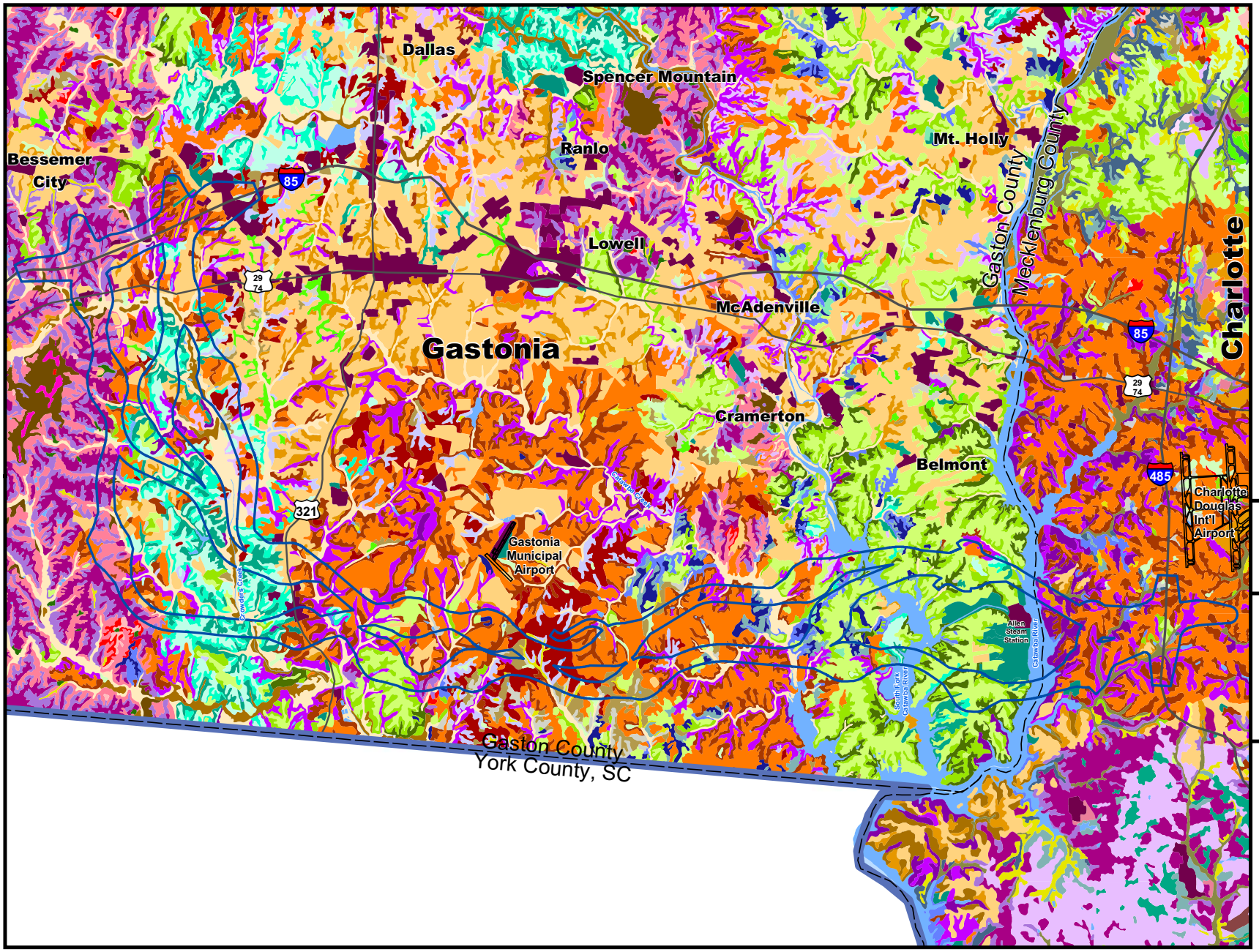
APPENDIX M

SOILS INFORMATION



Legend

- DSA Corridor
- Preliminary ROW
- County Lines
- State Line
- Interstates

Gaston Soils

AmB, AmD, ApB, CH, CeB2, CeD2, CfB, CfD, Co, GaB2, GaD2, GaE, HeB, HuB, LgB, MaB2, MaD2, MaE, PaD2, PaE, PaF, Pt, Ro, TaB, TaD, TaE, Ud, Ur, UwF, VaB, VaD, WeD, WkD, WkF, WnB, WnD, WoA, w

Mecklenburg Soils

ApB, ApD, CeB2, CeD2, CuB, CuD, DaB, DaD, DaE, EnB, EnD, GeB2, GeD2, GoB, GoD, HeB, HuB, IrA, IrB, IuB, LgB, MO, MS, MeB, MeD, MkB, PB3, PaE, PaF, Pt, UL, UO, Ur, VaB, VaD, WkB, WkD, WkE, WkF, WuD, w

Source: Gaston County and Mecklenburg County GIS
Map printed April 2009.

N

0 0.75 1.5 Miles

NORTH CAROLINA Turnpike Authority

STIP PROJECT
NO. U-3321

Gaston County and
Mecklenburg County

GASTON EAST-WEST CONNECTOR

PROJECT AREA SOILS

Appendix M

Gaston&MeckAllSoils.mxd AKH 4.10.09

APPENDIX M - TABLE 1 - Soils within the Gaston East-West Connector Preliminary Engineering Design Rights of Way

ACREAGES BY SOIL TYPE IN EACH DETAILED STUDY ALTERNATIVE

SOIL	Alt 22	Alt 23	Alt 27	Alt 4	Alt 5	Alt 58	Alt 64	Alt 68	Alt 76	Alt 77	Alt 81	Alt 9
AmB	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	0.0
ApB Gaston	46.4	35.7	35.7	73.8	63.2	45.6	48.0	48.0	48.9	38.3	38.3	63.2
ApB Meck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CH	72.8	70.8	73.3	59.7	57.7	80.6	78.5	81.0	73.5	71.5	74.0	60.2
CeB2	544.7	407.2	460.4	585.2	447.7	504.9	314.5	367.8	499.6	362.1	415.3	501.0
CeD2	232.3	232.7	209.6	233.8	234.2	224.4	198.0	174.9	193.1	193.5	170.4	211.1
CfB	146.6	140.3	144.3	148.1	141.8	49.8	42.7	46.7	97.2	90.9	94.8	145.8
CfD	6.1	6.1	6.1	9.6	9.6	0.3	0.3	0.3	6.8	6.8	6.8	9.6
Co	17.0	17.0	17.0	1.7	1.7	6.9	6.9	6.9	10.5	10.5	10.5	1.7
DaD	13.6	0.0	13.6	13.6	0.0	13.6	0.0	13.6	13.6	0.0	13.6	13.6
DaE	0.0	2.1	0.0	0.0	2.1	0.0	2.1	0.0	0.0	2.1	0.0	0.0
EnB	23.5	24.6	23.5	23.5	24.6	23.5	24.6	23.5	23.5	24.6	23.5	23.5
EnD	16.2	23.8	16.2	16.2	23.8	16.2	23.8	16.2	16.2	23.8	16.2	16.2
GaB2	155.6	228.0	242.2	155.6	228.0	159.6	249.5	263.7	158.9	231.3	245.5	242.2
GaD2	54.1	23.1	52.9	54.1	23.1	60.7	79.4	109.2	62.0	31.0	60.8	52.9
GaE	17.8	24.9	12.2	17.8	24.9	17.8	24.9	12.2	17.8	24.9	12.2	12.2
HeB Gaston	17.1	7.4	7.2	21.6	11.8	13.4	7.0	6.8	12.2	2.5	2.3	11.6
HeB Meck	2.4	2.3	2.4	2.4	2.3	2.4	2.3	2.4	2.4	2.3	2.4	2.4
LgB Gaston	0.0	0.0	0.0	0.0	0.0	5.4	5.4	5.4	5.4	5.4	5.4	0.0
LgB Meck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MaB2	97.1	86.4	97.1	49.0	38.3	36.4	25.7	36.4	49.8	39.2	49.8	49.0
MaD2	59.2	55.0	54.3	39.1	34.9	32.7	22.6	21.8	28.9	24.7	23.9	34.2
MaE	69.5	68.7	69.5	34.5	33.7	36.8	36.0	36.8	69.4	68.6	69.4	34.5
MO	18.0	25.6	18.0	18.0	25.6	18.0	25.6	18.0	18.0	25.6	18.0	18.0
MeD	7.5	7.6	7.5	7.5	7.6	7.5	7.6	7.5	7.5	7.6	7.5	7.5
PaD2	5.4	0.6	0.6	21.8	17.0	4.8	0.0	0.0	4.8	0.0	0.0	17.0
PaE	148.7	171.3	138.5	130.9	153.6	103.5	145.2	112.4	99.6	122.3	89.5	120.8
PaF	27.4	14.8	27.1	22.3	9.8	25.5	13.0	25.2	22.4	9.8	22.1	22.0
TaB	7.2	7.2	7.2	7.2	7.2	153.7	153.3	153.3	120.1	120.1	120.1	7.2
TaD	9.0	9.0	9.0	9.0	9.0	118.5	128.0	128.0	75.6	75.6	75.6	9.0
TaE	5.9	5.9	5.9	5.9	5.9	126.1	126.3	126.3	62.0	62.0	62.0	5.9
Ud	0.0	0.9	0.0	0.0	0.9	10.3	11.2	10.3	0.0	0.9	0.0	0.0
Ur	23.0	23.0	23.0	23.0	23.0	19.2	19.2	19.2	11.9	11.9	11.9	23.0
UwF	0.2	0.2	0.2	0.2	0.2	3.9	3.9	3.9	3.3	3.3	3.3	0.2
VaB	14.4	51.8	51.8	21.2	58.5	14.4	67.8	67.8	14.4	51.8	51.8	58.5
VaD	4.4	14.5	14.7	6.5	16.6	4.4	12.1	12.3	4.4	14.5	14.7	16.8
WeD	9.0	18.2	18.2	20.3	29.4	4.3	29.0	29.0	4.3	13.5	13.5	29.4
WkD Gaston	0.0	2.1	0.0	0.0	2.1	0.0	2.1	0.0	0.0	2.1	0.0	0.0
WkD Meck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WkE	1.3	1.2	1.3	1.3	1.2	1.3	1.2	1.3	1.3	1.2	1.3	1.3
WkF G	2.4	1.0	7.9	2.4	1.0	4.2	2.0	8.9	2.4	1.0	7.9	7.9
WkF M	2.3	2.6	2.3	2.3	2.6	2.3	2.6	2.3	2.3	2.6	2.3	2.3
WnB	14.7	8.5	13.3	14.7	8.5	14.7	3.1	7.9	14.7	8.5	13.3	13.3
WnD	9.9	7.9	8.3	9.9	7.9	9.9	7.9	8.3	9.9	7.9	8.3	8.3
WoA	12.6	16.1	18.5	12.6	16.1	5.4	6.5	8.9	5.4	8.8	11.2	18.5
w	24.8	29.7	21.4	25.1	30.0	25.7	30.0	21.7	25.8	30.7	22.4	21.7
TOTAL ACRES	1,940	1,876	1,932	1,902	1,837	2,010	1,991	2,047	1,901	1,837	1,893	1,894

SOIL NAMES

Soil Symbol	Prime/Statewide Farmland	County	Soil Name
AmB	P	Gaston	Alamance variant gravelly loam, 2 to 8 percent slopes
ApB		Gaston	Appling sandy loam, 1 to 6 percent slopes
ApB	P	Mecklenburg	Appling sandy loam, 2 to 8 percent slopes
CH	P	Gaston	Chewacla loam, frequently flooded
CeB2	P	Gaston	Cecil sandy clay loam, 2 to 8 percent slopes, eroded
CeD2		Gaston	Cecil sandy clay loam, 8 to 15 percent slopes, eroded
CfB		Gaston	Cecil-Urban land complex, 2 to 8 percent slopes
CfD		Gaston	Cecil-Urban land complex, 8 to 15 percent slopes
Co	P	Gaston	Congaree loam, occasionally flooded
DaD	S	Mecklenburg	Davidson sandy clay loam, 8 to 15 percent slopes
DaE		Mecklenburg	Davidson sandy clay loam, 15 to 25 percent slopes
EnB	P	Mecklenburg	Enon sandy loam, 2 to 8 percent slopes
EnD		Mecklenburg	Enon sandy loam, 8 to 15 percent slopes
GaB2	P	Gaston	Gaston sandy clay loam, 2 to 8 percent slopes eroded
GaD2	S	Gaston	Gaston sandy clay loam, 8 to 15 percent slopes eroded
GaE		Gaston	Gaston loam, 15 to 25 percent slopes
HeB	P	Gaston	Helena sandy loam, 1 to 6 percent slopes
HeB	P	Mecklenburg	Helena sandy loam, 2 to 8 percent slopes
LgB	S	Gaston	Lignum silt loam, 1 to 6 percent slopes
LgB	S	Mecklenburg	Lignum gravelly silt loam, 2 to 8 percent slopes
MaB2	P	Gaston	Madison sandy clay loam, 2 to 8 percent slopes, eroded
MaD2		Gaston	Madison sandy clay loam, 8 to 15 percent slopes, eroded
MaE		Gaston	Madison sandy loam, 15 to 25 percent slopes
MO	P	Mecklenburg	Monacan soils
MeD	S	Mecklenburg	Mecklenburg fine sandy loam, 8 to 15 percent slopes
PaD2		Gaston	Pacolet sandy clay loam, 8 to 15 percent slopes, eroded
PaE		Gaston&Meck	Pacolet sandy loam, 15 to 25 percent slopes
PaF		Gaston&Meck	Pacolet sandy loam, 25 to 45 percent slopes
TaB	P	Gaston	Tatum gravelly loam, 2 to 8 percent slopes
TaD	S	Gaston	Tatum gravelly loam, 8 to 15 percent slopes
TaE		Gaston	Tatum gravelly loam, 15 to 25 percent slopes
Ud		Gaston	Udorthents, loamy
Ur		Gaston	Urban Land
UwF		Gaston	Uwharrie stony loam, 25 to 45 percent slopes, very bouldery
VaB	P	Gaston	Vance sandy loam, 2 to 8 percent slopes
VaD		Gaston	Vance sandy loam, 8 to 15 percent slopes
WeD	S	Gaston&Meck	Wedowee sandy loam, 6 to 15 percent slopes
WkD		Gaston	Wilkes loam, 6 to 15 percent slopes
WkD		Mecklenburg	Wilkes loam, 8 to 15 percent slopes
WkE		Mecklenburg	Wilkes loam, 15 to 25 percent slopes
WkF G		Gaston	Wilkes loam, 15 to 30 percent slopes
WkF M		Mecklenburg	Wilkes loam, 25 to 45 percent slopes
WnB	P	Gaston	Winnsboro loam, 2 to 8 percent slopes
WnD	S	Gaston	Winnsboro loam, 8 to 15 percent slopes
WoA		Gaston	Worsham loam, 0 to 2 percent slopes
w		Gaston&Meck	

APPENDIX M - TABLE 1 - Soils within the Gaston East-West Connector Preliminary Engineering Design Rights of Way

COUNTY GASTON AND MECKLENBURG COUNTIES
DESCRIPTION GASTON EAST-WEST CONNECTOR STUDY **DATE** Revised 08.27.08

	ACRES OF SOIL TYPES IN CORRIDOR SEGMENT RIGHT OF WAY - Gaston County																											Mecklenburg Co.	
SOIL	H1A	H1B	H1C	H2A	H2B	H2C	H3	HX2	J1A	J1BD	J1EF	J2A	J2C	J2D	J3	J4	J5A	JX1	JX4	K1A	K1B	K1C	K2AJ5B	K3AB	KX1K3B	K3C	K4A	K3C	K4A
AmB	1.17	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ApB G	3.16	x	x	x	x	0.26	28.92	0.39	x	44.83	x	2.90	x	x	3.63	2.43	41.97	x	31.81	x	x	x	0.50	x	x	x	x	x	x
ApB M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CH	32.09	3.48	6.81	5.47	24.77	8.25	18.78	7.06	5.50	14.53	4.30	8.51	4.20	3.57	8.43	9.59	0.79	11.10	x	5.45	6.34	x	16.51	8.81	0.77	x	x	x	x
CeB2	18.76	8.37	13.03	52.96	14.38	9.92	62.29	13.41	26.74	51.37	33.39	11.43	33.55	67.69	11.44	13.98	93.18	15.55	20.97	26.30	7.93	2.61	73.79	2.53	0.47	x	0.72	187.29	125.31
CeD2	8.51	1.22	7.68	41.51	1.00	11.07	13.33	5.27	27.58	37.77	8.65	12.77	19.42	27.70	12.19	12.40	28.98	32.26	4.58	5.90	9.11	8.40	22.47	9.59	x	x	x	68.00	83.20
CfB	39.17	x	0.68	37.05	51.63	4.03	59.56	4.95	2.57	x	x	45.67	0.51	0.27	46.50	44.08	x	0.51	x	x	x	x	6.63	4.29	x	x	0.29	x	x
CfD	0.13	x	x	4.65	x	1.41	4.99	6.70	0.13	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Co	5.12	x	x	x	10.75	x	1.74	x	1.76	x	x	5.42	x	x	6.23	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DaD	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	13.58	x
DaE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	2.09
EnB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	23.53	24.56
EnD	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	16.23	23.81
GaB2	x	3.28	x	x	x	x	x	3.28	x	77.89	9.80	x	52.17	1.50	x	x	x	52.83	6.03	0.4216	0.00	64.05	30.79	140.69	39.56	31.62	94.09	x	x
GaD2	x	5.22	x	x	x	x	x	7.90	1.31	52.22	x	x	x	2.45	x	x	x	x	x	x	0.62	7.89	18.31	35.41	18.38	14.99	12.13	x	x
GaE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	1.05	12.16	16.74	x	24.94	x	x
HeB G	x	0.36	x	3.76	x	1.26	5.18	0.07	0.91	5.52	x	x	x	2.15	x	0.51	7.65	x	x	0.02	x	0.20	2.32	x	x	x	x	x	x
HeB M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	2.44	2.33
LgB G	5.41	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LgB M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MaB2	x	x	17.46	7.82	13.87	39.76	12.31	16.71	6.72	x	x	20.95	x	x	23.42	16.69	x	x	x	x	x	x	x	x	x	12.19	1.53	x	x
MaD2	x	x	12.95	3.45	6.86	39.21	10.30	19.25	4.16	0.08	x	0.09	x	x	0.14	15.84	x	6.06	x	x	x	x	1.38	x	3.57	4.60	5.35	x	x
MaE	1.29	1.35	18.53	x	11.89	18.55	2.29	31.52	12.00	x	x	32.93	x	x	35.40	28.54	x	x	x	x	x	x	x	x	x	3.65	2.86	x	x
MO	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	18.02	25.60
MeD	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	7.54	7.62
PaD2	0.04	x	x	0.60	x	x	13.59	x	x	x	x	x	x	x	x	2.83	x	x	x	x	x	x	4.80	x	x	x	x	x	x
PaE	4.06	4.14	2.26	35.37	0.55	21.62	3.33	4.40	0.32	43.26	7.11	2.01	17.28	3.39	1.95	3.03	5.72	20.85	x	9.44	9.15	13.04	22.05	1.10	x	x	x	40.71	52.42
PaF	x	x	x	0.05	x	2.08	0.00	x	3.25	x	x	0.13	x	x	2.98	x	x	x	x	x	x	x	0.25	x	x	x	x	21.99	9.72
TaB	114.65	5.21	28.54	1.89	x	x	x	0.14	x	4.92	x	x	5.34	x	x	x	x	5.34	x	x	x	x	x	x	x	x	x	x	x
TaD	75.57	0.10	42.80	9.04	x	x	x	x	x	9.49	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TaE	61.99	0.78	63.31	5.91	x	x	x	x	x	0.23	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Ud	x	x	x	x	x	x	x	x	10.35	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0.89	x	x
Ur	11.76	x	x	22.84	x	x	x	x	7.40	x	x	0.16	x	x	0.16	0.16	x	x	x	x	x	x	x	x	x	x	x	x	x
UwF	3.33	x	0.60	0.19	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
VaB	x	x	x	0.01	x	x	6.75	x	x	42.21	24.06	x	x	0.04	x	x	14.35	x	26.17	1.51	x	x	0.02	x	x	x	x	x	x
VaD	x	x	x	x	x	x	2.12	x	x	5.66	4.00	x	1.98	0.56	x	x	1.02	1.98	5.54	1.81	x	x	x	x	x	x	x	0.84	0.63
WeD	x	x	x	2.21	x	2.51	13.73	0.01	x	26.35	2.61	x	x	x	x	x	2.28	x	10.86	x	x	x	2.03	x	x	x	x	x	x
WkD G	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	2.08	x	x	x	x	x	x	x
WkD M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
WkE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	1.35	1.23
WkF G	x	x	x	x	x	x	x	x	x	1.01	x	x	x	x	x	x	x	1.78	x	x	1.03	x	2.39	7.92	x	x	x	x	x
WkF M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	2.31	2.57
WnB	x	x	x	x	x	x	x	x	x	x	x	x	x	5.42	x	x	x	x	x	0.12	0.26	2.67	7.33	7.76	1.97	x	x	x	x
WnD	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	3.02	0.00	3.62	9.89	5.24	x	x	1.27	x	x
WoA	0.28	x	x	7.53	x	x	x	x	x	6.09	0.12	x	x	x	x	x	2.68	x	8.41	x	x	x	x	x	x	2.42	x	x	x
w	1.09	x	0.06	x	x	x	0.90	0.01	0.33	1.00	x	0.53	0.87	x	0.61	x	3.04	0.87	0.70	x	x	0.11	6.64	5.56	x	6.44	15.21	7.19	12.18

APPENDIX M - TABLE 2 - PROPERTIES OF SOILS PRESENT IN THE GASTON EAST-WEST CONNECTOR DETAILED STUDY ALTERNATIVES

Soil Name and Symbol	Suitability as Roadfill	Suitability for Road Construction	Depth (Inches)	USDA Texture	AASHTO Classification	Risk of Corrosion		Shrink/Swell Potential
						Uncoated Steel	Concrete	
Alamance variant gravelly loam (AmB)	Poor: low strength	Severe: low strength	0-8	Gravelly loam	A-4	Moderate	High	Low
			08-27	Clay loam, silty clay loam, silty loam	A-4, A-6, A-7	Moderate	High	Low
			27-45	Loam, silt loam, very fine sandy loam	A-4, A-6, A-7	Moderate	High	Low
			45-60	Weathered bedrock	---	---	---	---
Appling sandy loam (ApB)	Fair: low strength	Moderate: low strength	0-10	Sandy loam	A-2	Moderate	Moderate	Low
			10-41	Sandy clay, clay loam, clay	A-7	Moderate	Moderate	Low
			41-48	Sandy clay, clay loam, sandy loay loam	A-4, A-6, A-7	Moderate	Moderate	Low
			48-60	Variable	---	---	---	---
Appling sandy loam (ApB)	Fair: low strength, area reclaim	Slight	0-11	Sandy loam	A-2	Moderate	Moderate	Low
			11-43	Sandy clay, clay loam, clay	A-7	Moderate	Moderate	Moderate
			43-66	Sandy clay, clay loam, sandy clay loam	A-4, A-6	Moderate	Moderate	Low
Chewacla loam (CH)	Poor: low strength, wetness	Severe: low strength, wetness, flooding	0-6	Loam	A-4, A-6, A-7	High	Moderate	Low
			6-45	Sandy clay loam, clay loam, fine sandy loam	A-4, A-7-6, A-6	High	Moderate	Low
			45-60	Variable	---	---	---	---
Cecil sandy clay loam (CeB2)	Fair: low strength, slope	Moderate: low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-58	Clay, clay loam	A-7, A-5	Moderate	Moderate	Low
			58-80	Variable	---	---	---	---
Cecil sandy clay loam (CeD2)	Fair: low strength, slope	Moderate: slope, low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-58	Clay, clay loam	A-7, A-5	Moderate	Moderate	Low
			58-80	Variable	---	---	---	---
Cecil-Urban land complex (CfB)	Fair: low strength, slope	Moderate: low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-58	Clay, clay loam	A-7, A-5	Moderate	Moderate	Low
			58-80	Variable	---	---	---	---
Cecil-Urban land complex (CfD)	Fair: low strength, slope	Moderate: slope, low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-58	Clay, clay loam	A-7, A-5	Moderate	Moderate	Low
			58-80	Variable	---	---	---	---
Congaree loam (Co)	Fair: low strength, wetness	Severe: flooding	0-8	Loam	A-4	Moderate	Moderate	Low
			8-42	Silty clay loam, fine sandy loam, loam	A-4, A-6, A-7	Moderate	Moderate	Low
			42-62	Variable	---	---	---	---
Davidson sandy clay loam (DaD)	Poor: low strength	Moderate: low strength	0-7	Sandy clay loam	A-6, A-4	High	Moderate	Low
			7-16	Clay loam	A-6	High	Moderate	Low
			16-99	Clay	A-7, A-6	High	Moderate	Low
Davidson sandy clay loam (DaE)	Poor: low strength	Severe: slope	0-7	Sandy clay loam	A-6, A-4	High	Moderate	Low
			7-16	Clay loam	A-6	High	Moderate	Low
			16-99	Clay	A-7, A-6	High	Moderate	Low
Enon sandy loam (EnB)	Poor: shrink-swell, low strength	Severe: shrink-swell, low strength	0-7	Sandy loam	A-2-4, A-4, A-6, A-2-6	High	Moderate	Low
			7-36	Clay loam, clay sandy clay loam	A-7-6	High	Moderate	High
			36-60	Weathered bedrock	---	---	---	---
Enon sandy loam (EnD)	Poor: shrink-swell, low strength	Severe: shrink-swell, low strength	0-7	Sandy loam	A-2-4, A-4, A-6, A-2-6	High	Moderate	Low
			7-36	Clay loam, clay sandy clay loam	A-7-6	High	Moderate	High
			36-60	Weathered bedrock	---	---	---	---
Gaston sandy clay loam (GaB2)	Poor: low strength	Severe: low strength	0-6	Sandy clay loam	A-4, A-6	High	Moderate	Low
			6-47	Clay, clay loam	A-7	High	Moderate	Moderate
			47-57	Clay loam, sandy clay loam, loam	A-7	High	Moderate	Low
			57-72	Variable	---	---	---	---
Gaston sandy clay loam (GaD2)	Poor: low strength	Severe: low strength	0-6	Sandy clay loam	A-4, A-6	High	Moderate	Low
			6-47	Clay, clay loam	A-7	High	Moderate	Moderate
			47-57	Clay loam, sandy clay loam, loam	A-7	High	Moderate	Low
			57-72	Variable	---	---	---	---
Gaston loam (GaE)	Poor: low strength	Severe: low strength, slope	0-6	Loam	A-2, A-4	High	Moderate	Low
			6-47	Clay, clay loam	A-7	High	Moderate	Moderate
			47-57	Clay loam, sandy clay loam, loam	A-4, A-6, A-7	High	Moderate	Low
			57-72	Variable	---	---	---	---
Helena sandy loam (HeB)	Poor: low strength, shrink-swell	Severe: low strength, shrink-swell	0-8	Sandy loam	A-2, A-4	High	High	Low
			13-39	Clay loam, sandy clay, clay	A-7	High	High	High
			39-60	Variable	---	---	---	---
Helena sandy loam (HeB)	Poor: shrink-swell, low strength	Severe: shrink-swell	0-8	Sandy loam	A-2, A-4	High	High	Low
			8-11	Sandy clay loam, clay loam	A-6, A-7	High	High	Moderate
			11-40	Clay loam, sandy clay, clay	A-7	High	High	High
			40-64	Weathered bedrock	---	---	---	---
Lignum silt loam (LgB)	Poor: low strength	Severe: low strength	0-4	Silt loam	A-4, A-6	High	High	Low
			4-36	Silty clay loam, silty clay, clay	A-7	High	High	Moderate
			36-60	Variable	---	---	---	---
Lignum gravelly silt loam (LgB)	Poor: low strength	Severe: low strength	0-5	Gravelly silt loam	A-4, A-6, A-7	High	High	Low
			5-37	Silty clay loam, silty clay, clay	A-7	High	High	Moderate
			37-50	Unweathered bedrock	---	---	---	---
Madison sandy clay loam (MaB2)	Poor: low strength	Severe: low strength	0-4	Sandy clay loam	A-4, A-6	High	Moderate	Low
			4-28	Clay, clay loam, sandy clay	A-7	High	Moderate	Low
			28-36	Loam, sandy clay loam, clay loam	A-4, A-6	High	Moderate	Low
			36-60	Variable	---	---	---	---
Madison sandy clay loam (MaD2)	Poor: low strength	Severe: low strength	0-4	Sandy clay loam	A-4, A-6	High	Moderate	Low
			4-28	Clay, clay loam, sandy clay	A-7	High	Moderate	Low
			28-36	Loam, sandy clay loam, clay loam	A-4, A-6	High	Moderate	Low
			36-60	Variable	---	---	---	---
Madison sandy loam (MaE)	Poor: low strength	Severe: low strength, slope	0-5	Sandy loam	A-2, A-4	High	Moderate	Low
			5-31	Clay, clay loam, sandy clay	A-7	High	Moderate	Low
			31-38	Loam, sandy clay loam, clay loam	A-4, A-6	High	Moderate	Low
			38-60	Variable	---	---	---	---
Monacan (MO)	Fair: wetness	Severe: floods	0-14	Loam	A-4, A-6	Moderate	High	Low
			14-43	Fine sandy loam, sandy clay loam, silty clay loam	A-4, A-6	Moderate	High	Low
			43-65	Variable	---	---	---	---
Mecklenburg fine sandy loam (MeD)	Poor: low strength	Severe: low strength	0-7	Fine sandy loam	A-4, A-6, A-7-6	High	Moderate	Low
			7-34	Clay	A-7	High	Moderate	Moderate
			34-65	Weathered bedrock	---	---	---	---
Pacolet sandy clay loam (PaD2)	Good	Moderate: low strength, slope	0-4	Sandy clay loam	A-4, A-6	High	High	Low
			4-28	Sandy clay, clay loam, clay	A-6, A-7	High	High	Low
			28-36	Clay loam, sandy clay loam, sandy loam	A-2, A-4, A-6	High	High	Low

APPENDIX M - TABLE 2 - PROPERTIES OF SOILS PRESENT IN THE GASTON EAST-WEST CONNECTOR DETAILED STUDY ALTERNATIVES

Soil Name and Symbol	Suitability as Roadfill	Suitability for Road Construction	Depth (Inches)	USDA Texture	AASHTO Classification	Risk of Corrosion		Shrink/Swell Potential
						Uncoated Steel	Concrete	
			36-60	Variable	---	---	---	---
Pacolet sandy loam (PaE)	Severe:slope	Severe: slope	0-5	Sandy loam	A-2, A-1-b	High	High	Low
			5-27	Sandy clay, clay loam, clay	A-6, A-7	High	High	Low
			27-39	Clay loam, sandy clay loam, sandy loam	A-2, A-4, A-6	High	High	Low
			39-60	Variable	---	---	---	---
Pacolet Sandy loam (PaE)	Fair: low strength, slope	Severe: slope	0-3	Sandy loam	A-2	High	High	Low
			3-31	Sandy clay, clay loam, clay	A-6, A-7	High	High	Low
			31-65	Weathered bedrock	---	---	---	---
Pacolet sandy loam (PaF)	Severe: slope	Severe: slope	0-5	Sandy loam	A-2, A-1-b	High	High	Low
			5-27	Sandy clay, clay loam, clay	A-6, A-7	High	High	Low
			27-39	Clay loam, sandy clay loam, sandy loam	A-2, A-4, A-6	High	High	Low
			39-60	Variable	---	---	---	---
Pacolet sandy loam (PaF)	Poor: slope	Severe: slope	0-3	Sandy loam	A-2	High	High	Low
			3-31	Sandy clay, clay loam, clay	A-6, A-7	High	High	Low
			31-65	Weathered bedrock	---	---	---	---
Tatum gravelly loam (TaB)	Poor: low strength	Severe: low strength	0-6	Gravelly loam	A-4	High	High	Low
			6-48	Clay loam, silty clay, clay	A-7	High	High	Moderate
			48-58	Variable	---	---	---	---
			58-62	Weathered bedrock	---	---	---	---
Tatum gravelly loam (TaD)	Poor: low strength	Severe: low strength	0-6	Gravelly loam	A-4	High	High	Low
			6-48	Clay loam, silty clay, clay	A-7	High	High	Moderate
			48-58	Variable	---	---	---	---
			58-62	Weathered bedrock	---	---	---	---
Tatum gravelly loam (TaE)	Poor: low strength	Severe: slope, low strength	0-6	Gravelly loam	A-4	High	High	Low
			6-48	Clay loam, silty clay, clay	A-7	High	High	Moderate
			48-58	Variable	---	---	---	---
			58-62	Weathered bedrock	---	---	---	---
Udorthents, loamy (Ud)	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Urban Land (Ur)	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Uwharrie stony loam (UwF)	Severe: slope	Severe: low strength, slope	0-4	Stony loam	A-4	Moderate	Moderate	Low
			4-30	Silty clay, clay loam, clay	A-4, A-6, A-7	Moderate	Moderate	Moderate
			30-40	Clay loam, silt loam, silty clay loam	A-7	Moderate	Moderate	Moderate
			40-50	Variable	---	---	---	---
			50-60	Weathered bedrock	---	---	---	---
Vance sandy loam (VaB)	Poor: slow strength	Severe: low strength	0-5	Sandy loam	A-2, A-4	High	High	Low
			5-37	Clay loam, sandy clay, clay	A-7	High	High	Moderate
			37-60	Variable	---	---	---	---
Vance sandy loam (VaD)	Poor: low strength	Severe: low strength	0-5	Sandy loam	A-2, A-4	High	High	Low
			5-37	Clay loam, sandy clay, clay	A-7	High	High	Moderate
			37-60	Variable	---	---	---	---
Wedowee sandy loam (WeD)	Moderate: too clayey, slope	Moderate: shrink-swell, low strength, slope	0-7	Sandy loam	A-4, A-2-4	Moderate	High	Low
			7-10	Loam, sandy clay loam	A-4, A-6	Moderate	High	Low
			10-24	Sandy clay, clay loam clay	A-6, A-7	Moderate	High	Moderate
			24-33	Sandy clay loam, clay loam, loam	A-4, A-6	Moderate	High	Low
			33-62	Variable	---	---	---	---
Wilkes loam (WkD)	Poor: depth to rock, thin layer	Moderate: depth to rock, shrink-swell, slope	0-6	Loam	A-2, A-4	Moderate	Moderate	Low
			6-15	Clay loam, clay sandy clay loam	A-6, A-7	Moderate	Moderate	Moderate
			15-60	Weathered bedrock	---	---	---	---
Wilkes loam (WkD)	Fair: thin layer	Moderate: slope	0-7	Loam	A-2, A-4	Moderate	Moderate	Low
			7-15	Clay loam, clay, sandy clay loam	A-6, A-7	Moderate	Moderate	Moderate
			15-45	Weathered bedrock	---	---	---	---
Wilkes loam (WkE)	Fair: slope, thin layer	Severe: slope	0-7	Loam	A-2, A-4	Moderate	Moderate	Low
			7-15	Clay loam, clay, sandy clay loam	A-6, A-7	Moderate	Moderate	Moderate
			15-45	Weathered bedrock	---	---	---	---
Wilkes loam (WkF)	Poor: depth to rock, thin layer	Severe: slope	0-6	Loam	A-2, A-4	Moderate	Moderate	Low
			6-15	Clay loam, clay sandy clay loam	A-6, A-7	Moderate	Moderate	Moderate
			15-60	Weathered bedrock	---	---	---	---
Wilkes Loam (WkF)	Poor: slope	Severe: slope	0-7	Loam	A-2, A-4	Moderate	Moderate	Low
			7-15	Clay loam, clay, sandy clay loam	A-6, A-7	Moderate	Moderate	Moderate
			15-45	Weathered bedrock	---	---	---	---
Winnsboro loam (WnB)	Fair: area reclaim, thin layer	Severe: shrink-swell, low strength	0-8	Loam	A-4, A-6	High	Low	Low
			8-28	Clay, clay loam	A-7	High	Low	High
			28-36	Clay loam, sandy clay loam, loam	A-4, A-6, A-7	High	Low	Moderate
			36-60	Variable	---	---	---	---
Winnsboro loam (WnD)	Fair: area reclaim, thin layer	Severe: shrink-swell, low strength	0-8	Loam	A-4, A-6	High	Low	Low
			8-28	Clay, clay loam	A-7	High	Low	High
			28-36	Clay loam, sandy clay loam, loam	A-4, A-6, A-7	High	Low	Moderate
			36-60	Variable	---	---	---	---
Worsham loam (WoA)	Poor: wetness, low strength	Severe: wetness, low strength	0-6	Loam	A-4, A-6	High	Moderate	Low
			6-45	Sandy clay loam, sandy clay, clay	A-2, A-7	High	Moderate	Moderate
			45-60	Sandy loam, sandy clay loam, clay loam	A-2, A-4, A-6, A-7	High	Moderate	Moderate

Sources: Soil Survey of Gaston County, North Carolina (USDA NRCS, 1989) and Soil Survey of Mecklenburg County, North Carolina (USDA NRCS, 1980)

The Unified and American Association of State Highway and Transportation Officials (AASHTO) soil classification systems categorize soils according to their probable engineering behavior.

In the Unified system, soils in which "fines" (silts and clays do not affect engineering performance are classified according to grain size, and soils in which fines do not control behavior are classified according to their plasticity characteristics. The symbols in the table are defined as follows (Holtz, 1981:52):

GM = Silty gravels, gravel-sand-silt mixtures
GC = Clayey gravels, gravel-sand-clay mixtures
SM = Silty sands, sand-silt mixtures
ML = Inorganic silts, very fine sands, clayey silts
CL = Inorganic clays, gravelly clays, sandy clays
MH = Inorganic silts, fine sand or silty soils, elastic silts

The AASHTO system was developed to help determine the relative quality of soils for use in roadway embankments, subgrades, subbases, and bases (Holtz, 1981:65). Soils are classified into eight groups, A-1 to A-8; with several subgroups. A-1 soils are well graded. A-2 soils are granular, but contain silts and clays. A-3 soils are clean, poorly graded sands. A-4 to A-7 soils are silty-clay materials. A-8 soils are highly organic.