100 0 100 200
(IN FEET)

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1-800-362-2764

REV.	DATE	DESCRIPTION

POGGEMEYER DESIGN GROUP
A KLEINFELDER COMPANY
1168 NORTH MAIN STREET
BOWLING GREEN, OH 43402
PH: (419) 352-7537

DHL SUPPLY CHAIN
ASHVILLE LOGISTICS PARK
ASHVILLE, OHIO

PROPOSED DRAINAGE PLAN

DRAWN BY: MEK
DESIGNED BY: KAM

STATE OF OHIO
KENNETH A. MAAG
53316
REGISTERED PROFESSIONAL ENGINEER

D2
DATE: 05/25/2022
PROJECT NUMBER: 20224880.001A

APPENDIX I

GEO-TECHNICAL REPORT

GEOTECHNICAL
CONSULTANTS INC.

GCI PROJECT No. 22-G-26214

Due Diligence Subsurface Exploration
And
Final Geotechnical Engineering Report

Ashville, Ohio Land AON
SR 752
Ashville, Ohio

Prepared for:
DHL Supply Chain

February 20, 2022
Revised March 13, 2022

GEOTECHNICAL
CONSULTANTS INC.

MAIN OFFICE
720 Greencrest Drive
Westerville, OH 43081
614.895.1400 **phone**
614.895.1171 **fax**

YOUNGSTOWN OFFICE
8433 South Avenue
Building 1, Suite 1
Boardman, OH 44514
330.965.1400 **phone**
330.965.1410 **fax**

DAYTON OFFICE
2380 Bellbrook Avenue
Xenia, OH 45385
937.736.2053 **phone**

www.gci2000.com

February 20, 2022, Revised March 13, 2022

Mr. Jason Stevens
DHL Supply Chain – Real Estate Solutions Americas
360 Westar Boulevard
Westerville, Ohio 43082

Reference: Due Diligence Subsurface Exploration and Final Geotechnical Engineering Report
Ashville, Ohio Land AON
SR 752 – Ashville, Ohio
GCI Project No. 22-G-26214

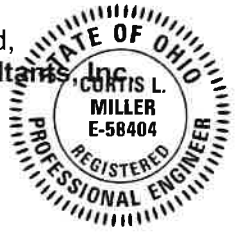
Dear Mr. Stevens:

As authorized, Geotechnical Consultants, Inc. (GCI) performed a limited/due diligence subsurface exploration and prepared this final geotechnical engineering report for the above referenced project. In summary, the borings generally encountered a soil profile consisting of topsoil over lean clay (including glacial till soils) and granular soils. We encountered groundwater in 29 of the 41 borings at depths ranging from 3.5 feet to 18 feet below grade. We did not encounter bedrock in the maximum 20-foot drilled depths of the borings.

Geotechnical considerations for the project include proper surface stripping (vegetation topsoil, trees/stumps, etc.), stabilization of softer natural soils (as needed), groundwater conditions, elevated soil moisture, general subgrade preparation, new fill placement, and ultimately, foundations, slab, and pavement support. Once the building pads have been properly prepared, it is GCI's opinion that the proposed warehouses can be supported using conventional shallow foundations and concrete slabs-on-grade. We discuss geotechnical considerations and provide foundation recommendations in the report.

After you have reviewed the report, feel free to contact us with any questions you may have. We appreciate the opportunity to provide our services for this project and hope to continue providing our services through construction.

Respectfully submitted,
Geotechnical Consultants, Inc.



Curtis L. Miller, P.E.
Principal

Kevin M. O'Connor, P.E., Ph.D.
In-House Reviewer

Distribution: Mr. Jason Stevens @ DHL – pdf via email
Mr. Stephen Hess @ DHL – pdf via email

TABLE OF CONTENTS

INTRODUCTION

As requested by Mr. Jason Stevens and authorized by Mr. Stephen Hess, both representing DHL Supply Chain – Real Estate Solutions Americas (DHL), Geotechnical Consultants, Inc. (GCI) performed a limited/due diligence subsurface exploration and prepared this final geotechnical engineering report for the proposed warehouse development to be located north and south of SR 752 on the west side of Ashville, Ohio. The client provided GCI with site plans (dated 12/9/2021) showing the proposed building and pavement layouts.

Our subsurface study consisted of forty-one (41) standard penetration borings drilled across the parcels within the proposed warehouses, pavement, and pond/borrow areas. We located the borings with reference to existing site features; locations should be considered approximate. We did not determine ground elevations at the boring locations within our scope of services.

The intent of this study was to evaluate subsurface conditions and offer geotechnical recommendations relative to earthwork, foundations, slabs, and pavements for the anticipated warehouse development in Ashville, Ohio. We issue this report prior to receipt of final site layout and grading plans. GCI should review these plans when available, and provide additional recommendations and borings, as necessary.

GCI prepared this report for the exclusive use of DHL Supply Chain – Real Estate Solutions Americas, and their consultants for specific application to the above referenced project in accordance with generally accepted soil and foundation engineering practices. We make no warranty, expressed or implied.

SITE LOCATION AND PROJECT DESCRIPTIONS

The project site consists of three parcels totaling about 421 acres, located north and south of SR 752, on the west side of Ashville, Pickaway County, Ohio. The site is generally surrounded by open farmland, with some residential and commercial properties as well. Mud Run crosses the northwest portion of the property. We show the general site location on an attached map. The aerial photograph below shows conditions at the site similar to those encountered during our drilling operations.

Aerial Photograph of the Site with Approximate Boundary (Google.com)

We understand the development could consist of up to 7 large warehouse structures (ranging in size from about 518K to over 1 million SF). The structures will be one-story, with slab-on-grade, and will include truck loading docks. New paved parking and drive

areas will surround the structures. Several large basins/borrow pits are proposed in the north and south properties.

While we do not have grading information at this time, we suspect that combinations of cut and fill will be needed to create properly sloping grades for building pads and pavements.

SUBSURFACE CONDITIONS

GCI mobilized track and truck-mounted rotary drill rigs (with automatic sampling hammers) to the site on February 7, 8, 9, 10, 12, 14, and 15, 2022. We drilled a total of forty-one (41) standard penetration borings across the site within the proposed building, pavement, and pond areas. The borings were drilled to depths of 18.7 to 20 feet below grade.

A boring location plan, test boring logs, and summary tables of the encountered subsurface conditions are attached in the appendix. We also summarize the subsurface findings below. Refer to the individual boring logs for more detailed subsurface information at specific boring locations.

Surface Cover

The borings encountered a topsoil cover ranging in thickness from 0.2 to 1.2 feet.

Natural Soils

Below the surface cover of topsoil, the borings encountered brown mottled gray lean clay (classified as CL in the Unified/ASTM Soils Classification System). The upper portions of these soils were stained, which is typically attributed to water filtering down through

overlying topsoil over the years. The mottled lean clays were noted to be of moderate plasticity with minor amounts of sand. Standard penetration testing indicated generally medium stiff to stiff consistencies. Softer conditions were noted near the surface, which we attribute to some melting snow and ice conditions at the time of drilling.

Borings B-1 to B-7, B-9, B-10, B-13 to B-31, and B-33 to B-41 encountered brown glacial till below the mottled lean clay soils at depths of 2 to 5 feet below grade. The brown till was visually classified as lean clay with sand (CL), was moderately plastic, and contained more embedded sand and gravel when compared to the overlying mottled lean clay.

We noted gray glacial till in borings B-2 to B-7, B-11, B-12, B-14 to B-41 at depths of 7 to 15 feet below grade. The gray till was visually classified as sandy lean clay (CL), was low in plasticity, and contained more embedded sand and gravel when compared to the brown till soils. Standard penetration testing indicated the till soils were medium stiff to hard. Thinner sand and silt seams were common to the glacial till soil. Borings B-5, B-7, B-11, B-12, B-17, B-19 through B-28, B-31, B-33, B-36, B-37, B-38, and B-40 terminated within the gray till soils at depths ranging from 18.7 to 20 feet below grade. We note boring B-5 terminated at 18.7 feet with driving refusal on possible cobbles.

In addition to the thinner sand and silt seams, 23 of the borings encountered thicker silty sand and gravel strata. Borings B-1 to B-4, B-6 to B-10, B-13 to B-18, B-29, B-30, B-32, B-34, B-35, B-36, B-39, and B-41 encountered brown and gray silty sand with gravel (SM) at depths ranging from 4 feet to 18.5 feet below grade. There were also some granular layers between the brown and gray glacial till layers. Standard penetration testing indicated generally medium dense to very dense conditions. Borings B-1 to B-4, B-6, B-8, B-9, B-10, B-13 to B-16, B-18, B-29, B-30, B-32, B-34, B-35, B-39, and B-41

terminated within the granular soils at depths of 18.7 to 20 feet below grade. We note that borings B-6, B-13, B-16, and B-39 terminated with driving refusal at 19.2, 18.7, 19.5, and 19.5 feet, respectively.

Bedrock

We did not encounter bedrock within the maximum drilled depth of our borings (20 feet).

Groundwater and Soil Moisture Conditions

During the drilling process, we encountered groundwater seepage in 29 of 41 borings at depths ranging from 3.5 to 18 feet. Upon completion of drilling, the groundwater had dissipated in 4 of the borings and the levels in the remaining borings were noted at depths of 2 to 16 feet.

Moisture conditions immediately below the surface were moist to very moist. Soils below the stained areas were generally moist with some very moist conditions noted. The soils below the seepage levels were generally wet. Note that groundwater levels and moisture conditions can vary with changes in season and in response to precipitation events.

LABORATORY TESTING

Our laboratory testing program consisted of determining the moisture content of representative soil samples retrieved across the site. Additionally, GCI performed Index testing (Atterberg Limits and Gradation), Standard Proctor testing, and California Bearing Ratio (CBR) testing on site soils.

The moisture contents ranged from 6.2% to 31.1% and the results are attached in the appendix. We note that moisture contents greater than 20% indicate that moisture

conditioning of the site soils could be required. Note that repetitive rubber-tired equipment will exacerbate subgrade instability, particularly where the soils have elevated moisture conditions. Contingencies should be made for chemical drying of these soils or removal and replacement to achieve stable subgrades and workable fills.

We performed index testing consisting of Atterberg Limits and gradation testing on split spoon samples from borings B-3 and B-30, as well as from bulk samples at borings B-1, B-13, B-23, B-25, B-27, B-33 and B-39. The testing generally resulted in classifications of Lean Clay with Sand (CL), Sandy Lean Clay (CL) Silty Clay with Sand (CL-ML), and Silty, Clayey Sand with Gravel (SC-SM). We incorporated the results on the test boring logs.

We performed Standard Proctor testing on bulk sample from borings B-1, B-13, B-23, B-25, B-27, B-33, and B-39. The purpose of the testing was to aid in determining parameters for earthwork and pavement design. The following table summarizes the results of the Standard Proctor testing.

Summary of Standard Proctor Testing

Sample ID	Depth (feet)	Maximum Dry Density (lbs/ft^3)	Optimum Moisture Content (%)	Natural Moisture Content (%)	ASTM/USCS
B-1	4 to 6	113.6	15.8	22.0	Lean Clay with Sand (CL)
B-13	1 to 4	108.4	18.7	25.6	Lean Clay with Sand (CL)
B-23	1 to 4	111.8	16.7	22.8	Lean Clay with Sand (CL)
B-25	8 to 10	123.6	12.1	16.0	Sandy Lean Clay (CL)
B-27	4 to 6	117.1	14.6	17.7	Lean Clay with Sand (CL)
B-33	1 to 4	110.8	17.0	24.0	Lean Clay with Sand (CL)
B-39	8 to 10	122.1	12.4	14.4	Sandy Lean Clay (CL)

Based on these results and the results of natural moisture content testing, we conclude that zones of the mottled lean clay soils (upper level soils) were above optimum moisture content at the time of drilling and drying of the soils to achieve suitable moisture contents for compaction and stable subgrades should be expected. Our testing also indicated that the lower level soils (the glacial till) and zones of the mottled lean clay are not as "wet", and we anticipate less moisture conditioning (if any) will be needed to be able to achieve recommended compaction levels with these soils when used as fill.

We anticipate the majority of the fill for the project will consist of the upper level lean clays generated from shallow cuts in pavement and loading dock areas and excavated spoils from the basins.

In addition to Standard Proctor testing, we performed soaked California Bearing Ratio (CBR) testing on the bulk samples from borings B-13, B-23, and B-33. The testing yielded CBR values of 5.2, 3.1, and 2.1; average of 3.5. We measured volume change potential that resulted in 0.9, 2.1, and 2.7 percent after soaking for 72 hours, indicating a low to moderate swell/heave potential, and we provide recommendations for subgrade stabilization below.

ANALYSES AND CONCLUSIONS

GEOTECHNICAL EVALUATION

It is GCI's opinion that the site is generally suitable for the proposed warehouse project. We note that some high moisture conditions in the upper lean clay soils associated with seasonal conditions could pose earthwork and construction difficulties. The degree to which the high moisture soils will affect the project will depend to some extent on the time

of year construction is performed and final site grading. In general terms, we would expect less of an impact if work is performed during traditionally drier times of the year, i.e., late spring thru early fall. The thicker deposits of topsoil and stained clays could also result in additional material handling, or additional sources of borrow may be needed, depending on the site grading.

Based on our subsurface findings, the proposed one-story, slab-on-grade warehouse structures can be founded on conventional spread footings and continuous wall foundation systems, bearing in either firm and stable non-organic natural soils or engineered fill placed directly over firm and stable non-organic natural soils; provided the site is prepared as recommended herein. The following paragraphs discuss the impact of the subsurface conditions on site development and structure foundations.

Topsoil Stripping

The topsoil thickness across the site was variable and measured at 0.2 to 1.2 feet. Topsoil, vegetation, stumps from removed trees, and other organic materials are not considered suitable for foundation, floor slab, or pavement support and should be completely removed to a minimum of 5 feet laterally beyond proposed building and pavement areas. The upper natural soils may be locally stained and can remain in-place provided they are non-organic and stable below a proof-roll. Topsoil can be disposed of at an off-site location, wasted to green spaces, placed in borrow pits or ponds, or reused in landscaping mounds.

Existing Mud Run

We anticipate that where Mud Run interferes with new development, Mud Run will need to be re-routed, any soft or organic soils removed, and the trench backfilled in accordance with the recommendations of this report.

Subgrade Stability

Once the topsoil is removed, the exposed subgrades will consist of stained to brown mottled gray lean clay. Elevated moisture conditions could cause subgrade instability, especially below repeated construction traffic. Based on the encountered elevated soil moisture conditions in the upper 2 to 4 feet, we expect that some level of stabilization should be expected to create stable subgrades and create fills that will need to be near optimum moisture to meet compaction requirements. Subgrade stability could also be a concern where the site is to be cut (such as the loading docks and pavements).

Conventional mechanical aeration methods to dry wet soils are typically not feasible through fall, winter, and through early spring seasons. Drying of clay soils by means of air-drying (even under favorable conditions) is a time-consuming, weather dependent endeavor. As such, a contingency budget should be considered by the client/owner for chemical drying and/or removal and replacement of wet soils to achieve stable subgrades and proceed with mass earthwork operations. Subgrade instabilities will be exacerbated below repetitive rubber-tired traffic during construction unless the subgrades are stabilized or construction traffic is controlled to designated travel paths. Chemical stabilization of the building pad and pavement areas would also improve subgrade performance through building construction during unfavorable weather conditions.

Chemical stabilization of the building pad and pavement soil subgrades can be utilized to improve pavement performance, to improve slab subgrade modulus values in slab design and to improve subgrade stability during adverse weather or lengthy construction schedules. To realize the benefits of chemical stabilization (as discussed later in the report), we recommend an application rate of cement or lime at 4-6% by dry unit weight of the soils being stabilized. Cement is more costly, but usually requires less percentage (typically 4% is feasible) by weight and does not rely on a favorable chemical reaction with the soil. The application/mixing depth normally varies between 12 and 16 inches. It is our experience that a mixing depth of 12 inches is normally sufficient in building and pavement areas. Due to the size of the proposed project, as well as the high moisture encountered in upper level soils, depending on when construction occurs, we strongly recommend that a contingency budget be allotted for chemical stabilization of the building pad and pavement soils subgrades.

Regardless of the encountered soil moisture conditions, the earthwork contractor should proof-roll the exposed soil subgrades using a fully-loaded, tandem-axle dump truck (or equivalent) to determine the extent of the soft, yielding subgrade areas. Soft spots identified during the proof-roll should be undercut to firm, stable conditions or otherwise chemically stabilized prior to placing additional fill, slab construction, or paving. Structural fill can be placed to design grade provided the exposed subgrades are proof-rolled, and firm, stable conditions are verified prior to fill placement.

The borings showed the natural glacial till soils to contain water bearing layers of sand with gravel. These layers can cause subgrade instability where they are located close to the working surface and saturated. Subgrade instabilities will be exacerbated below

repetitive rubber-tired traffic during and after construction unless the subgrades are stabilized or otherwise modified using working mats of stone and/or geogrid.

Fill Placement and Compaction

Fill materials within building pad and pavement areas should be placed in a controlled manner. Fill should be placed in maximum 8-inch thick loose lifts and compacted to at least 98% of the maximum Standard Proctor dry density. Lift thickness should be reduced to 6 inches in confined areas where hand operated compaction equipment is used. The clay-based site soils will compact best using static-weight, sheepsfoot compactors.

Moisture should be controlled within ±3% of the optimum Standard Proctor moisture. The upper 2 to 4 feet (local deeper in some areas) of the existing natural soils could be very moist at the time of earthwork, and some chemical drying of these soils should be anticipated to achieve compaction and stable subgrades as discussed above.

Compaction will be difficult to obtain if soft/unstable subgrades are not properly remediated before starting to place fill, or if the proposed fill materials contain excess moisture. We recommend that site earthwork and grading be performed during traditionally drier times of the year such as late spring, summer, and early fall.

FOUNDATIONS

In our opinion, the proposed warehouses can be constructed on conventional spread footings and continuous wall foundations. Provided the site is prepared as described herein, all footings should bear on stable, non-organic natural soils (extended as needed)

or new, controlled fill placed directly over stable, non-organic natural soils with some consideration outlined below.

Footings bearing on acceptable soils (natural soils or controlled fill placed directly over stable natural soils) can be designed using a maximum allowable bearing capacity not to exceed 3,000 pounds per square foot. Regardless of calculated sizes, we recommend minimum sizes of 16 inches wide for wall footings and 30 inches square for column pads to prevent a "punch" effect. All exterior footings should extend to local frost bearing depth (32 inches) or to stable bearing (as stated above), whichever is deeper. Normally interior footings in heated areas may be placed as shallow as feasible, if bearing on acceptable soils. Interior footings should to be lowered to frost bearing depth to prevent frost from penetrating bearing soils if winter construction is planned.

Typical to local practice, if soft or unstable, natural soils are encountered at footing subgrade, undercut to stable soils. Undercut areas can be backfilled to design bottom-of-footing elevation using controlled density fill (CDF) to allow footing construction at design grade. Alternatively, the foundations can be constructed on firm, stable site soils at the bottom-of-footing undercut. Soft, unstable bearing soils should be reviewed by the soil engineer prior to undercuts.

FLOOR SLABS

A conventional concrete slab-on-grade is suitable for the proposed buildings. The subgrade should be thoroughly proof rolled and any soft, yielding areas brought to a stable condition prior to slab construction or placement of aggregate base. A subgrade modulus of 150 pci (based on a 1' by 1' plate load test) can be used with 6 inches of crushed,

graded limestone stone such as ODOT Item 304 or equivalent. Chemical stabilization of the subgrades would yield a higher subgrade modulus of about 200 pci in conjunction with 6 inches of stone (again based on a 1' by 1' plate load test). Place a vapor retarder below the slab in areas where moisture could cause problems with floor finishes or where slabs extend below grade.

The actual modulus of subgrade reaction value will depend on subsurface conditions and the stiffness of the structural element (slabs or mats) to transfer how the load is applied, and is an iterative process between the structural and geotechnical engineers. The value for slab/mat design (including equipment pads, pallets, and storage racks), should be adjusted for areas larger than the noted 1' by 1' plate load test values using the following expression for cohesive and cohesionless soil:

Modulus of Subgrade Reaction, $k_s = (\frac{k}{B})$ for cohesive soil and

$k_s = k\,(\frac{B+1}{2B})^2$ for cohesionless soil

where: k_s = coefficient of vertical subgrade reaction for loaded area,
k = coefficient of vertical subgrade reaction for 1x1 square foot area
B = width of area loaded, in feet

If a higher modulus of subgrade reaction is needed, due to the loading condition or loaded area, additional well-graded crushed stone, can be placed and compacted in the slab area.

BELOW-GRADE WALLS

Retaining walls allowed to move freely at the top of the wall should be designed using active lateral earth pressure. Walls restrained at both top and bottom (loading docks) should be

designed to resist an at-rest lateral soil pressure. The design loading depends on the type of backfill material used and boundary support conditions. The following table provides recommended equivalent fluid pressures for two types of soils and loading conditions.

Soil Type	Equivalent Active Fluid Pressure (pcf)	Equivalent At-Rest Fluid Pressure (pcf)
Lean Clay (site soils)	55	70
Sand and Gravel (properly compacted)	35	55

We do not recommend using cohesive soils as wall backfill due to their poor drainage characteristics and potential for lateral wall loads resulting from surface frost. We recommend that granular material (less than 15% passing the No. 200 sieve) be used for all wall backfill. The stone should be placed in a wedge defined by a line extending up from the footing at a 35° angle from the vertical to allow use of the lower values above. We recommend that footing drains and underslab drains leading to a permanent sump pump or otherwise drained to daylight be installed to minimize the build-up of hydrostatic forces behind the below-grade walls. GCI also suggests damp-proofing of below-grade walls.

A coefficient of friction of 0.31 can be used to evaluate the friction (sliding) resistance along the base of the footing. The use of passive-case lateral earth pressures to resist wall sliding is not recommended, because, in our opinion, soils within the passive zone are subject to freezing and subsequent strength loss during the thaw cycle. If passive resistance is used in design, we suggest using a value of 200 pcf, which helps account for potential loss; this value also incorporates a safety factor of 1.5, but presumes an earth-formed footing.

SEISMIC FACTOR

Our borings encountered soft to medium stiff to stiff natural lean clay over medium stiff to hard glacial till soils, and medium dense to very dense granular soils. In accordance with the Ohio Building Code - Site class definitions, we estimate the site as a Site Class D - stiff soil profile.

EXCAVATIONS

The natural site soils can be excavated with conventional track-hoe equipment. The glacial tills contain layers of sand with gravel and the site has prevailing sand strata that will become unstable in open excavation, especially when saturated. In addition, perched groundwater and high moisture in the lean clays could cause sloughing of sidewall soils depending on the depth of the excavations; but especially in deeper utility excavations. Excavations that encounter granular layers and/or groundwater seepage will require additional laybacks and possibly excavation support (trench boxes, etc.). **All excavations should comply with current OSHA regulations**.

GROUNDWATER

We encountered groundwater seepage in 29 of the 41 borings at depths ranging from 3.5 to 18 feet. The deeper groundwater appeared to be associated with the sand and gravel deposits. We do not anticipate that groundwater seepage will pose significant problems with most normal shallow footing excavations within the building pads.

GCI should review final grading plans and where cuts are proposed to assess groundwater issue impacts and their ramifications. We do note that loading dock footings could potentially encounter groundwater in the upper lean clays, glacial till or other

saturated sand and gravel seams within the glacial till soils. If water is encountered in site excavations, the excavations should be dewatered to allow footing construction and utility trench backfilling in dry conditions. The use of working mats of crushed stone and portable sump pumps should be sufficient to allow construction in dry conditions.

Utility and detention basin excavations deeper than about 8 feet may encounter more significant seepage where the extensive layers of granular soils are encountered. More advanced forms of dewatering will be needed where excavations extend into saturated sand and gravel layers (and below the levels of noted groundwater seepage) such as well points or deep sump pits/wells. Contact GCI if unexpected seepage is encountered.

BASINS / BORROW PITS

We drilled borings B-1, B-2, B-6, B-10, B-13, B-25, B-26, B-27, B-29, B-34, and B-39 in areas of proposed basins to a depth of about 20 feet. We expect that basins will be about 10 to 15 feet in depth. In, general the pond borings encountered clay-based soils overflying granular soils at depths of about 7 to 18 feet. Groundwater seepage was encountered at depths of 7 to 16 feet. If a basin is to maintain a normal water level, a liner will be needed where granular seams/strata are encountered in the site soils.

The clay-based site soils will make an excellent liner for the basins provided granular seams are gouged out and covered with a minimum of 18 inches of compacted clay. Fill should be properly placed and compacted to a minimum of 98% Standard Proctor dry density, as described in the Site Preparation and Earthwork section of this report. If dewatering is required to construct the liner, dewatering should be continued until the basin has been filled.

Due to the presence of the saturated sand and gravel strata, dewatering to construct the ponds could be significant and may require deep well-points or a specialty dewatering contractor. In addition, dewatering may be needed to allow for dry material to be excavated for use as near-optimum moisture fill.

PAVEMENTS

We anticipate that pavement subgrades will consist of non-organic clay-based soils, which are suitable for support of pavements when properly drained and stabilized. GCI analyzed the development pavement sections for provided daily truck counts of 100, 150, 200, and 250 for drives at the individual warehouses. We also performed analyses for total possible truck counts of 600 and 650 for the north and south properties. We assumed non-stabilized subgrades and a 20-year design life. The heavy-duty pavement sections are summarized in the following table. The attached computer generated printouts provide additional parameters. The pavement sections have been designed using a laboratory determined average CBR of 3.5.

Summary of Heavy-Duty Pavement Sections

# of Trucks per day (design lane)	Subgrade	Asphalt Pavement			
		*ODOT Item 441 Surface (Type 1)	*ODOT Item 441 Intermediate (Type 2)	ODOT Item 301 Base	ODOT Item 304
100	Non-Stabilized	1.5	2.0	3.0	10.0
150 & 200	Non-Stabilized	1.5	2.0	3.5	10.0
250	Non-Stabilized	1.5	2.0	4.0	10.0
600 & 650	Non-Stabilized	1.5	2.0	4.5	12.0

It should be noted that other variations of asphalt and stone base thickness are feasible to satisfy the required design structural number provided they meet the guidelines put forth in the Ohio Department of Transportation Pavement Design Manual.

Light Duty Parking

We anticipate that the pavement sections used for the light duty pavement will be asphalt. Based on our experience with the existing project pavements and soils, and assuming properly prepared subgrades, we recommend a minimum light-duty pavement section consisting of 3 inches of asphalt (1½" of ODOT Item 441 Surface Course over 1½" of ODOT Item 441 Intermediate Course or equivalent) over 8 inches of aggregate base (ODOT Item 304). We recommend the use of a geogrid below the drive aisles to improve pavement performance and to maintain a uniform subgrade for drainage.

Final Stone Base Preparation

If the pavement/slab stone base is used as a working mat during construction, it will be necessary to remove mud and other debris to expose "clean" aggregate base material. Place additional stone as needed to reach finished top of pavement subbase. We recommend a primer coat be applied to the stone in areas of asphalt pavement prior to paving.

Sub-base Drainage

Providing adequate subbase drainage is important to future pavement performance. Finger drains connecting to weep-holes in inlets, underdrains at pavement transitions (i.e. PCC to asphalt, pavement to landscape, pavement to gravel trailer parking, etc.), proper grading of pavement subgrades and surfaces to shed run-off, and under drains in pavement swales are suggested subbase drainage methods and should be designed by the site civil engineer. Prior to pavement construction, the subgrade should be carefully proof-rolled, stabilized (as necessary), and flat wheel rolled to a smooth draining surface.

SITE PREPARATION AND EARTHWORK

We provide below general guidelines for site preparation and earthwork operations.

1. Strip existing vegetation, topsoil, and root mat systems from below the proposed building footprint and pavement areas plus a minimum of 5 feet laterally beyond. Remove any trees and grub out root balls. Stockpile any topsoil encountered for redistribution in proposed green space areas, reuse in landscaping mounds, or to backfill on-site borrow pits, otherwise haul the topsoil off-site.

2. Thoroughly and carefully proof-roll the exposed soil subgrades with a fully-loaded, tandem-axle dump truck (or equivalent) to identify potential soft subgrade areas. The upper 2 to 4 feet of natural soils could be very moist and associated instabilities should be expected. Undercut soft areas or otherwise stabilize soft spots identified during the proof-roll prior to placing controlled fill to design grade. We have made additional comments in the *Geotechnical Evaluation* section above.

3. Place controlled fills to design grade within proposed building and pavement areas, as required. Remove any frozen subgrades prior to proceeding with fill placement. Non-organic natural soils or non-organic removed fills are suitable for reuse in new controlled fills. Do not use frozen materials for fill. **Off-site borrow materials should be reviewed by our office prior to use.**

4. Place controlled fills in maximum 8-inch thick loose lifts and compact each lift to a minimum of 98% of the maximum Standard Proctor dry density (ASTM D-698). The moisture in the fill soils should be controlled to within ±3% the optimum Standard Proctor moisture content. Cohesive soils will compact best with a sheepsfoot roller, while granular soils will compact best with vibrating equipment.

5. Construct foundations and start building construction after a building pad is filled to grade. Refer to the *Foundations* section of this report for specific foundation design parameters.

6. Pavement areas should be steel-wheel rolled to a smooth surface prior to placement of base aggregate. Subgrade preparation during wet seasons may require the use of engineering fabric or geo-grid.

7. It is recommended that GCI be retained to observe proof-rolling operations, cut and fill operations, and footing excavations.

CONSTRUCTION MATERIALS ENGINEERING AND TESTING

GCI provides construction materials engineering and testing services. For project continuity throughout construction, we recommend that GCI be retained to observe, test, and document:

- earthwork procedures (stripping, fill placement, compaction, utility trench backfill, etc.),
- slab preparation (proof-rolling, excavations, undercuts, etc.),
- concrete placement and compressive strength testing (footings, slabs, pavements, etc.), and
- structural steel (welds, bolts, etc.).

The purpose of this work is to assess that the intent of our recommendations is being followed and to make timely changes to our recommendations (as needed) in the event site conditions vary from those encountered in our borings. Please contact our field department to initiate these services.

FINAL

We recommend that GCI review final site layout and grading plans. Recommendations contained in this report may be changed based on review of final site plans and laboratory results in preparation of our final report. If any changes in the nature, design or locations of the construction are planned, conclusions and recommendations should not be considered valid unless verified in writing by GCI.

The recommendations contained in this report are the opinion of GCI based on the subsurface conditions found in the borings and available development information. It should be noted that the nature and extent of variations between borings might not become evident until construction. If variations appear evident, it will be necessary to re-evaluate the recommendations of our report. This report has been prepared for due diligence purposes only and should not be considered sufficient to prepare an accurate bid document. If you have any questions or need for any additional information, please contact our office. It has been a pleasure to be of service to you on this project, and we hope to continue our services through construction.

GEOTECHNICAL
CONSULTANTS INC.

APPENDIX –Ashville, Ohio Land AON

General Notes for Soil Sampling and Classifications
General Site Location Map
Boring Location Plan
Summary of Encountered Subsurface Conditions
Test Boring Logs (B-1 to B-41)
Laboratory Test Results (7 pages)
Pavement Design Sheets (12 pages)

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GENERAL NOTES FOR SOIL SAMPLING AND CLASSIFICATIONS

BORINGS, SAMPLING AND GROUNDWATER OBSERVATIONS:

Drilling and sampling were conducted in accordance with procedures generally recognized and accepted as standard methods of exploration of subsurface conditions. The borings were drilled using a truck-mounted drill rig using auger boring methods with standard penetration testing performed in each boring at intervals ranging from 1.5 to 5.0 feet. The stratification lines on the logs represent the approximate boundary between soil types at that specific location and the transition may be gradual.

Water levels were measured at drill locations under conditions stated on the logs. This data has been reviewed and interpretations made in the text of the report. Fluctuations in the level of the groundwater may occur due to other factors than those present at the time the measurements were made.

The Standard Penetration Test (ASTM-D-1586) is performed by driving a 2.0 inch O.D. split barrel sampler a distance of 18 inches utilizing a 140 pound hammer free falling 30 inches. The number of blows required to drive the sampler each 6 inches of penetration are recorded. The summation of the blows required to drive the sampler for the final 12 inches of penetration is termed the Standard Penetration Resistance (N). Soil density/consistency in terms of the N-value is as follows:

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-10	Loose	0-4	Soft
10-30	Medium Dense	4-8	Medium Stiff
30-50	Dense	8-15	Stiff
50 +	Very Dense	15-30	Very Stiff
		30 +	Hard

SOIL MOISTURE TERMS

Soil Samples obtained during the drilling process are visually characterized for moisture content as follows:

MOISTURE CONTENT	DESCRIPTION
Damp	Soil moisture is much drier than the Atterberg plastic limit (where soils are cohesive) and generally more than 3% below Standard Proctor "optimum" moisture conditions. Soils of this moisture generally require added moisture to achieve proper compaction.
Moist	Soil moisture is near the Atterberg plastic limit (cohesive soils) and generally within ±3% of the Standard Proctor "optimum" moisture content. Little to no moisture conditioning is anticipated to be required to achieve proper compaction and stable subgrades.
Very Moist	Soil moisture conditions are above the Atterberg plastic limit (cohesive soils) and generally greater than 3% above Standard Proctor "optimum" moisture conditions. Drying of the soils to near "optimum" conditions is anticipated to achieve proper compaction and stable subgrades.
Wet	Soils are saturated. Significant drying of soils is anticipated to achieve proper compaction and stable subgrades.

SOIL CLASSIFICATION PROCEDURE:

Soil samples obtained during the drilling process are preserved in plastic bags and visually classified in the laboratory. Select soil samples may be subjected to laboratory testing to determine natural moisture content, gradation, Atterberg limits and unit weight. Soil classifications on logs may be adjusted based on results of laboratory testing.

Soils are classified in accordance with the ASTM version of the Unified Soil Classification System. ASTM D-2487 "Classification of Soils for Engineering Purposes (Unified Soil Classification System) describes a system for classifying soils based on laboratory testing. ASTM D-2488 "Description and Identification of Soil (Visual-Manual Procedure) describes a system for classifying soils based on visual examination and manual tests.

Soil classifications are based on the following tables (see reverse side):

GENERAL NOTES FOR SOIL SAMPLING AND CLASSIFICATIONS

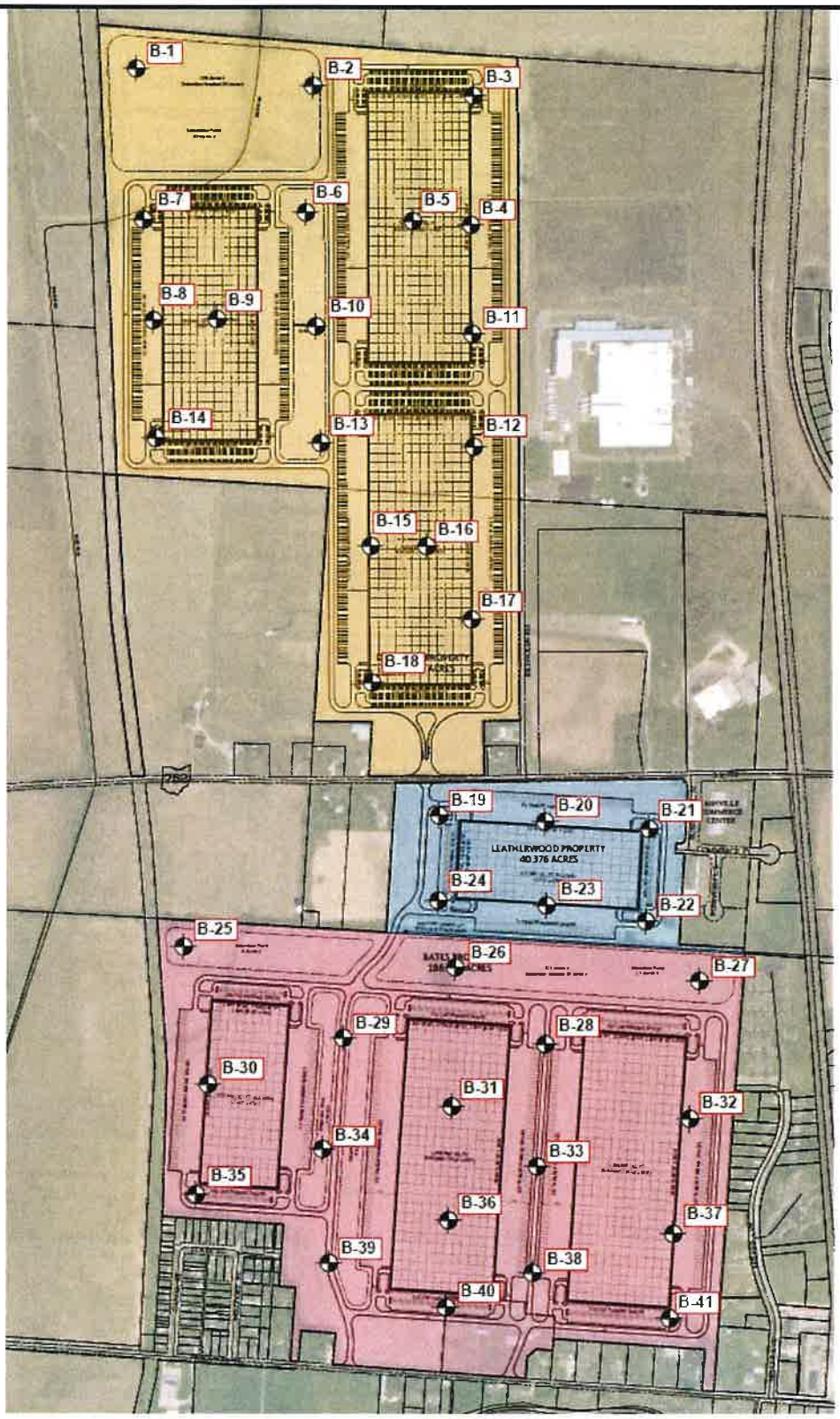
PARTICLE SIZE DEFINITION			CONSTITUENT MODIFIERS	
Boulders:		>12"		
Cobbles:		3" to 12"		
Gravel:	Coarse:	3/4" to 3"	Trace	Less than 5%
	Fine:	No. 4 (3/16") to 3/4"	Few	5-10%
Sand:	Coarse	No. 10 (2.0mm) to No. 4 (4.75mm)	Little	15-25%
	Medium	No. 40 (0.425mm) to No. 10 (2.0mm)	Some	30-45%
	Fine	No. 200 (0.074mm) to No. 40 (0.425mm)	Mostly	50-100%
Silt & Clay		<0.074mm; classification based on overall plasticity; in general clay particles <0.005mm.		

ASTM/UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOILS (more than 50% of materials is larger than No. 200 sieve size)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	*Clean Gravel (less than 5% fines)*	
	GW	Well-graded gravel, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel sand mixtures, little or no fines
	Gravels with fines (more than 12% fines)	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS More than 50% of coarse fraction smaller than No. 4 sieve size	*Clean Sands (Less than 5% fines)*	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly-graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent .....GW, GP, SW, SP Greater than 12 percent .....GM, GC, SM, SC 5 to 12 percent .....Borderline cases requiring dual symbols: SP-SM, GP-GM, etc.		
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size)		
SILTS AND CLAYS Liquid Limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays or low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	CL-ML	Inorganic silty clay of slight plasticity, P.I. between 4 and 7
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid Limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays or medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

GENERAL SITE LOCATION MAP

Ashville, Ohio Land AON
SR 752 – Ashville, Ohio

Base map from Google.com	
Project No.: 22-G-26214	
Date: 2/17/22	**Drawn By:** CLM
Scale: NTS	



Approximate Boring Location

BORING LOCATION PLAN

Ashville, Ohio Land AON
SR 752 – Ashville, Ohio

Base map provided by client	
Project No.: 22-G-26214	
Date: 2/18/22	Drawn By: CLM
Scale: NTS	

Summary of Encountered Subsurface Conditions

Ashville, Ohio Land AON
SR 752 - Ashville, Ohio
GCI Job Number: 22-G-26214

Borehole	Surface Layer	Topsoil Thickness (ft.)	Groundwater: Level Encountered (ft)	Groundwater: Level at Completion (ft)	Depth to Mottled Lean Clay (ft)	Depth to Brown Till (ft)	Depth to Gray Till (ft)	Depth to Silty Sand (ft)	Bottom of Boring Depth (ft)
			Depth	Depth					
B- 1	Topsoil	0.7	7	9	0.7	4.0	--	8.5	20.0
B- 2	Topsoil	0.7	16	15	0.7	3.0	8.0	18.0	20.0
B- 3	Topsoil	0.7	15	13	0.7	3.0	8.5	18.5	20.0
B- 4	Topsoil	0.8	13	12	0.8	3.5	8.5	13.5	20.0
B- 5	Topsoil	0.9	16	16	0.9	4.0	8.0	--	18.7
B- 6	Topsoil	0.7	16	16	0.7	3.0	7.0	18.0	19.2
B- 7	Topsoil	1.2	6	7	1.2	3.5	14.5	8.5	20.0
B- 8	Topsoil	0.7	7	4	0.7	--	--	4.0	20.0
B- 9	Topsoil	0.8	8	8	0.8	3.0	--	8.5	20.0
B-10	Topsoil	0.8	11	5	0.8	3.0	--	9.0	20.0
B-11	Topsoil	0.7	--	--	0.7	--	8.0	--	20.0
B-12	Topsoil	0.9	--	--	0.9	--	8.0	--	20.0
B-13	Topsoil	0.9	13	13	0.9	5.0	--	9.5	18.7
B-14	Topsoil	0.8	14	6	0.8	3.0	11.0	17.0	20.0
B-15	Topsoil	0.8	14	7	0.8	2.5	9.0	16.0	20.0
B-16	Topsoil	0.7	12	5	0.7	3.0	9.5	12.5	19.5
B-17	Topsoil	0.3	14	10	0.3	3.0	15.0	13.0	20.0
B-18	Topsoil	0.5	13.5	9	0.5	2.0	9.0	13.0	20.0
B-19	Topsoil	0.4	18	--	0.4	3.0	9.0	--	20.0
B-20	Topsoil	0.3	14	--	0.3	2.5	10.0	--	20.0
B-21	Topsoil	0.9	--	--	0.9	3.0	9.5	--	20.0
B-22	Topsoil	0.9	--	--	0.9	5.0	8.0	--	20.0
B-23	Topsoil	0.9	--	--	0.9	3.0	8.5	--	20.0
B-24	Topsoil	0.8	9	--	0.8	4.0	9.5	--	20.0
B-25	Topsoil	0.7	--	--	0.7	2.5	10.5	--	20.0
B-26	Topsoil	0.7	--	--	0.7	3.0	9.5	--	20.0
B-27	Topsoil	0.5	--	--	0.5	3.0	9.5	--	20.0

Summary of Encountered Subsurface Conditions

Ashville, Ohio Land AON
SR 752 - Ashville, Ohio
GCI Job Number: 22-G-26214

Borehole	Surface Layer	Topsoil Thickness (ft.)	Groundwater: Level Encountered (ft)	Groundwater: Level at Completion (ft)	Depth to Mottled Lean Clay (ft)	Depth to Brown Till (ft)	Depth to Gray Till (ft)	Depth to Silty Sand (ft)	Bottom of Boring Depth (ft)
			Depth	Depth					
B-28	Topsoil	0.2	--	--	0.2	2.0	9.5	--	20.0
B-29	Topsoil	0.7	9	5	0.7	3.0	9.5	12.0	20.0
B-30	Topsoil	0.8	17	15	0.8	2.0	11.0	17.0	20.0
B-31	Topsoil	0.5	--	--	0.5	2.0	10.5	--	20.0
B-32	Topsoil	0.9	3.5	4	0.9	--	9.0	4.0	20.0
B-33	Topsoil	0.6	--	--	0.6	2.5	9.0	--	20.0
B-34	Topsoil	0.9	9	--	0.9	2.0	11.0	16.0	20.0
B-35	Topsoil	0.8	13	9	0.8	3.0	9.0	17.0	20.0
B-36	Topsoil	0.9	9	2	0.9	4.5	11.0	8.5	20.0
B-37	Topsoil	0.4	--	--	0.4	2.0	8.0	--	20.0
B-38	Topsoil	0.8	14	5	0.8	3.0	8.5	--	20.0
B-39	Topsoil	0.6	8	9	0.6	3.0	9.5	7.0	19.5
B-40	Topsoil	0.8	7	3	0.8	2.0	8.0	--	20.0
B-41	Topsoil	1.0	14	12	1.0	3.0	8.5	18.5	20.0

Average Topsoil Depth at boring locations: 0.7 feet

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 1**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/7/2022**

GROUND WATER OBSERVATION

9.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	4	5	5	Moist	0.7	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	5	5	6	Moist		
								4.0	
	3.5	4.0-5.5	SS	4	5	6	Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
5									Water Seepage at 7'
	--	8.5-10.0	SS	10	12	12	Very Moist	8.5	
									Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
10									
	--	13.5-15.0	SS	7	12	25	Wet		
15									
	--	18.5-20.0	SS	14	14	14	Wet		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 2**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/7/2022**

GROUND WATER OBSERVATION

15.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	6	7	7	Moist to Very Moist	0.7	Topsoil
	4	2.0-3.5	SS	8	11	12	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4	4.0-5.5	SS	12	12	12	Moist	8.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	4.5	8.5-10.0	SS	9	13	30	Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
15	4.5	13.5-15.0	SS	13	14	27	Moist		Water Seepage at 16'
	--	18.5-20.0	SS	8	17	20	Wet	18.0	Gray Silty Sand with Gravel (SM) - little silt, little gravel
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 3**

PROJ. SURF. ELEV.

CLIENT **DHL Supply Chain** NO. **22-G-26214** DATE DRILLED **2/7/2022**

GROUND WATER OBSERVATION

13.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	3	4	4	Moist to Very Moist	0.7	Topsoil
	4	2.0-3.5	SS	4	5	5	Moist	3.0	Brown Mottled Gray Lean Clay (CL) to Silty Clay with Sand (CL-ML) - stained, moderately plastic, trace sand
5	4.5	4.0-5.5	SS	5	4	6	Moist	8.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	12	14	19	Moist		
10									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	12	14	21	Moist		
15									Water Seepage at 15'
	--	18.5-20.0	SS	16	19	24	Very Moist	18.5	
								20.0	Gray Silty Sand with Gravel (SM) - little silt, little gravel BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 4**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/7/2022**

GROUND WATER OBSERVATION

12.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	1.5	0.0-1.5	SS	3	4	4	Moist to Very Moist	0.8	Topsoil
								3.5	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4.5	2.0-3.5	SS	3	3	3	Moist		
	4	4.0-5.5	SS	4	5	6	Moist	8.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
5									
	4.5	8.5-10.0	SS	12	14	17	Moist		
10								13.5	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	--	13.5-15.0	SS	10	14	16	Wet		Water Seepage at 13'
15									Gray Silty Sand with Gravel (SM) - little silt, little gravel
	--	18.5-20.0	SS	13	15	18	Wet	20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 5**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/7/2022**

GROUND WATER OBSERVATION

16.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	3	0.0-1.5	SS	3	3	3	Moist	0.9	Topsoil
	4	2.0-3.5	SS	3	3	4	Moist	4.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4	4.0-5.5	SS	4	4	4	Moist	8.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	7	12	14	Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									
	--	13.5-15.0	SS	30	19	21	Moist		limestone fragments noted
15									Water Seepage at 16'
	--	18.5-18.7	SS	50/2"			Wet	18.7	cobbles noted
									BOTTOM OF BORING: 18.7'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 6**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/7/2022**

GROUND WATER OBSERVATION

16.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	3	0.0-1.5	SS	4	5	5	Moist	0.7	Topsoil
	4	2.0-3.5	SS	5	6	6	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4.5	4.0-5.5	SS	6	6	6	Moist	7.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	4.5	8.5-10.0	SS	12	19	18	Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
15	4.5	13.5-15.0	SS	13	21	26	Moist		Water Seepage at 16'
	--	18.5-19.2	SS	14	50/2"		Wet	18.0	Gray Silty Sand with Gravel (SM) - little silt, little gravel
								19.2	BOTTOM OF BORING: 19.2'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 7**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/7/2022**

GROUND WATER OBSERVATION

7.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	4	4	5	Moist to Very Moist	1.2	Topsoil
	2	2.0-3.5	SS	4	5	5	Moist	3.5	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	2.5	4.0-5.5	SS	4	4	4	Moist	8.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted Water Seepage at 6'
5									
	--	8.5-10.0	SS	8	8	9	Wet	14.5	Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
10									
	--	13.5-15.0	SS	6	6	6	Wet		
15									
	4.5	18.5-20.0	SS	6	7	6	Very Moist	20.0	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 8**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/14/2022**

GROUND WATER OBSERVATION

4.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	4	3	4	Moist to Very Moist	0.7	Topsoil
	3	2.0-3.5	SS	3	4	4	Moist	4.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	--	4.0-5.5	SS	4	5	5	Moist		Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
									Water Seepage at 7'
10	--	8.5-10.0	SS	8	9	13	Wet		
15	--	13.5-15.0	SS	9	11	14	Wet		
	--	18.5-20.0	SS	9	12	17	Wet	20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B- 9**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/14/2022**

GROUND WATER OBSERVATION

8.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	4	0.0-1.5	SS	7	7	9	Moist	0.8	Topsoil
	4.5	2.0-3.5	SS	9	10	11	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4.5	4.0-5.5	SS	8	8	11	Moist	8.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	--	8.5-10.0	SS	9	10	13	Wet		Water Seepage at 8'
10									Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
	--	13.5-15.0	SS	12	14	17	Wet		
15									
	--	18.5-20.0	SS	11	11	14	Wet	20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-10**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/14/2022**

GROUND WATER OBSERVATION

5.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	1.5	0.0-1.5	SS	4	4	5	Moist to Very Moist	0.8	Topsoil
	4	2.0-3.5	SS	4	5	6	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4.5	4.0-5.5	SS	4	4	4	Moist	9.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	--	8.5-10.0	SS	26	31	38	Moist		Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel Water Seepage at 11'
15	--	13.5-15.0	SS	19	16	17	Wet		
	--	18.5-20.0	SS	16	17	21	Wet	20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-11**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/14/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	5	5	6	Moist	0.7	Topsoil
	4.5	2.0-3.5	SS	5	6	6	Moist		Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4.5	4.0-5.5	SS	6	6	6	Moist		
5								8.0	
	4.5	8.5-10.0	SS	5	5	8	Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									
	4.5	13.5-15.0	SS	8	8	10	Moist		
15									
	4.5	18.5-20.0	SS	8	10	12	Moist		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-12**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/14/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	4	4	5	Very Moist	0.9	Topsoil
	3	2.0-3.5	SS	4	4	4	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	3	4.0-5.5	SS	3	3	3	Moist	8.0	Brown Sandy Silt (ML)
10	4.5	8.5-10.0	SS	6	7	9	Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
15	4.5	13.5-15.0	SS	7	10	11	Moist		
	4.5	18.5-20.0	SS	9	10	13	Moist	20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-13**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/8/2022**

GROUND WATER OBSERVATION

13.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	3	0.0-1.5	SS	4	6	5	Moist	0.9	Topsoil
	2	2.0-3.5	SS	4	5	6	Moist	5.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	4.0-5.5	SS	6	8	8	Moist		
5								9.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	7	14	20	Moist		
10									Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
	--	13.5-14.1	SS	30	50/1"		Wet		Water Seepage at 13'
15									
	--	18.5-18.7	SS	50/2"			Wet	18.7	
									BOTTOM OF BORING: 18.7'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-14**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/15/2022**

GROUND WATER OBSERVATION

6.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	5	5	6	Moist	0.8	Topsoil
	4.5	2.0-3.5	SS	5	7	8	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained to 1.5', moderately plastic, trace sand
5	4	4.0-5.5	SS	7	7	8	Moist	11.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	3.5	8.5-10.0	SS	10	18	22	Moist	17.0	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
15	4	13.5-15.0	SS	30	40	50	Wet to Very Moist		Water Seepage at 14'
	--	18.5-20.0	SS	18	21	24	Wet	20.0	Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-15**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/15/2022**

GROUND WATER OBSERVATION

7.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	3	0.0-1.5	SS	6	4	4	Moist to Very Moist	0.8	Topsoil
	4	2.0-3.5	SS	4	4	4	Moist	2.5	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4	4.0-5.5	SS	4	3	3	Moist to Very Moist	9.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	4.5	8.5-10.0	SS	10	13	12	Moist	16.0	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
15	4	13.5-14.5	SS	27	50		Wet to Very Moist		Water Seepage at 14'
	--	18.5-20.0	SS	19	26	32	Wet	20.0	Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
									BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-16**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/15/2022**

GROUND WATER OBSERVATION

5.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	3	4	4	Moist	0.7	Topsoil
	4.5	2.0-3.5	SS	5	5	6	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4	4.0-5.5	SS	3	3	3	Very Moist	9.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	4.5	8.5-10.0	SS	12	26	22	Very Moist	12.5	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted Water Seepage at 12'
15	--	13.5-14.5	SS	29	50		Wet		Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
	--	18.5-19.5	SS	40	50		Wet	19.5	BOTTOM OF BORING: 19.5'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-17**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/15/2022**

GROUND WATER OBSERVATION

10.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	1.5	0.0-1.5	SS	5	4	5	Very Moist	0.3	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4.5	2.0-3.5	SS	6	7	7	Moist	3.0	
									Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	4.0-5.5	SS	6	7	8	Moist		
5									
	4.5	8.5-10.0	SS	10	13	9	Moist		
10								13.0	
	--	13.5-15.0	SS	20	23	20	Very Moist to Wet		Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
									Water Seepage at 14'
15								15.0	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4	18.5-20.0	SS	6	7	10	Wet		
									BOTTOM OF BORING: 20'
								20.0	

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-18**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/15/2022**

GROUND WATER OBSERVATION

9.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2.5	0.0-1.5	SS	6	4	5	Moist	0.5	Topsoil
								2.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	3	2.0-3.5	SS	5	5	6	Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4	4.0-5.5	SS	4	4	5	Moist		
5									
	4	8.5-10.0	SS	17	26	30	Moist	9.0	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10								13.0	
	--	13.5-15.0	SS	27	29	34	Wet		Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
									Water Seepage at 13.5'
15									
	--	18.5-20.0	SS	5	7	11	Wet		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-19**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/9/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	7	6	6	Very Moist	0.4	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	3.5	2.0-3.5	SS	8	9	11	Moist	3.0	
									Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	4.0-5.5	SS	8	10	12	Moist		
5									
	4.5	8.5-10.0	SS	8	9	11	Moist	9.0	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									
	4.5	13.5-15.0	SS	13	14	16	Moist		
15									
	--	18.5-20.0	SS	26	30	34	Wet		Water Seepage at 18'
									Silty Sand layer (SM)
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-20**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/9/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	7	5	5	Very Moist	0.3	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	2.5	2.0-3.5	SS	5	5	7	Moist	2.5	
									Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4	4.0-5.5	SS	7	6	7	Moist		
5									
	4	8.5-10.0	SS	13	12	10	Moist		
10								10.0	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4	13.5-15.0	SS	7	9	11	Moist to Very Moist		
15									Water Seepage at 14'
	4.5	18.5-20.0	SS	7	13	21	Wet to Very Moist		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-21**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/8/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	3	3	4	Moist to Very Moist	0.9	Topsoil
	4	2.0-3.5	SS	3	4	4	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4	4.0-5.5	SS	4	4	5	Moist	9.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	4.5	8.5-10.0	SS	4	5	7	Moist		
15	4.5	13.5-15.0	SS	9	11	14	Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	18.5-20.0	SS	12	12	16	Moist	20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-22**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/8/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	3	3	4	Moist	0.9	Topsoil
	2	2.0-3.5	SS	3	3	4	Moist	5.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4.5	4.0-5.5	SS	4	4	5	Moist	8.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	5	6	8	Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	11	13	17	Moist		
	4.5	18.5-20.0	SS	13	17	22	Moist	20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-23**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/8/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	3	3	3	Moist to Very Moist	0.9	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	3	4	4	Moist	3.0	
									Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	4.0-5.5	SS	4	4	6	Moist		
5									
	4.5	8.5-10.0	SS	5	5	7	Moist	8.5	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									
	4.5	13.5-15.0	SS	7	9	12	Moist		
15									
	4.5	18.5-20.0	SS	12	13	17	Moist		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-24**

PROJ. SURF. ELEV.

CLIENT **DHL Supply Chain** NO. **22-G-26214** DATE DRILLED **2/9/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	7	6	5	Very Moist	0.8	Topsoil
	3	2.0-3.5	SS	5	5	5	Moist	4.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4	4.0-5.5	SS	4	5	5	Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	9	9	10	Moist to Very Moist	9.5	Water Seepage at 9'
10									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	11	12	17	Moist		
15									
	--	18.5-20.0	SS	11	15	19	Wet		Silty Sand layer (SM)
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-25**

PROJ. SURF. ELEV.

CLIENT **DHL Supply Chain** NO. **22-G-26214** DATE DRILLED **2/9/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	5	4	5	Very Moist	0.7	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	3	2.0-3.5	SS	5	6	5	Moist	2.5	
									Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4	4.0-5.5	SS	7	8	9	Moist		
5									
	4.5	8.5-10.0	SS	8	10	12	Moist		
10								10.5	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	12	14	14	Moist		
15									
	4.5	18.5-20.0	SS	18	23	24	Moist		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-26**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/9/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	1.5	0.0-1.5	SS	5	6	6	Very Moist	0.7	Topsoil
								3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	6	8	8	Moist		
5	4.5	4.0-5.5	SS	9	9	10	Moist	9.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	7	9	12	Moist		
10									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	7	8	8	Moist		
15									
	4.5	18.5-20.0	SS	10	12	13	Moist		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-27**

PROJ. SURF. ELEV.

CLIENT **DHL Supply Chain** NO. **22-G-26214** DATE DRILLED **2/9/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	6	4	5	Very Moist	0.5	Topsoil
								3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	3	2.0-3.5	SS	5	5	5	Moist		
	4	4.0-5.5	SS	5	6	6	Moist	9.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
5									
	4.5	8.5-10.0	SS	7	9	9	Moist		
10									
	4.5	13.5-15.0	SS	7	9	11	Moist		
15									
	4.5	18.5-20.0	SS	6	7	9	Moist	20.0	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-28**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/12/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	4	5	5	Moist to Very Moist	0.2	Topsoil
								2.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	6	6	7	Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	4.0-5.5	SS	6	8	8	Moist		
5									
	4.5	8.5-10.0	SS	15	15	16	Moist	9.5	
10									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	11	10	12	Moist		
15									
	4	18.5-20.0	SS	9	14	20	Moist		
								20.0	BOTTOM OF BORING: 20'

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-29**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/10/2022**

GROUND WATER OBSERVATION

5.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	4	4	5	Very Moist	0.7	Topsoil
	4	2.0-3.5	SS	6	7	7	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4.5	4.0-5.5	SS	7	8	9	Moist	9.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	4.5	8.5-10.0	SS	11	10	13	Moist	12.0	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
15	4.5	13.5-15.0	SS	14	26	38	Very Moist		Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel Water Seepage at 13'
	--	18.5-20.0	SS	16	18	27	Wet	20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-30**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/10/2022**

GROUND WATER OBSERVATION

15.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	1.5	0.0-1.5	SS	5	5	6	Very Moist	0.8	Topsoil
								2.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	6	8	10	Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	3	4.0-5.5	SS	7	11	11	Moist		Silty, Clayey Sand with Gravel (SC-SM) layers noted
5									
	4.5	8.5-10.0	SS	14	18	24	Moist		Water Seepage at 9'
10								11.0	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	26	34	31	Wet		
15								17.0	
									Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
	--	18.5-20.0	SS	20	29	38	Wet		BOTTOM OF BORING: 20'
								20.0	

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-31**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/12/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	4	5	6	Very Moist	0.5	Topsoil
								2.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4.5	2.0-3.5	SS	6	8	10	Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	4.0-5.5	SS	7	11	34	Moist		
5									
	4.5	8.5-10.0	SS	16	17	20	Moist		
10								10.5	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	9	9	11	Moist		
15									
	4.5	18.5-20.0	SS	13	14	17	Moist		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-32**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/14/2022**

GROUND WATER OBSERVATION

4.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	3	4	3	Very Moist	0.9	Topsoil
	4	2.0-3.5	SS	3	3	4	Moist	4.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand Water Seepage at 3.5'
5	--	4.0-5.5	SS	2	2	2	Wet	9.0	Gray Silty Sand with Gravel (SM) - little silt, little gravel
	4.5	8.5-10.0	SS	5	7	7	Moist		
10									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	7	10	11	Very Moist to Wet		
15									
	--	18.5-20.0	SS	8	13	15	Wet	18.5	
								20.0	Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-33**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/12/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	1.5	0.0-1.5	SS	4	5	5	Very Moist	0.6	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4.5	2.0-3.5	SS	5	4	5	Moist	2.5	
									Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	4.0-5.5	SS	5	7	7	Moist		
5									
	4.5	8.5-10.0	SS	12	15	17	Moist	9.0	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									
	4.5	13.5-15.0	SS	9	9	12	Moist to Very Moist		
15									
	4.5	18.5-20.0	SS	15	19	16	Very Moist		silty sand and gravel layer
									BOTTOM OF BORING: 20'
								20.0	

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-34**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/12/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	3	4	4	Very Moist	0.9	Topsoil
								2.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	--	2.0-3.5	SS	5	6	7	Moist to Very Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4	4.0-5.5	SS	6	7	7	Moist		
5									
	--	8.5-10.0	SS	15	19	22	Very Moist to Wet		Water Seepage at 9'
10								11.0	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	4.5	13.5-15.0	SS	28	32	33	Moist		
15								16.0	
									Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
	--	18.5-20.0	SS	15	21	32	Wet		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-35**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/10/2022**

GROUND WATER OBSERVATION

9.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	4	6	5	Very Moist	0.8	Topsoil
	4	2.0-3.5	SS	6	7	9	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	4	4.0-5.5	SS	7	9	11	Moist	9.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
10	--	8.5-10.0	SS	15	30	32	Moist	17.0	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted Water Seepage at 17'
15	--	13.5-15.0	SS	18	22	27	Moist		
	--	18.5-20.0	SS	15	28	33	Very Moist	20.0	Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-36**

PROJ. SURF. ELEV.

CLIENT **DHL Supply Chain** NO. **22-G-26214** DATE DRILLED **2/12/2022**

GROUND WATER OBSERVATION

2.0 FEET BELOW SURFACE AT COMPLETION

____ FEET BELOW SURFACE AT 24 HOURS

____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	4	4	5	Very Moist	0.9	Topsoil
	3	2.0-3.5	SS	5	5	6	Moist	4.5	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	2	4.0-5.5	SS	4	4	4	Moist to Very Moist	8.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
5	--	8.5-10.0	SS	17	13	14	Wet	11.0	Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel Water Seepage at 9.5'
10	4.5	13.5-15.0	SS	11	13	15	Moist	20.0	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
15	--	18.5-20.0	SS	17	37	50	Moist		BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-37**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/15/2022**

GROUND WATER OBSERVATION

None FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	2	0.0-1.5	SS	3	4	4	Very Moist	0.4	Topsoil
								2.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	4	5	5	Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4	4.0-5.5	SS	7	6	7	Moist		
5								8.0	
	4.5	8.5-10.0	SS	7	7	8	Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									
	4.5	13.5-15.0	SS	8	13	13	Moist		
15									
	4.5	18.5-20.0	SS	12	16	19	Moist		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-38**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/12/2022**

GROUND WATER OBSERVATION

5.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	1.5	0.0-1.5	SS	3	5	6	Very Moist	0.8	Topsoil
									Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4.5	2.0-3.5	SS	6	7	8	Moist	3.0	
									Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	3.5	4.0-5.5	SS	5	8	10	Moist		
5									
	4.5	8.5-10.0	SS	9	9	12	Moist	8.5	
									Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									
	4	13.5-15.0	SS	10	15	17	Wet to Very Moist		Water Seepage at 14'
15									
	4.5	18.5-20.0	SS	12	15	22	Very Moist		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-39**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/10/2022**

GROUND WATER OBSERVATION

9.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	4	5	5	Very Moist	0.6	Topsoil
								3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	3	2.0-3.5	SS	6	8	9	Very Moist to Moist		
	4.5	4.0-5.5	SS	8	9	11	Moist	7.0	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
5								9.5	Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
	--	8.5-10.0	SS	13	11	10	Very Moist		Water Seepage at 8'
10								13.0	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
	--	13.5-15.0	SS	14	19	23	Wet		Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel
15									
	--	18.5-19.5	SS	27	50		Wet	19.5	BOTTOM OF BORING: 19.5'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-40**

PROJ. SURF. ELEV.

CLIENT **DHL Supply Chain** NO. **22-G-26214** DATE DRILLED **2/12/2022**

GROUND WATER OBSERVATION

3.0 FEET BELOW SURFACE AT COMPLETION

____ FEET BELOW SURFACE AT 24 HOURS

____ FEET BELOW SURFACE AT ____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density

0 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
50 +	Very Dense

Cohesive Consistency

0 - 4	Soft
4 - 8	Medium Stiff
8 - 15	Stiff
15 - 30	Very Stiff
30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	1.5	0.0-1.5	SS	3	4	4	Very Moist to Wet	0.8	Topsoil
								2.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
	4	2.0-3.5	SS	4	4	5	Moist		Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	--	4.0-5.5	SS	3	3	7			
5									
								8.0	Water Seepage at 7'
	4.5	8.5-10.0	SS	7	7	9	Wet to Very Moist		Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
10									
	--	13.5-15.0	SS	7	8	10	Wet		
15									
	4.5	18.5-20.0	SS	8	11	14	Wet		
								20.0	BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

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TEST BORING LOG

PROJECT NAME **Ashville, Ohio Land AON - SR 752 - Ashville, Ohio** BORING NO. **B-41**

CLIENT **DHL Supply Chain** PROJ. NO. **22-G-26214** SURF. ELEV. _____ DATE DRILLED **2/14/2022**

GROUND WATER OBSERVATION

12.0 FEET BELOW SURFACE AT COMPLETION

_____ FEET BELOW SURFACE AT 24 HOURS

_____ FEET BELOW SURFACE AT _____ HOURS

Proportions Used

Trace	Less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

140 lb Wt. x 30" fall on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0 - 10	Loose	0 - 4	Soft
10 - 30	Medium Dense	4 - 8	Medium Stiff
30 - 50	Dense	8 - 15	Stiff
50 +	Very Dense	15 - 30	Very Stiff
		30 +	Hard

LOCATION OF BORING **See Boring Location Plan**

DEPTH	Pocket Penetrometer (tsf)	Sample Depths From To	Type of Sample	Blows per 6" on Sampler From To 0-6	6-12	12-18	Moisture Density or Consist.	Strata Change Depth*	SOIL IDENTIFICATION Remarks include color, type of soil, etc. Rock-color, type, condition, hardness
	--	0.0-1.5	SS	3	3	3	Very Moist	1.0	Topsoil
	2.5	2.0-3.5	SS	3	4	3	Moist	3.0	Brown Mottled Gray Lean Clay (CL) - stained, moderately plastic, trace sand
5	2	4.0-5.5	SS	3	3	3	Moist	8.5	Brown Lean Clay with Sand (CL) - moderately plastic, little fine to coarse sand, trace gravel (glacial till); random silty sand and gravel layers noted
	4.5	8.5-10.0	SS	6	6	8	Moist		
10									
	4.5	13.5-15.0	SS	8	10	10	Very Moist		Water Seepage at 14'
15									
	--	18.5-20.0	SS	10	12	17	Wet	18.5	Gray Sandy Lean Clay with Gravel (CL) - low to moderate plasticity, little to some fine to coarse sand, little gravel (glacial till); random silty sand and gravel layers noted
								20.0	Brown and Gray Silty Sand with Gravel (SM) - little silt, little gravel BOTTOM OF BORING: 20'

*** The stratification lines represent the approximate boundary between soil types and the transition may be gradual.**

Summary of Laboratory Results

Ashville, Ohio Land AON
SR 752 - Ashville, Ohio
GCI Job Number: 22-G-26214

Test Hole	Depth	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Fines (< #200 Sieve)	% Clay (< 0.005 mm)	Dry Density (pcf)	Optimum Moisture (%)	C.B.R.	Swell (%)	ASTM Class-ification	ASTM Description
B- 1	4-6'	22.0	35	17	18	80.0	38	113.6	15.8	-	-	CL	Lean Clay With Sand
B- 3	0.0	31.1						-	-	-	-		
B- 3	2.0	15.5	24	17	7	80.9	31	-	-	-	-	CL-ML	Silty Clay With Sand
B- 3	4.0	15.6	26	17	9	67.5	30	-	-	-	-	CL	Sandy Lean Clay
B- 3	8.5	10.3						-	-	-	-		
B- 3	13.5	7.6						-	-	-	-		
B- 3	18.5	10.9						-	-	-	-		
B-13	1-4'	25.6	43	17	26	82.7	48	108.4	18.7	5.2	0.9	CL	Lean Clay With Sand
B-23	1-4'	22.8	41	16	25	82.0	39	111.8	16.7	3.1	2.1	CL	Lean Clay With Sand
B-25	8-10'	16.0	23	15	8	55.9	23	123.6	12.1	-	-	CL	Sandy Lean Clay
B-27	4-6'	17.7	30	15	15	70.2	41	117.1	14.6	-	-	CL	Lean Clay With Sand
B-30	0.0	23.5						-	-	-	-		
B-30	2.0	10.9	22	16	6	41.7	18	-	-	-	-	SC-SM	Silty, Clayey Sand With Gravel
B-30	4.0	11.3	21	16	5	37.5	14	-	-	-	-	SC-SM	Silty, Clayey Sand With Gravel
B-30	8.5	8.6						-	-	-	-		
B-30	13.5	7.8						-	-	-	-		
B-30	18.5	13.1						-	-	-	-		
B-33	1-4'	24.0	43	20	23	78.7	41	110.8	17.0	2.1	2.7	CL	Lean Clay With Sand
B-34	0.0	27.5						-	-	-	-		
B-34	2.0	19.6						-	-	-	-		
B-34	4.0	15.2						-	-	-	-		
B-34	8.5	10.9						-	-	-	-		
B-34	13.5	7.2						-	-	-	-		

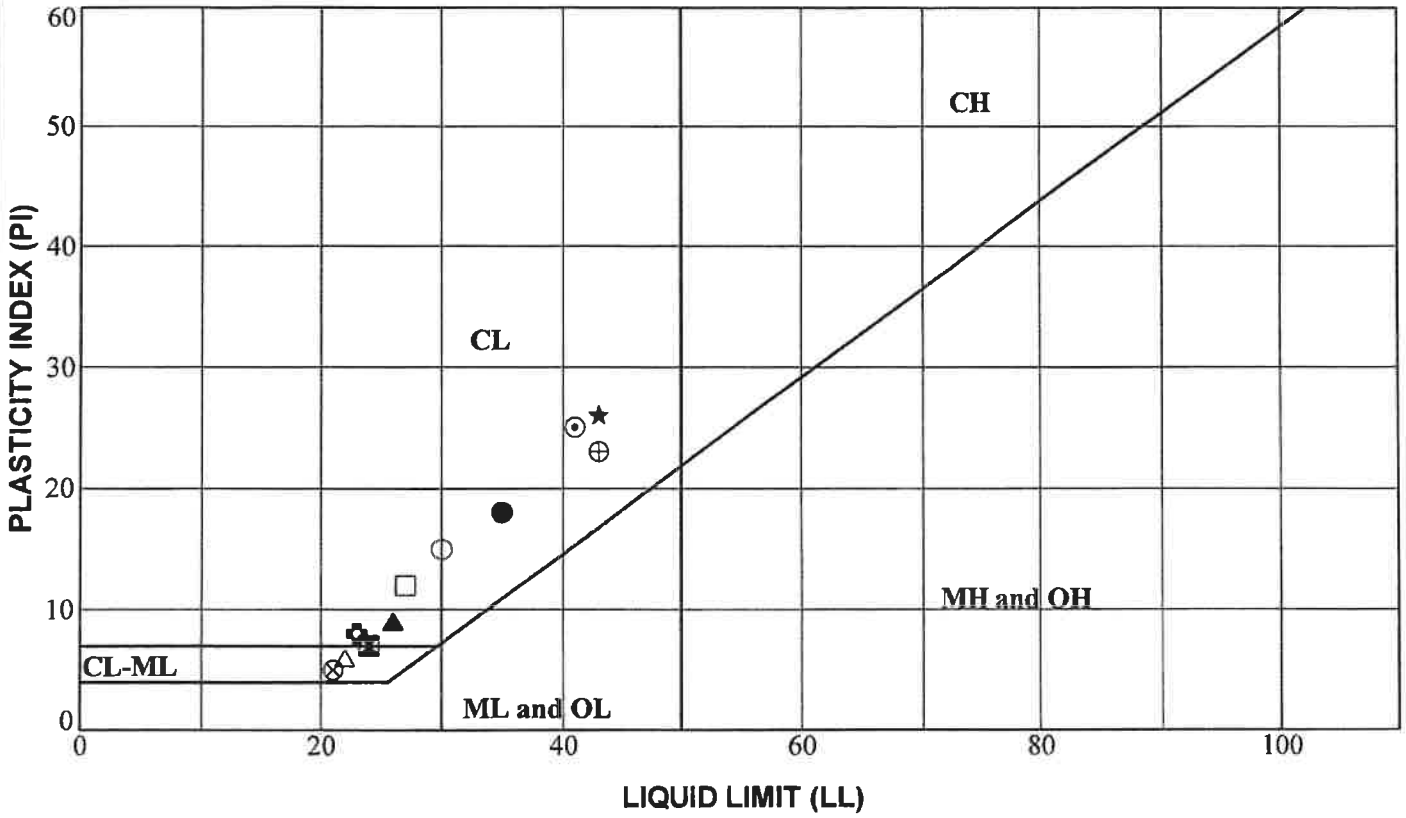
February 2022

Summary of Laboratory Results

Ashville, Ohio Land AON
SR 752 - Ashville, Ohio
GCI Job Number: 22-G-26214

Test Hole	Depth	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Fines (< #200 Sieve)	% Clay (< 0.005 mm)	Dry Density (pcf)	Optimum Moisture (%)	C.B.R.	Swell (%)	ASTM Class-ification	ASTM Description
B-34	18.5	13.9						-	-	-	-		
B-39	8-10'	14.4	27	15	12	59.0	33	122.1	12.4	-	-	CL	Sandy Lean Clay
B-41	0.0	31.1						-	-	-	-		
B-41	2.0	25.0						-	-	-	-		
B-41	4.0	23.1						-	-	-	-		
B-41	8.5	8.7						-	-	-	-		
B-41	13.5	10.0						-	-	-	-		
B-41	18.5	6.2						-	-	-	-		

February 2022



LEGEND:

	TEST HOLE	DEPTH	w_n	LL	PL	PI	ASTM CLASSIFICATION
●	B- 1	4-6'	22.0	35	17	18	CL
⊠	B- 3	2.0	15.5	24	17	7	CL-ML
▲	B- 3	4.0	15.6	26	17	9	CL
★	B-13	1-4'	25.6	43	17	26	CL
⊙	B-23	1-4'	22.8	41	16	25	CL
✿	B-25	8-10'	16.0	23	15	8	CL
○	B-27	4-6'	17.7	30	15	15	CL
△	B-30	2.0	10.9	22	16	6	SC-SM
⊗	B-30	4.0	11.3	21	16	5	SC-SM
⊕	B-33	1-4'	24.0	43	20	23	CL
□	B-39	8-10'	14.4	27	15	12	CL

Job No: *22-G-26214*

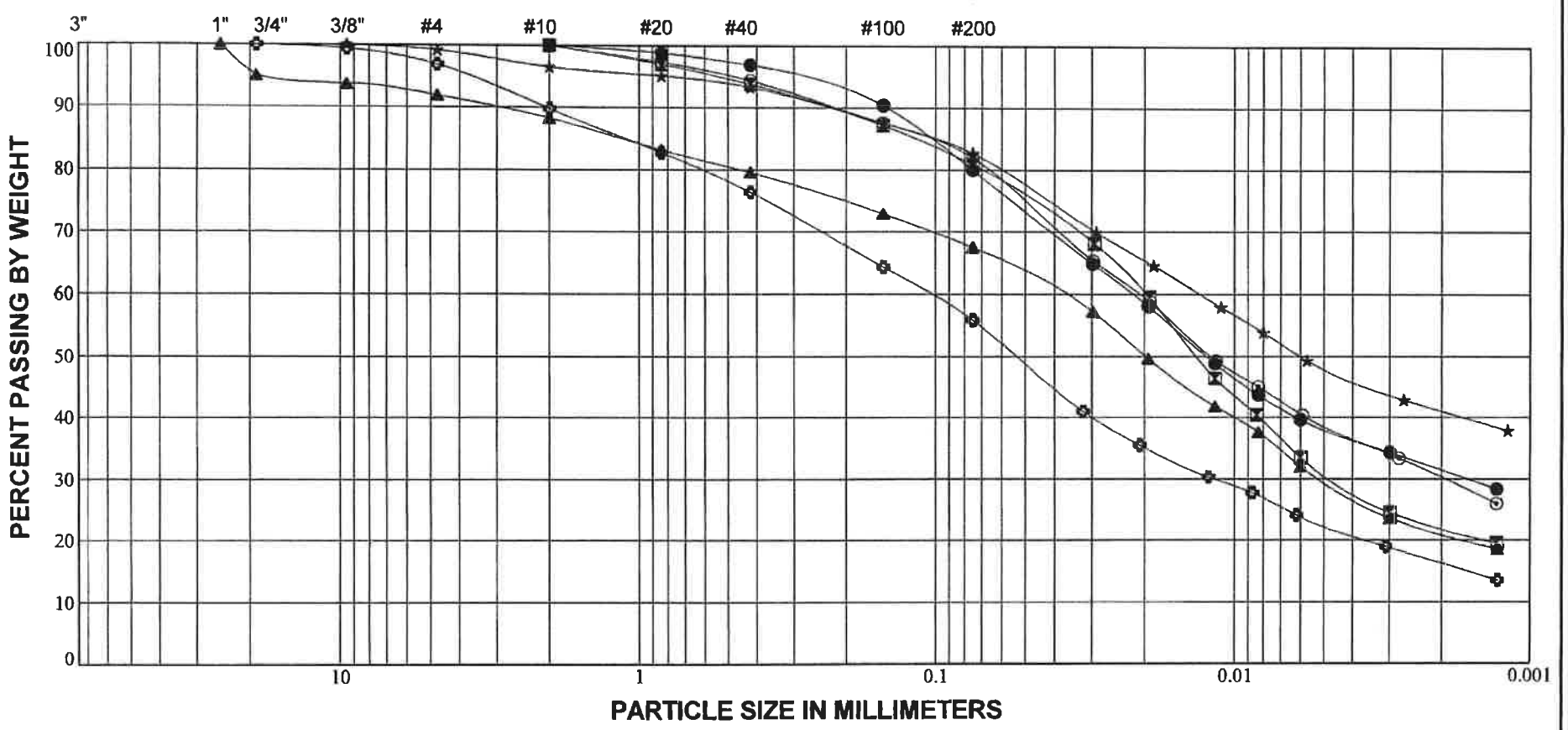
Method: *ASTM D4318*

Date: *February 2022*

ATTERBERG LIMITS TEST RESULTS

Ashville, Ohio Land AON
SR 752 - Ashville, Ohio

Geotechnical Consultants, Inc. - Westerville, Ohio 43081



GRAVEL		SAND			SILT	CLAY
coarse	fine	coarse	medium	fine		

LEGEND:

	TEST HOLE	DEPTH	LL	w_n	PL	ASTM CLASSIFICATION	ASTM SOIL DESCRIPTION	C.B.R.
●	B-1	4-6'	35	22.0	17	CL	Lean Clay With Sand	-
⊠	B-3	2.0	24	15.5	17	CL-ML	Silty Clay With Sand	-
▲	B-3	4.0	26	15.6	17	CL	Sandy Lean Clay	-
★	B-13	1-4'	43	25.6	17	CL	Lean Clay With Sand	5.2
⊙	B-23	1-4'	41	22.8	16	CL	Lean Clay With Sand	3.1
✿	B-25	8-10'	23	16.0	15	CL	Sandy Lean Clay	-

Job No.: *22-G-26214*

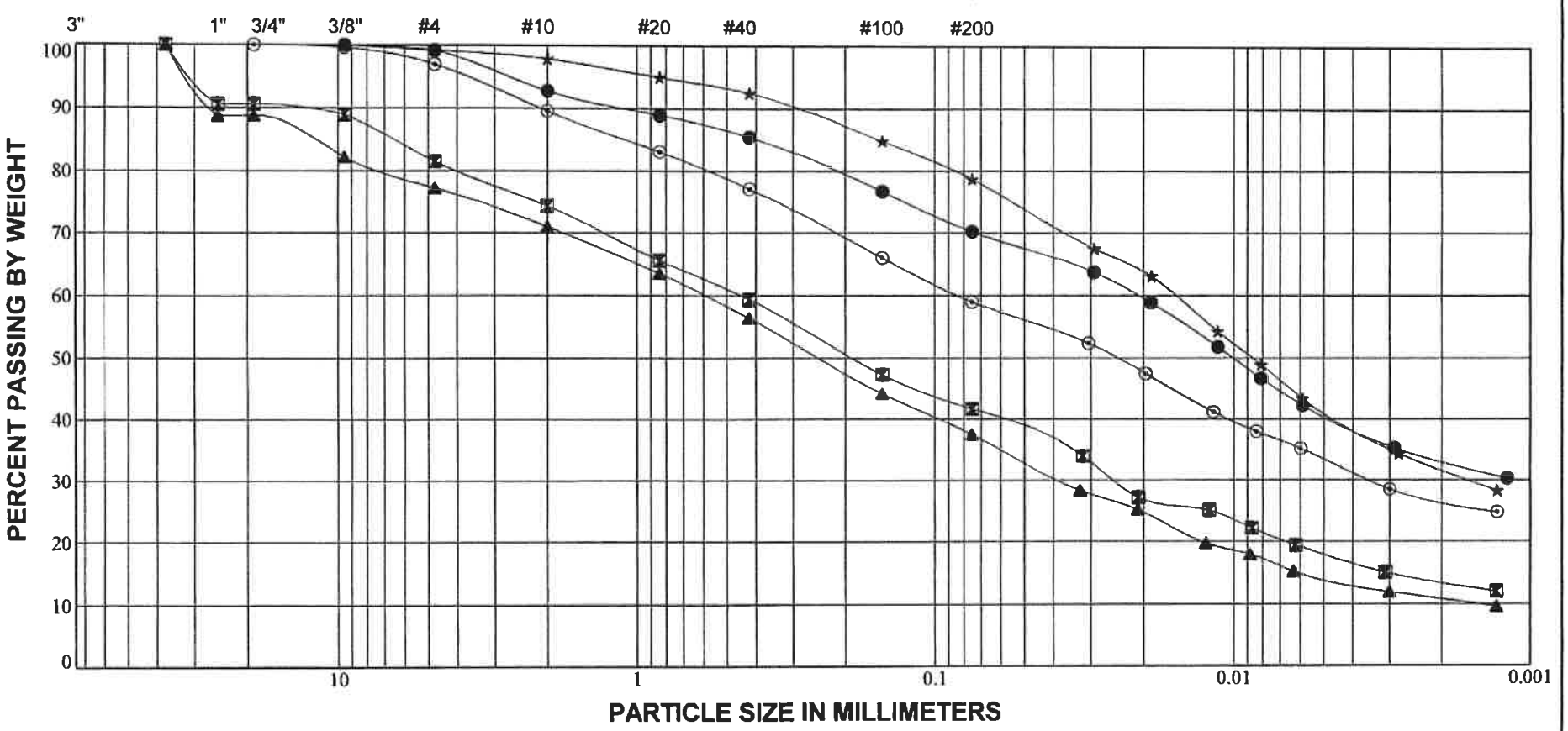
Method: *ASTM D421 D422*

Date: *February 2022*

COMBINED PARTICLE SIZE DISTRIBUTION

Ashville, Ohio Land AON - SR 752 - Ashville, Ohio

Geotechnical Consultants, Inc. - Westerville, Ohio 43081



GRAVEL		SAND			SILT	CLAY
coarse	fine	coarse	medium	fine		

LEGEND:

	TEST HOLE	DEPTH	LL	w_o	PL	ASTM CLASSIFICATION	ASTM SOIL DESCRIPTION	C.B.R.
●	B-27	4-6'	30	17.7	15	CL	Lean Clay With Sand	-
⊠	B-30	2.0	22	10.9	16	SC-SM	Silty, Clayey Sand With Gravel	-
▲	B-30	4.0	21	11.3	16	SC-SM	Silty, Clayey Sand With Gravel	-
★	B-33	1-4'	43	24.0	20	CL	Lean Clay With Sand	2.1
⊙	B-39	8-10'	27	14.4	15	CL	Sandy Lean Clay	-

Job No.: *22-G-26214*

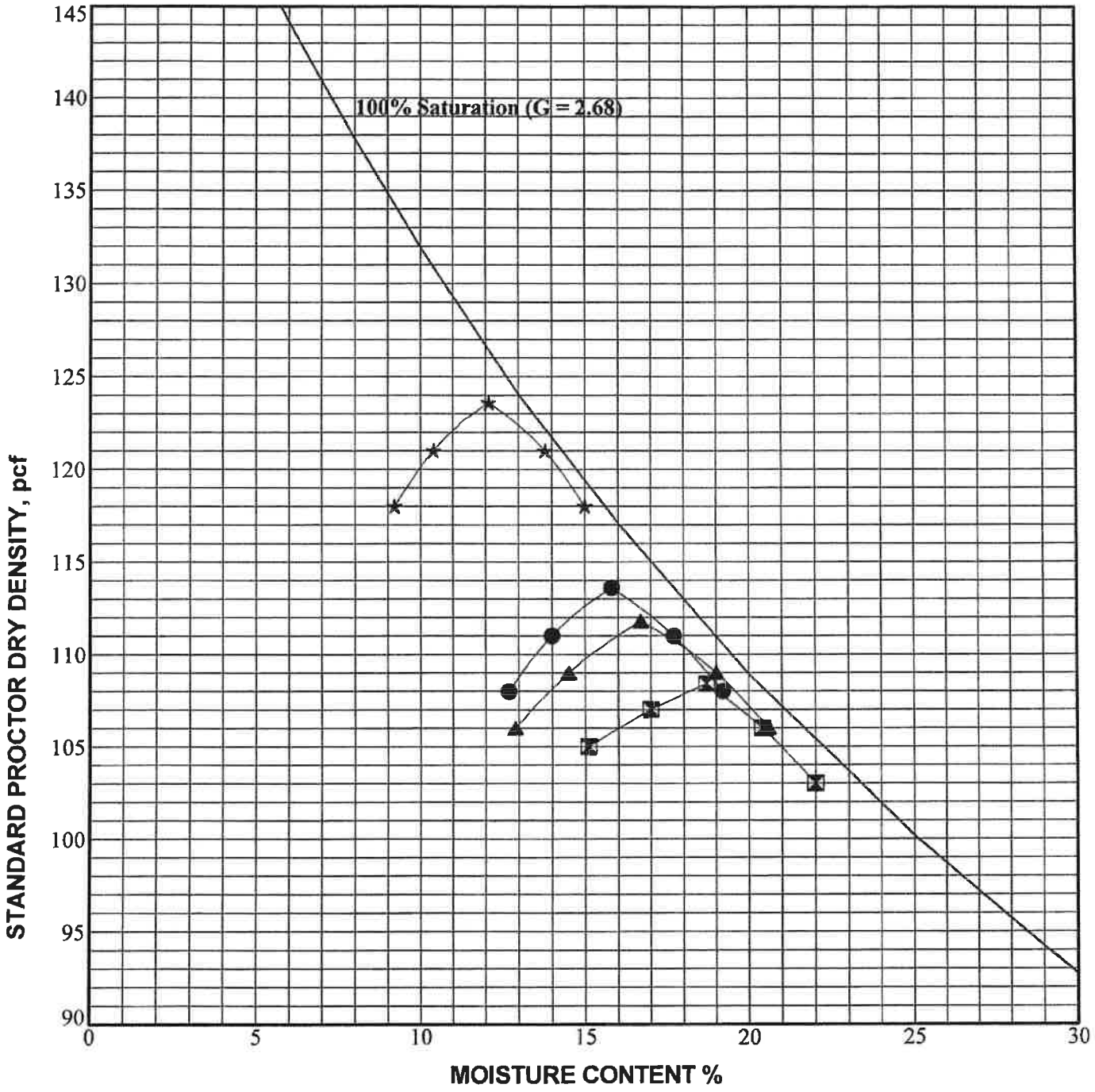
Method: *ASTM D421 D422*

Date: *February 2022*

COMBINED PARTICLE SIZE DISTRIBUTION

Ashville, Ohio Land AON - SR 752 - Ashville, Ohio

Geotechnical Consultants, Inc. - Westerville, Ohio 43081



LEGEND:

	Test Hole	Depth	ASTM Classification	Maximum Dry Density, pcf	Optimum Moisture Content, %	Natural Moisture Content, %	CBR
●	B- 1	4-6'	CL	113.6	15.8	22.0	---
⊠	B-13	1-4'	CL	108.4	18.7	25.6	5.2
▲	B-23	1-4'	CL	111.8	16.7	22.8	3.1
★	B-25	8-10'	CL	123.6	12.1	16.0	---

Job No: *22-G-26214*

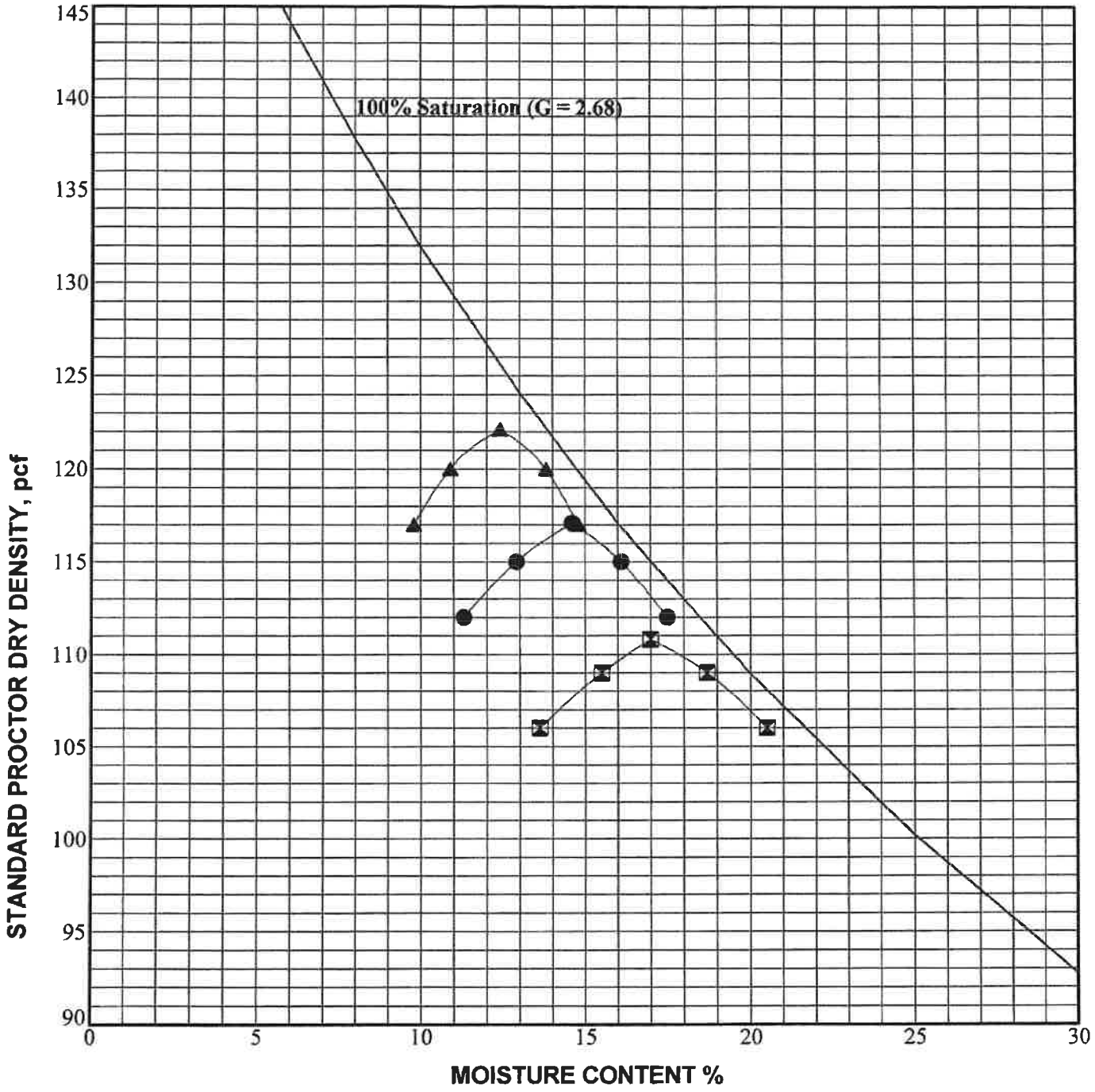
Method: *ASTM D698A*

Date: *February 2022*

LABORATORY COMPACTION TEST

Ashville, Ohio Land AON
SR 752 - Ashville, Ohio

Geotechnical Consultants, Inc. - Westerville, Ohio 43081



LEGEND:

	Test Hole	Depth	ASTM Classification	Maximum Dry Density, pcf	Optimum Moisture Content, %	Natural Moisture Content, %	CBR
●	B-27	4-6'	CL	117.1	14.6	17.7	---
⊠	B-33	1-4'	CL	110.8	17.0	24.0	2.1
▲	B-39	8-10'	CL	122.1	12.4	14.4	---

Job No: *22-G-26214*

Method: *ASTM D698A*

Date: *February 2022*

LABORATORY COMPACTION TEST

Ashville, Ohio Land AON
SR 752 - Ashville, Ohio

Geotechnical Consultants, Inc. - Westerville, Ohio 43081

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

ESAL Data by Vehicle Type

Agency:
Company: DHL
Contractor:
Project Description: 100 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Traffic Factor

Estimated Rigid Thickness	8.00	**inches**
Estimated Structural Number	4.5	
Terminal Serviceability	2.0	
Design Life	20	**years**
Annual Growth Rate	0.00	**percent**
Traffic Input by	Day	

Traffic Input by

Design Lane

Vehicle	Axle Load	Axle Type	Number
	2.00	Single	
	0.00		
	2.00	Single	0
	10.00	Single	
	0.00		
	24.00	Single	0
	12.00	Single	
	0.00		
	34.00	Tandem	0

Vehicle	Axle Load	Axle Type	Number
	12.00	Single	
	16.00	Single	
	34.00	Tandem	0
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	100
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	0

Total Rigid ESALs **2,942,929**

Total Flexible ESALs **1,708,352**

Engineer: Curtis L. Miller, P.E.

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: DHL
Contractor:
roject Description: 100 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Flexible Pavement Design/Evaluation

Structural Number	3.80		**Soil Resilient Modulus**	4,576.50	psi
Design ESALs	1,708,352		**Initial Serviceability**	4.20	
Reliability	85.00	percent	**Terminal Serviceability**	1.00	
Overall Deviation	0.45				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Surface Asph	0.43	1.00	1.50	0.65
Interm Asph	0.43	1.00	2.00	0.86
Base Asph	0.36	1.00	3.00	1.08
Crushed Stone Base	0.14	1.00	10.00	1.40
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			ΣSN	3.99

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Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

ESAL Data by Vehicle Type

Agency:
Company: DHL
Contractor:
Project Description: 150 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Traffic Factor

Estimated Rigid Thickness	8.00 **inches**
Estimated Structural Number	4.5
Terminal Serviceability	2.0
Design Life	20 **years**
Annual Growth Rate	0.00 **percent**
Traffic Input by	Day

Traffic Input by

Design Lane

Vehicle	Axle Load	Axle Type	Number
	2.00	Single	
	0.00		
	2.00	Single	0
	10.00	Single	
	0.00		
	24.00	Single	0
	12.00	Single	
	0.00		
	34.00	Tandem	0

Vehicle	Axle Load	Axle Type	Number
	12.00	Single	
	16.00	Single	
	34.00	Tandem	0
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	150
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	0

Total Rigid ESALs **4,414,394**

Total Flexible ESALs **2,562,528**

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Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: DHL
Contractor:
roject Description: 150 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Flexible Pavement Design/Evaluation

Structural Number	4.00		**Soil Resilient Modulus**	4,576.50 **psi**
Design ESALs	2,562,528		**Initial Serviceability**	4.20
Reliability	85.00	**percent**	**Terminal Serviceability**	1.00
Overall Deviation	0.45			

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Surface Asph	0.43	1.00	1.50	0.65
Interm Asph	0.43	1.00	2.00	0.86
Base Asph	0.36	1.00	3.50	1.26
Crushed Stone Base	0.14	1.00	10.00	1.40
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			ΣSN	4.17

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Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

ESAL Data by Vehicle Type

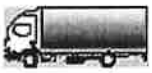
Agency:
Company: DHL
Contractor:
Project Description: 200 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Traffic Factor

Estimated Rigid Thickness	8.00	**inches**
Estimated Structural Number	4.5	
Terminal Serviceability	2.0	
Design Life	20	**years**
Annual Growth Rate	0.00	**percent**
Traffic Input by	Day	

Traffic Input by

Design Lane

Vehicle	Axle Load	Axle Type	Number
	2.00	Single	
	0.00		
	2.00	Single	0
	10.00	Single	
	0.00		
	24.00	Single	0
	12.00	Single	
	0.00		
	34.00	Tandem	0

Vehicle	Axle Load	Axle Type	Number
	12.00	Single	
	16.00	Single	
	34.00	Tandem	0
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	200
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	0

Total Rigid ESALs **5,885,859**

Total Flexible ESALs **3,416,703**

Engineer: Curtis L. Miller, P.E.

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: DHL
Contractor:
roject Description: 200 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Flexible Pavement Design/Evaluation

Structural Number	4.15		**Soil Resilient Modulus**	4,576.50	**psi**
Design ESALs	3,416,703		**Initial Serviceability**	4.20	
Reliability	85.00	**percent**	**Terminal Serviceability**	1.00	
Overall Deviation	0.45				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Surface Asph	0.43	1.00	1.50	0.65
Interm Asph	0.43	1.00	2.00	0.86
Base Asph	0.36	1.00	3.50	1.26
Crushed Stone Base	0.14	1.00	10.00	1.40
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			ΣSN	4.17

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Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

ESAL Data by Vehicle Type

Agency:
Company: DHL
Contractor:
Project Description: 250 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Traffic Factor

Estimated Rigid Thickness	8.00	**inches**
Estimated Structural Number	4.5	
Terminal Serviceablity	2.0	
Design Life	20	**years**
Annual Growth Rate	0.00	**percent**
Traffic Input by	Day	

Traffic Input by

Design Lane

Vehicle	Axle Load	Axle Type	Number
	2.00	Single	
	0.00		
	2.00	Single	0
	10.00	Single	
	0.00		
	24.00	Single	0
	12.00	Single	
	0.00		
	34.00	Tandem	0

Vehicle	Axle Load	Axle Type	Number
	12.00	Single	
	16.00	Single	
	34.00	Tandem	0
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	250
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	0

Total Rigid ESALs **7,357,323**

Total Flexible ESALs **4,270,879**

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: DHL
Contractor:
roject Description: 250 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Flexible Pavement Design/Evaluation

Structural Number	4.26		**Soil Resilient Modulus**	4,576.50 psi
Design ESALs	4,270,879		**Initial Serviceability**	4.20
Reliability	85.00	percent	**Terminal Serviceability**	1.00
Overall Deviation	0.45			

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Surface Asph	0.43	1.00	1.50	0.65
Interm Asph	0.43	1.00	2.00	0.86
Base Asph	0.36	1.00	4.00	1.44
Crushed Stone Base	0.14	1.00	10.00	1.40
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			ΣSN	4.35

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Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

ESAL Data by Vehicle Type

Agency:
Company: DHL
Contractor:
Project Description: 600 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Traffic Factor

Estimated Rigid Thickness	8.00	**inches**
Estimated Structural Number	4.5	
Terminal Serviceability	2.0	
Design Life	20	**years**
Annual Growth Rate	0.00	**percent**
Traffic Input by	Day	

Traffic Input by

Design Lane

Vehicle	Axle Load	Axle Type	Number
	2.00	Single	
	0.00		
	2.00	Single	0
	10.00	Single	
	0.00		
	24.00	Single	0
	12.00	Single	
	0.00		
	34.00	Tandem	0

Vehicle	Axle Load	Axle Type	Number
	12.00	Single	
	16.00	Single	
	34.00	Tandem	0
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	600
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	0

Total Rigid ESALs **17,657,576**

Total Flexible ESALs **10,250,110**

Engineer: Curtis L. Miller, P.E.

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: DHL
Contractor:
roject Description: 600 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Flexible Pavement Design/Evaluation

Structural Number	4.76		**Soil Resilient Modulus**	4,576.50 **psi**
Design ESALs	10,250,110		**Initial Serviceability**	4.20
Reliability	85.00	**percent**	**Terminal Serviceability**	1.00
Overall Deviation	0.45			

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Surface Asph	0.43	1.00	1.50	0.65
Interm Asph	0.43	1.00	2.00	0.86
Base Asph	0.36	1.00	4.50	1.62
Crushed Stone Base	0.14	1.00	12.00	1.68
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			ΣSN	4.81

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

ESAL Data by Vehicle Type

Agency:
Company: DHL
Contractor:
Project Description: 650 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Traffic Factor

Estimated Rigid Thickness	8.00	**inches**
Estimated Structural Number	4.5	
Terminal Serviceability	2.0	
Design Life	20	**years**
Annual Growth Rate	0.00	**percent**
Traffic Input by	Day	

Traffic Input by

Design Lane

Vehicle	Axle Load	Axle Type	Number
	2.00	Single	
	0.00		
	2.00	Single	0
	10.00	Single	
	0.00		
	24.00	Single	0
	12.00	Single	
	0.00		
	34.00	Tandem	0

Vehicle	Axle Load	Axle Type	Number
	12.00	Single	
	16.00	Single	
	34.00	Tandem	0
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	650
	12.00	Single	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	
	34.00	Tandem	0

Total Rigid ESALs **19,129,041**

Total Flexible ESALs **11,104,286**

Engineer: Curtis L. Miller, P.E.

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: DHL
Contractor:
roject Description: 650 Trucks - Non-Stabilized
Location: SR 752 - AShville, Ohio

Flexible Pavement Design/Evaluation

Structural Number	4.80		**Soil Resilient Modulus**	4,576.50	psi
Design ESALs	11,104,286		**Initial Serviceability**	4.20	
Reliability	85.00	percent	**Terminal Serviceability**	1.00	
Overall Deviation	0.45				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Surface Asph	0.43	1.00	1.50	0.65
Interm Asph	0.43	1.00	2.00	0.86
Base Asph	0.36	1.00	4.50	1.62
Crushed Stone Base	0.14	1.00	12.00	1.68
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			ΣSN	4.81