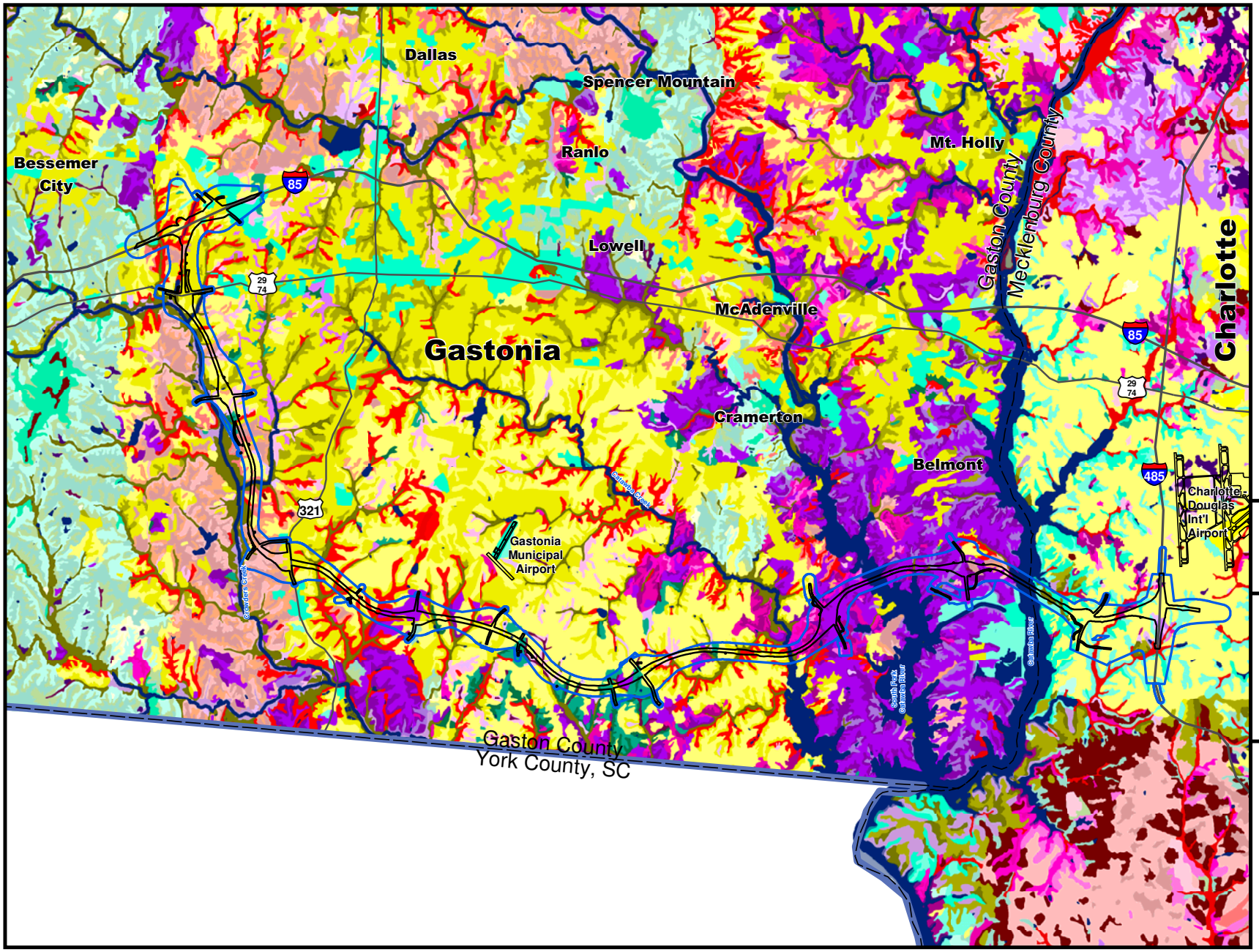
APPENDIX E
SOILS INFORMATION

This Page Intentionally Blank



Legend

- Pref Alt Right of Way
- Pref Alt DSA Corridor
- County Lines
- State Line
- Interstates

Gaston Soils: AmB, AmD, ApB, CeB2, CeD2, CfB, CfD, ChA, CoA, HeB, HuB, LcE, LdB2, LdD2, LgB, MaB2, MaD2, MaE, PaD2, PaE, PaF, Pt, Ro, TaB, TaD, TaE, Ud, Ur, UwF, VaB, VaD, W, WeD, WkD, WkF, WnB, WnD, WoA

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, W, WkB, WkD, WkE, WkF, WuD

Source: Soil Data Mart 2009
Map printed March 2010.

N

0 3,750 7,500 Feet

NORTH CAROLINA Turnpike Authority

STIP PROJECT
NO. U-3321

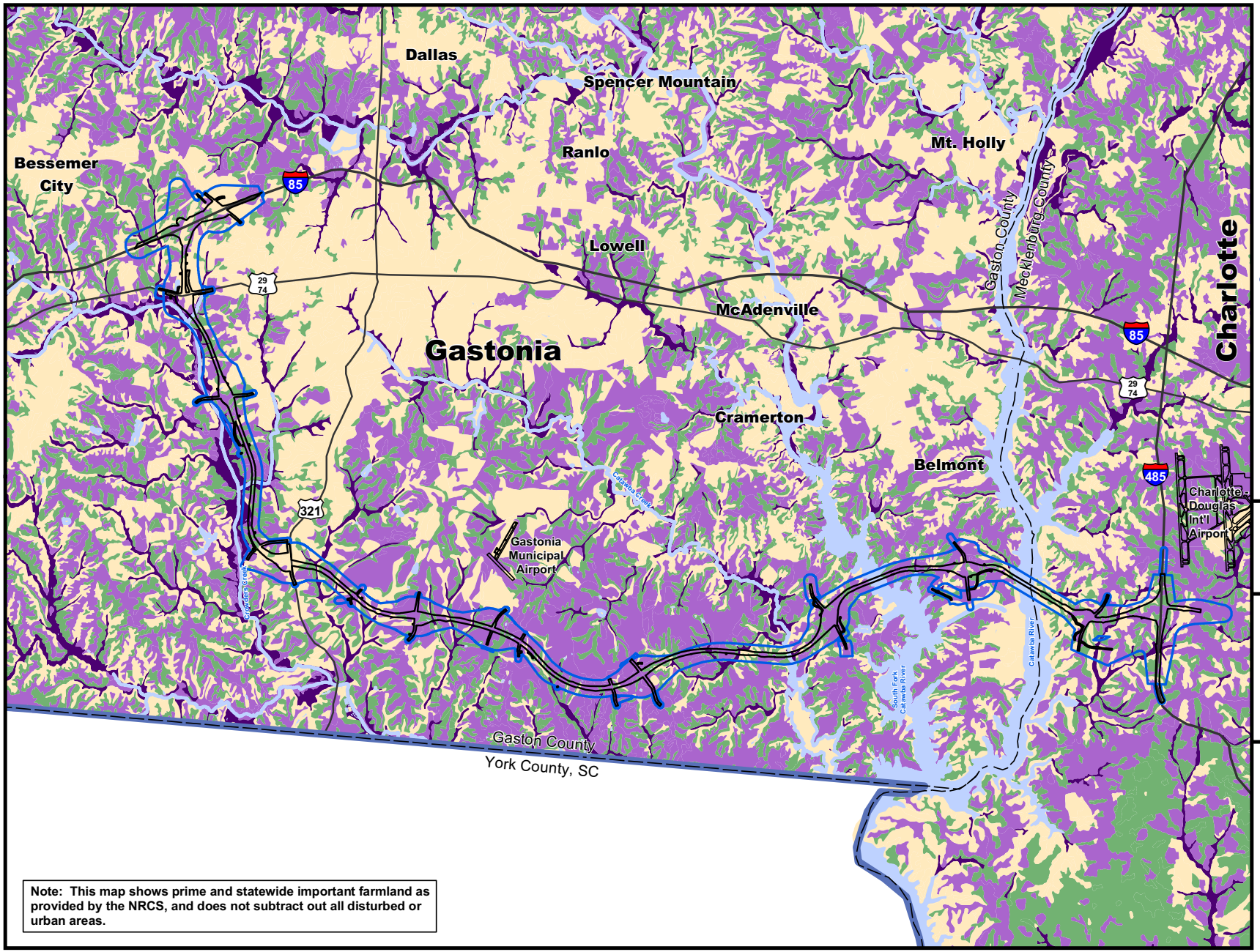
Gaston County and
Mecklenburg County

GASTON EAST-WEST CONNECTOR

PROJECT AREA SOILS

Appendix E

FEIS_Gaston&MeckAllSoils.mxd AKH 03.23.2010



Legend

- Prime Farmland Soils
- Prime if Drained Soils
- Statewide Farmland Soils
- Non-Farmland Soils
- Pref Alt Right of Way
- Pref Alt DSA Corridor
- Rivers & Streams
- County Lines
- State Line
- Interstates

Source: Soil Data Mart 2009
Map printed May 2010.

N

0 3,750 7,500 Feet

NORTH CAROLINA Turnpike Authority

STIP PROJECT
NO. U-3321

Gaston County and
Mecklenburg County

GASTON EAST-WEST CONNECTOR

PRIME & STATEWIDE IMPORTANT FARMLAND SOILS

Appendix E

Note: This map shows prime and statewide important farmland as provided by the NRCS, and does not subtract out all disturbed or urban areas.

FEIS_Gaston&Meck_ Prime&StatewideFarmland.mxd AKH 05.24.2010

APPENDIX E - TABLE 1 - Soils within the Gaston East-West Connector Preferred Alternative Refined Preliminary Design

Soil	Acreage
ApB	45.52
CeB2	290.41
CeD2	137.78
CfB	22.80
CfD	2.93
ChA	42.40
CoA	1.61
DaD	13.11
EnB	5.89
EnD	2.72
HeB	5.00
LcE	10.74
LdB2	166.58
LdD2	39.28
MaB2	28.71
MaD2	22.61
MaE	28.42
MeD	1.15
MO	4.41
PaD2	14.11
PaE	80.36
PaF	15.89
TaB	4.23
TaD	0.61
Ud	1.05
Ur	5.14
VaB	36.62
VaD	11.12
W	13.79
WeD	22.62
WkE	0.18
WkF	12.20
WnB	6.86
WnD	5.62
WoA	13.48
Disturbed Land	497.68

TOTAL ACRES	1613.63

Soil Symbol	Prime/Statewide Farmland	County	Soil Name
ApB	P	Gaston	Appling sandy loam, 1 to 6 percent slopes
CeB2	P	Gaston & Mecklenburg	Cecil sandy clay loam, 2 to 8 percent slopes, eroded
CeD2	S	Gaston & Mecklenburg	Cecil sandy clay loam, 2 to 8 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
ChA	P	Gaston	Chewacla loam, 0 to 2 percent slopes, frequently flooded
CoA	P	Gaston	Congaree loam, 0 to 2 percent slopes, occasionally flodded
DaD	S	Mecklenburg	Davidson sandy clay loam, 8 to 15 percent slopes
EnB	P	Mecklenburg	Enon sandy loam, 2 to 8 percent slopes
EnD		Mecklenburg	Enon sandy loam, 8 to 15 percent slopes
HeB	P	Gaston & Mecklenburg	Helena sandy loam, 1 to 6 percent slopes
LcE		Gaston	Lloyd loam, 15 to 25 percent slopes
LdB2	P	Gaston	Lloyd sandy clay loam, 2 to 8 percen slopes, mod. eroded
LdD2	S	Gaston	Lloyd sand clay loam, 8 to 15 percent slopes, mod. eroded
MaB2	P	Gaston	Madison sandy clay loam, 2 to 8 percent slopes, mod. eroded
MaD2	S	Gaston	Madison sandy clay loam, 8 to 15 percent slopes, mod. eroded
MaE		Gaston	Madison sandy loam, 15 to 25 percent slopes
MeD		Mecklenburg	Mecklenburg fine sandy loam, 8 to 15 percent slopes
MO	P	Mecklenburg	Monacan loam
PaD2	S	Gaston	Pacolet sandy clay loam, 8 to 15 percent slopes, mod. eroded
PaE		Gaston & Mecklenburg	Pacolet sandy loam, 15 to 25 percent slopes
PaF		Mecklenburg	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
Ud		Gaston	Udorthents, loamy
Ur		Gaston	Urban Land
VaB	P	Gaston	Vance sandy loam, 2 to 8 percent slopes
VaD	S	Gaston & Mecklenburg	Vance sandy loam, 8 to 15 percent slopes
W		Gaston	Water
WeD	S	Gaston	Wedowee sandy loam, 6 to 15 percent slopes
WkE		Mecklenburg	Wilkes loam, 15 to 25 percent slopes
WkF		Gaston & Mecklenburg	Wilkes loam, 15 to 30 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

APPENDIX E - TABLE 2 - 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	0.3	0.3	0.3	0.3	0.3	0.3	0.0
ApB	37.7	25.0	25.0	60.8	48.1	39.2	29.9	29.9	40.8	28.1	28.1	48.1
CeB2	409.3	272.2	321.8	443.4	306.3	360.1	171.1	220.7	373.7	236.6	286.2	355.9
CeD2	188.7	181.1	170.4	192.3	184.7	194.5	148.1	137.4	160.6	153.0	142.3	173.9
CfB	28.1	26.5	26.8	26.2	24.6	11.6	8.6	8.9	14.2	12.6	12.9	24.8
CfD	1.6	1.6	1.6	2.9	2.9	0.2	0.2	0.2	1.0	1.0	1.0	2.9
ChA	58.4	56.5	59.7	48.1	46.2	72.6	69.9	73.1	66.0	64.1	67.3	49.4
CoA	15.5	15.5	15.5	1.6	1.6	7.0	7.0	7.0	10.9	10.9	10.9	1.6
DaD	13.5	0.0	13.5	13.5	0.0	13.5	0.0	13.5	13.5	0.0	13.5	13.5
DaE	0.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
EnB	10.4	11.6	10.4	10.4	11.6	10.4	11.6	10.4	10.4	11.6	10.4	10.4
EnD	9.3	8.9	9.3	9.3	8.9	9.3	8.9	9.3	9.3	8.9	9.3	9.3
HeB	13.0	4.7	4.6	15.5	7.2	13.8	6.1	6.0	12.6	4.3	4.2	7.1
LcE	16.1	19.8	12.1	16.1	19.8	16.1	19.8	12.1	16.1	19.8	12.1	12.1
LdB2	102.0	159.0	188.6	102.0	159.0	106.2	176.9	206.5	104.2	161.2	190.8	188.6
LdD2	32.2	17.2	37.0	32.2	17.2	38.8	74.0	93.8	40.1	25.1	44.9	37.0
LgB	0.0	0.0	0.0	0.0	0.0	5.3	5.3	5.3	5.3	5.3	5.3	0.0
MaB2	62.3	57.5	62.3	29.5	24.7	19.3	14.5	19.3	33.7	28.9	33.7	29.5
MaD2	51.2	46.5	46.3	27.3	22.6	29.4	18.8	18.6	24.2	19.6	19.3	22.4
MaE	67.1	66.3	67.1	28.0	27.2	37.3	36.5	37.3	63.3	62.5	63.3	28.0
MO	11.1	17.7	11.1	11.1	17.7	11.1	17.7	11.1	11.1	17.7	11.1	11.1
MeD	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PaD2	5.5	0.7	0.7	20.6	15.8	4.8	0.0	0.0	4.8	0.0	0.0	15.8
PaE	138.5	162.5	128.4	120.5	144.5	98.3	135.3	101.2	92.7	116.7	82.5	110.4
PaF	26.2	12.4	25.9	20.9	7.1	25.0	11.2	24.7	21.1	7.4	20.9	20.7
TaB	6.3	6.3	6.3	6.3	6.3	105.4	104.3	104.3	78.1	78.1	78.1	6.3
TaD	3.4	3.4	3.4	3.4	3.4	89.7	98.2	98.2	53.1	53.1	53.1	3.4
TaE	5.0	5.0	5.0	5.0	5.0	98.0	98.1	98.1	44.1	44.1	44.1	5.0
Ud	0.0	0.9	0.0	0.0	0.9	3.3	4.2	3.3	0.0	0.9	0.0	0.0
Ur	1.8	1.8	1.8	5.1	5.1	0.4	0.4	0.4	0.4	0.4	0.4	5.1
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	10.0	38.5	38.5	14.2	42.7	10.0	50.4	50.4	10.0	38.5	38.5	42.7
VaD	4.1	12.8	12.9	6.1	14.7	4.1	10.3	10.5	4.1	12.8	12.9	14.9
WeD	5.1	10.2	10.2	13.8	18.9	4.3	28.1	28.1	4.3	9.5	9.5	18.9
WkD	0.0	2.1	0.0	0.0	2.1	0.0	2.1	0.0	0.0	2.1	0.0	0.0
WkE	0.5	0.3	0.5	0.5	0.3	0.5	0.3	0.5	0.5	0.3	0.5	0.5
WkF	4.1	2.0	9.6	4.1	2.0	5.8	2.9	10.4	4.1	2.0	9.6	9.6
WnB	13.9	7.7	13.1	13.9	7.7	13.9	1.4	6.8	13.9	7.7	13.1	13.1
WnD	7.3	7.3	8.3	7.3	7.3	7.3	7.3	8.3	7.3	7.3	8.3	8.3
WoA	9.9	12.9	13.7	9.9	12.9	3.8	5.4	6.2	3.8	6.8	7.6	13.7
w	24.6	28.9	22.5	24.9	29.2	25.0	28.6	22.2	25.3	29.7	23.2	22.7
DISTURBED LAND	547.0	551.9	540.2	559.5	564.5	519.0	536.7	525.0	521.2	526.1	514.4	552.7
TOTAL ACRES	1945.6	1861.4	1929.0	1911.0	1826.9	2023.1	1960.3	2027.9	1908.3	1824.1	1891.7	1894.5

SOIL NAMES

Soil Symbol	Prime/Statewide Farmland	County	Soil Name
AmB	P	Gaston	Alamance variant gravelly loam, 2 to 8 percent slopes
ApB	P	Gaston	Appling sandy loam, 1 to 6 percent slopes
CeB2	P	Gaston&Meck	Cecil sandy clay loam, 2 to 8 percent slopes, eroded
CeD2	S	Gaston&Meck	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
ChA	P	Gaston	Chewacla loam, 0 to 2 percent slopes, frequently flooded
CoA	P	Gaston	Congaree loam, 0 to 2 percent slopes, 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
HeB	P	Gaston	Helena sandy loam, 1 to 6 percent slopes
HeB	P	Mecklenburg	Helena sandy loam, 2 to 8 percent slopes
LcE		Gaston	Lloyd loam, 15 to 25 percent slopes
LdB2	P	Gaston	Lloyd sand clay loam, 2 to 8 percent slopes, mod. eroded
LdD2	S	Gaston	Lloyd sand clay loam, 8 to 15 percent slopes, mod. eroded
LgB	S	Gaston	Lignum silt loam, 1 to 6 percent slopes
MaB2	P	Gaston	Madison sandy clay loam, 2 to 8 percent slopes, mod. eroded
MaD2	S	Gaston	Madison sandy clay loam, 8 to 15 percent slopes, mod. eroded
MaE		Gaston	Madison sandy loam, 15 to 25 percent slopes
MeD	S	Mecklenburg	Mecklenburg fine sandy loam, 8 to 15 percent slopes
MO	P	Mecklenburg	Monacan loam
PaD2	S	Gaston	Pacolet sandy clay loam, 8 to 15 percent slopes, mod. 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	S	Gaston&Meck	Vance sandy loam, 8 to 15 percent slopes
WeD	S	Gaston	Wedowee sandy loam, 6 to 15 percent slopes
WkD		Gaston	Wilkes loam, 6 to 15 percent slopes
WkE		Mecklenburg	Wilkes loam, 15 to 25 percent slopes
WkF		Gaston	Wilkes loam, 15 to 30 percent slopes
WkF		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 E - TABLE 3 - 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)	Fair: organic matter content low, water erosion, too acid	Very limited: 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-7-6	Moderate	High	Low
			27-45	Loam, silt loam, very fine sandy loam	A-4, A-6	Moderate	High	Low
			45-60	Weathered bedrock	---	---	---	---
Appling sandy loam (ApB)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: low strength	0-6	Coarse sandy loam, sandy loam	A-2-4	Moderate	Moderate	Low
			6-18	Clay loam, sandy clay, sandy clay loam	A-6, A-7-6	Moderate	Moderate	Low
			18-36	Clay, clay loam, sandy clay	A-7-5, A-7-6	Moderate	Moderate	Low
			36-52	Clay loam, sandy clay, sandy clay loam	A-4, A-6, A-7-6	Moderate	Moderate	Low
			52-80	Fine sandy loam, gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
Cecil sandy clay loam (CeB2)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-40	Clay, clay loam, sandy clay	A-5, A-7-5	Moderate	Moderate	Low
			40-55	Clay loam, loam, sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			55-80	Fine sandy loam, gravelly sandy loam, loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
Cecil sandy clay loam (CeD2)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: slope, low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-40	Clay, clay loam, sandy clay	A-5, A-7-5	Moderate	Moderate	Low
			40-55	Clay loam, loam, sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			55-80	Fine sandy loam, gravelly sandy loam, loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
Cecil-Urban land complex (CfB)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-40	Clay, clay loam, sandy clay	A-5, A-7-5	Moderate	Moderate	Low
			40-55	Clay loam, loam, sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			55-80	Fine sandy loam, gravelly sandy loam, loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
Cecil-Urban land complex (CfD)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: slope, low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-40	Clay, clay loam, sandy clay	A-5, A-7-5	Moderate	Moderate	Low
			40-55	Clay loam, loam, sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			55-80	Fine sandy loam, gravelly sandy loam, loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
Chewacla loam (ChA)	Fair: too acid, water erosion	Very limited: Flooding, low strength, depth to saturated zone	0-4	Loam, silt loam, sandy loam	A-4, A-6, A-7-6	High	Moderate	Low
			4-26	Clay loam, silty clay loam, silt loam	A-4, A-6, A-7-6	High	Moderate	Low
			26-38	Loam, sandy clay loam, sandy loam	A-4, A-6, A-7-6	High	Moderate	Low
			38-60	Clay loam, silty clay loam, silt loam	A-4, A-6, A-7-6	High	Moderate	Low
			60-80	Fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-6	High	Moderate	Low
Congaree loam (CoA)	Fair: too acid, water erosion	Very limited: flooding, low strength	0-10	Loam, silt loam	A-4, A-6	Moderate	Moderate	Low
			10-80	Fine sandy loam, loam, sandy clay loam, silty clay loam, silt loam	A-4, A-6, A-7-6	Moderate	Moderate	Low
Davidson sandy clay loam (DaD)	Poor: too clayey, organic matter content low, too	Somewhay limited: slope, low strength	0-7	Clay loam, sandy clay loam	A-4, A-6	High	Moderate	Low
			7-16	Clay loam	A-6	High	Moderate	Low
			16-103	Clay	A-6, A-7-5, A-7-6	High	Moderate	Low
Davidson sandy clay loam (DaE)	Poor: too clayey, organic matter content low, too	Very limited: too steep, low strength	0-7	Clay loam, sandy clay loam	A-4, A-6	High	Moderate	Low
			7-16	Clay loam	A-6	High	Moderate	Low
			16-103	Clay	A-6, A-7-5, A-7-6	High	Moderate	Low
Enon sandy loam (EnB)	Poor: too clayey, organic matter content low, too acid	Very limited: shrink-swell, low strength	0-7	Fine sandy loam, loam	A-2-4, A-4	High	Moderate	Low
			7-10	Clay loam, loam, sandy clay loam	A-4, A-6	High	Moderate	Moderate
			10-33	Clay, clay loam	A-7-5, A-7-6	High	Moderate	High
			33-80	Gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-6	High	Moderate	Low
Enon sandy loam (EnD)	Poor: too clayey, organic matter content low, too acid	Very limited: shrink-swell, low strength, slope	0-7	Fine sandy loam, loam	A-2-4, A-4	High	Moderate	Low
			7-10	Clay loam, loam, sandy clay loam	A-4, A-6	High	Moderate	Moderate
			10-33	Clay, clay loam	A-7-5, A-7-6	High	Moderate	High
			33-80	Gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-6	High	Moderate	Low

APPENDIX E - TABLE 3 - 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	
Helena sandy loam (HeB) (Gaston)	Poor: too clayey, organic matter content low, too acid	Very limited: low strength, shrink-swell, depth to saturated zone	0-4	Sandy loam	A-2-4, A-4	High	High	Low
			4-13	Sandy loam	A-2-4, A-4	High	High	Low
			13-37	Clay, clay loam, sandy clay	A-7-5, A-7-6	High	High	High
			37-44	Clay loam, fine sandy loam, loam, sandy clay loam, sandy loam	A-6	High	High	Moderate
			44-80	Clay loam, fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	High	High	Low
Helena sandy loam (HeB) (Meck)	Poor: too clayey, organic matter content low, too acid	Very limited: low strength, shrink-swell, depth to saturated zone	0-13	Sandy loam	A-2-4, A-4	High	High	Low
			13-30	Clay, clay loam, sandy clay	A-7-5, A-7-6	High	High	High
			30-44	Fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	High	High	Low
			44-80	Clay loam, fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	High	High	Low
Lloyd loam (LcE)	Poor: too clayey, organic matter content low, too acid	Very limited: too steep, low strength	0-8	Loam	A-4, A-6	Moderate	High	Low
			8-38	Clay, clay loam, silty clay	A-6, A-7-5	Moderate	High	Low
			38-49	Clay lom	A-4, A-6, A-7-6	Moderate	High	Low
			49-80	Loam, sandy clay loam, sandy loam	A-4, A-6, A-7-6	Moderate	High	Low
Lloyd sandy clay loam (LdB2)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: low strength	0-7	Clay loam, loam, sandy clay	A-4, A-6, A-7-6	Moderate	High	Low
			7-58	Clay, clay loam, silty clay	A-6, A-7-5	Moderate	High	Low
			58-73	Clay loam, silty clay loam	A-4, A-6, A-7-6	---	---	Low
			73-80	Loam, sandy clay loam, sandy loam	A-4, A-6, A-7-6			Low
Lloyd sandy clay loam (LdD2)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: slope, low strength	0-7	Clay loam, loam, sandy clay	A-4, A-6, A-7-6	Moderate	High	Low
			7-58	Clay, clay loam, silty clay	A-6, A-7-5	Moderate	High	Low
			58-73	Clay loam, silty clay loam	A-4, A-6, A-7-6	Moderate	High	Low
			73-80	Loam, sandy clay loam, sandy loam	A-4, A-6, A-7-6	Moderate	High	Low
Lignum silt loam (LgB)	Poor: too clayey, organic matter content low, too acid, water erosion	Very limited: low strength, shrink-swell, depth to saturated zone	0-2	Silt loam	A-4, A-6	High	High	Low
			2-12	Silt loam	A-4, A-6	High	High	Low
			12-39	Clay, silty clay, silty clay loam	A-7-6	High	High	Moderate
			39-56	Silty clay loam, silt loam	A-2-4, A-4, A-6, A-7-5	High	High	Low
			56-80	Weathered bedrock	---	---	---	---
Madison sandy clay loam (MaB2)	Poor: too clayey, organic matter content low, too acid, water erosion	Somewhat limited: low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-26	Clay, clay loam, sandy clay	A-4, A-7-5	Moderate	Moderate	Low
			26-34	Clay loam, loam, sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			34-80	Fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-5, A-7-5	Moderate	Moderate	Low
Madison sandy clay loam (MaD2)	Poor: too clayey, organic matter content low, too acid, water erosion	Somewhat limited: slope, low strength	0-6	Sandy clay loam	A-4, A-6	Moderate	Moderate	Low
			6-26	Clay, clay loam, sandy clay	A-4, A-7-5	Moderate	Moderate	Low
			26-34	Clay loam, loam, sandy clay loam, sandy loam	A-4, A-6	Moderate	Moderate	Low
			34-80	Fine sandy loam, loam, sandy loam	A-2-4, A-5, A-7-5	Moderate	Moderate	Low
Madison sandy loam (MaE)	Poor: too clayey, organic matter content low, too acid, water erosion	Very limited: too steep, low strength	0-3	Fine sandy loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
			3-8	Fine sandy loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
			8-25	Clay, clay loam, sandy clay	A-4, A-7-5	Moderate	Moderate	Low
			25-31	Clay, clay loam, sandy clay	A-4, A-7-5	Moderate	Moderate	Low
			31-80	Sandy clay loam, sandy loam	A-2-45, A-5, A-7-5	Moderate	Moderate	Low
Monacan loam (MO)	Fair: organic matter content low, water erosion, too acid	Very limited: flooding, depth to saturated zone	0-14	Loam	A-4, A-6	Moderate	High	Low
			14-25	Fine sandy loam, silty clay loam	A-4, A-6	Moderate	High	Low
			25-65	Clay loam, sandy clay, sandy clay loam	A-4, A-6	Moderate	High	Low
			65-80	Sandy clay loam, stratified sand to clay	A-1-a, A-2-4, A-4, A-6	Moderate	High	Low
Mecklenburg fine sandy loam (MeD)	Poor: too clayey, organic matter content low, too acid	Very limited: low strength, slope, shrink-swell	0-7	Fine sandy loam	A-4, A-6	Moderate	Moderate	Low
			7-34	Clay	A-7-5	Moderate	Moderate	Moderate
			34-80	Clay loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-5	---	---	Low
Pacolet sandy clay loam (PaD2)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: low strength, slope	0-7	Clay loam, sandy clay loam,	A-4, A-6	Moderate	Moderate	Low
			7-24	Clay, clay loam, sandy clay	A-6, A-7-5, A-7-6	Moderate	Moderate	Low
			24-33	Clay loam, loam, sandy clay loam, sandy loam	A-1-b, A-2-4, A-4	Moderate	Moderate	Low
			36-80	Fine sandy loam, loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low

APPENDIX E - TABLE 3 - 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	
Pacolet sandy loam (PaE)	Poor: too clayey, organic matter content low, too acid	Very limited: too steep, low strength	0-5	Fine sandy loam, sandy loam	A-1-b, A-2-4, A-4	Moderate	Moderate	Low
			5-8	Fine sandy loam, loam, loamy coarse sand, loamy sand, sandy loam	A-1-b, A-2-4, A-4	Moderate	Moderate	Low
			8-29	Clay, clay loam, sandy clay	A-6, A-7-5, A-7-6	Moderate	Moderate	Low
			29-38	Clay loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6	Moderate	Moderate	Low
			38-80	Fine sandy loam, loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
Pacolet sandy loam (PaF)	Poor: too clayey, organic matter content low, too acid	Very limited: too steep, low strength	0-5	Fine sandy loam, sandy loam	A-1-b, A-2-4, A-4	Moderate	Moderate	Low
			5-8	Fine sandy loam, loam, loamy coarse sand, loamy sand, sandy loam	A-1-b, A-2-4, A-4	Moderate	Moderate	Low
			8-29	Clay, clay loam, sandy clay	A-6, A-7-5, A-7-6	Moderate	Moderate	Low
			29-38	Clay loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6	Moderate	Moderate	Low
			38-80	Fine sandy loam, loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
Tatum gravelly loam (TaB)	Fair: too clayey, organic matter content low, too acid, droughty	Very limited: low strength, shrink-swell	0-7	Gravelly loam, gravelly silt loam	A-4	High	High	Low
			7-42	Gravelly clay, silty clay, silty clay loam	A-7-5	High	High	Moderate
			42-80	Weathered bedrock	---	---	---	---
Tatum gravelly loam (TaD)	Fair: too clayey, organic matter content low, too acid, droughty	Very limited: low strength, slope, shrink-swell	0-7	Gravelly loam, gravelly silt loam	A-4	High	High	Low
			7-42	Gravelly clay, silty clay, silty clay loam	A-7-5	High	High	Moderate
			42-80	Weathered bedrock	---	---	---	---
Tatum gravelly loam (TaE)	Fair: too clayey, organic matter content low, too acid, droughty	Very limited: too steep, low strength, shrink-swell	0-7	Gravelly loam, gravelly silt loam	A-4	High	High	Low
			7-42	Gravelly clay, silty clay, silty clay loam	A-7-5	High	High	Moderate
			42-80	Weathered bedrock	---	---	---	---
Udorthents, loamy (Ud)	Fair: organic matter content low, too acid	Somewhat limited: shrink-swell, slope	0-80	Clay loam, sandy clay loam, sandy loam, variable	A-2-4, A-4, A-6, A-7-6	Moderate	High	Moderate
Urban Land (Ur)	Not rated	Not rated	Varies	Varies	Varies	Varies	Varies	Varies
Uwharrie stony loam (UwF)	Poor: too clayey, organic matter content low, too acid	Very limited: too steep, low strength, shrink-swell	0-4	Stony silt loam	A-4	Moderate	Moderate	Low
			4-8	Clay loam, silty clay loam, silt loam	A-4, A-6, A-7-5	Moderate	Moderate	Low
			8-36	Clay, clay loam, silty clay	A-7-5, A-7-6	Moderate	Moderate	Moderate
			36-80	Clay loam, silty clay, silty clay loam, silt loam	A-4, A-6, A-7-6	Moderate	Moderate	Moderate
Vance sandy loam (VaB)	Poor: too clayey, organic matter content low, too acid	Very limited: low strength, shrink-swell	0-6	Sandy loam	A-2-4, A-4	High	High	Low
			6-10	Sandy loam	A-2-4, A-4	High	High	Low
			10-38	Clay, clay loam, sandy clay	A-7-5, A-7-6	High	High	Moderate
			38-50	Clay loam, fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	High	High	Low
			50-80	Clay loam, fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	High	High	Low
Vance sandy loam (VaD)	Poor: too clayey, organic matter content low, too acid	Very limited: low strength, slope, shrink-swell	0-8	Sandy loam	A-2-4, A-4	High	High	Low
			8-10	Sandy loam	A-2-4, A-4	High	High	Low
			10-38	Clay, clay loam, sandy clay	A-7-5, A-7-6	High	High	Moderate
			38-50	Clay loam, fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	High	High	Low
			50-80	Clay loam, fine sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	High	High	Low
Wedowee sandy loam (WeD)	Poor: too clayey, organic matter content low, too acid	Somewhat limited: slope, low strength	0-4	Coarse sandy loam, sandy loam	A-2-4	Moderate	High	Low
			4-7	Coarse sandy loam, sandy loam	A-2-4	Moderate	High	Low
			7-23	Clay, clay loam, sandy clay	A-7-5, A-7-6	Moderate	High	Low
			23-35	Clay loam, sandy clay, sandy clay loam	A-4, A-6, A-7-6	Moderate	High	Low
			35-80	Fine sandy loam, gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4	Moderate	High	Low
Wilkes loam (WkD)	Poor: droughty, depth to bedrock, too clayey, organic matter content low, too acid	Somewhat limited: Depth to soft bedrock, slope, shrink-swell	0-3	Loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
			3-6	Loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
			6-10	Clay, clay loam, sandy clay loam	A-6, A-7-6	Moderate	Moderate	Moderate
			10-13	Clay loam, gravelly sandy loam, loam, sandy clay loam, sandy loam	A-1-b, A-2-4, A-4, A-6, A-7-6	Moderate	Moderate	Moderate
			13-48	Weathered bedrock	---	---	---	---
			48-80	Unweathered bedrock	---	---	---	---

APPENDIX E - TABLE 3 - 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	
Wilkes loam (WkE)	Poor: droughty, depth to bedrock, too clayey, organic matter content low, too acid	Very limited: too steep, depth to soft bedrock, shrink-swell	0-3	Loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
			3-6	Loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
			6-10	Clay, clay loam, sandy clay loam	A-6, A-7-6	Moderate	Moderate	Moderate
			10-13	Clay loam, gravelly sandy loam, loam, sandy clay loam, sandy loam	A-1-b, A-2-4, A-4, A-6, A-7-6	Moderate	Moderate	Moderate
			13-48	Weathered bedrock	---	---	---	---
			48-80	Unweathered bedrock	---	---	---	---
Wilkes Loam (WkF)	Poor: droughty, depth to bedrock, too clayey, organic matter content low, too acid	Very limited: too steep, depth to soft bedrock, shrink-swell	0-3	Loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
			3-6	Loam, sandy loam	A-2-4, A-4	Moderate	Moderate	Low
			6-10	Clay, clay loam, sandy clay loam	A-6, A-7-6	Moderate	Moderate	Moderate
			10-13	Clay loam, gravelly sandy loam, loam, sandy clay loam, sandy loam	A-1-b, A-2-4, A-4, A-6, A-7-6	Moderate	Moderate	Moderate
			13-48	Weathered bedrock	---	---	---	---
			48-80	Unweathered bedrock	---	---	---	---
Winnsboro loam (WnB)	Poor: too clayey, organic matter content low, too acid	Very limited: low strength, shrink-swell	0-8	Fine sandy loam, loam, sandy loam	A-2-4, A-4	High	Moderate	Low
			8-11	Clay loam, gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-5	High	Moderate	Moderate
			11-32	Clay, clay loam	A-7-5, A-7-6	High	Moderate	High
			32-37	Clay loam, gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-5	High	Moderate	Moderate
			37-60	Gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-5	High	Moderate	Moderate
Winnsboro loam (WnD)	Poor: too clayey, organic matter content low, too acid, water erosion	Very limited: low strength, shrink-swell, slope	0-5	Loam	A-4, A-6	High	Moderate	Low
			5-8	Loam	A-4, A-6	High	Moderate	Low
			8-28	Clay, clay loam	A-7-5, A-7-6	High	Moderate	High
			28-36	Clay loam, gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-5	High	Moderate	Moderate
			36-60	Gravelly sandy loam, loam, sandy clay loam, sandy loam	A-2-4, A-4, A-6, A-7-5	High	Moderate	Moderate
Worsham loam (WoA)	Poor: too clayey, too acid, organic matter content low	Very limited: depth to saturated zone, low strength, shrink-swell	0-6	Fine sandy loam, loam, sandy loam	A-4, A-6	High	Moderate	Low
			6-16	Clay loam, sandy clay loam	A-4, A-6	High	Moderate	Low
			16-45	Clay, clay loam, sandy clay	A-2-7, A-7-6	High	Moderate	Moderate
			45-80	Clay loam, sandy clay loam	A-2-4, A-4, A-6, A-7-6	High	Moderate	Moderate

Source: NRCS Web site: http://soildatamart.nrcs.usda.gov; Gaston County data dated June 17, 2009; Mecklenburg County data dated April 29, 2009.

**The American Association of State Highway and Transportation Officials (AASHTO) soil classification system categorizes soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained.*