Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

October 26, 2015

MEMORANDUM TO: James F. Bridges
Project Development Engineer
Rail Division

FROM: Craig E. Haden
GeoEnvironmental Project Manager
GeoEnvironmental Section
Geotechnical Engineering Unit

TIP NO: P-5705A
WBS: 44475.1.1
COUNTY: Mecklenburg
DIVISION Division 10
DESCRIPTION: Charlotte Wye Track Improvements

SUBJECT: **GeoEnvironmental Report for Planning**

The GeoEnvironmental Section has completed the GeoEnvironmental Report for Planning. This report has the following components and is transmitted as:

__X__ Hazardous Materials Report (6) pages

Please contact me if you have any questions concerning this project.

Hazardous Materials Report

The GeoEnvironmental Section of the Geotechnical Engineering Unit has investigated the above referenced project to identify hazardous material sites for inclusion in the environmental document.

HAZARDOUS MATERIALS EVALUATION

Purpose

This section presents the results of a hazardous material evaluation conducted along the above referenced project. The main purpose of this investigation is to identify properties within the project study area that are, or may be, contaminated and thus may result in increased project costs and future liability if acquired by the Department. Hazardous material impacts may include, but are not limited to active and abandoned underground storage tank (UST) sites, hazardous waste generators, regulated landfills,or unregulated dumpsites.

Methodology

Geographical Information System (GIS) databases were consulted to identify known and suspected sites of concern in relation to the project study area. A search of appropriate historical records was performed to assist in evaluating sites of concern identified during this study. GeoEnvironmental Section personnel did not conducted field reconnaissance along the above mentioned project.

Summary of Findings

UST Facilities

One (1) former UST facility was identified with the project limits.

Hazardous Waste Sites

None within the project limits.

Landfills

None within the project limits.

Other GeoEnvironmental Concerns

Two (2) other sites of concern, a former scrap metal recycling facility and a manufacturer & wholesaler of household cleaning products were identified within the study area.

Anticipated Impacts

Three (3) sites of concern have been identified within the project area, including one (1) former UST facility, one (1) former scrap metal recycling facility and one (1) household cleaning product manufacturer & wholesaler. We anticipate low to moderate monetary and scheduling impacts resulting from these sites (see the following table and appendices for details).

The GeoEnvironmental Section observed no additional contaminated properties during the field reconnaissance and regulatory agencies' records search. The GeoEnvironmental Section will investigate these sites of concern for contamination after the Final Design Field Inspection as necessary based on the proposed design. Design recommendations and right of way recommendations will be provided base on our findings.

Please note that discovery of additional sites not recorded by regulatory agencies and not reasonably discernible during the project reconnaissance may occur. The GeoEnvironmental Section should be notified immediately after discovery of such sites so their potential impact(s) may be assessed.

If there are questions regarding the geoenvironmental issues, please contact me, at 919-707-6871.

Craig E. Haden

Craig E. Haden
GeoEnvironmental Project Manager
GeoEnvironmental Section
Geotechnical Engineering Unit

cc:
John Pilipchuk, LG, PE, State Geotechnical Engineer
Glenn Mumford, PE, State Roadway Design Engineer
David Chang, Ph.D, PE, State Hydraulics Engineer
Tom Koch, PE, State Structures Engineer
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Ronald Wilkins, PE, State Utilities Manager
Darin Waller, PE, Area Bridge Construction Engineer
Kenneth Hill, Division Right of Way Agent
Eric Williams, PE, Geotechnical Regional Manager
Clint Little, LG, Regional Geological Engineer
Steve Grimes, ROW Unit, Negotiations, State Negotiator
row-notify@ncdot.gov
File

Appendix A

1) **Property Name**

Vacant Lot
Formerly Plato Price Warehouse
4201 Morris Field Dr.
Charlotte, NC 28208

Facility ID: 0-027361
Incident: N/A

Property Owner:

City of Charlotte
600 E 4th St.
Charlotte, NC 28202

UST Owner: City of Charlotte
600 E 4th St.
Charlotte, NC 28202

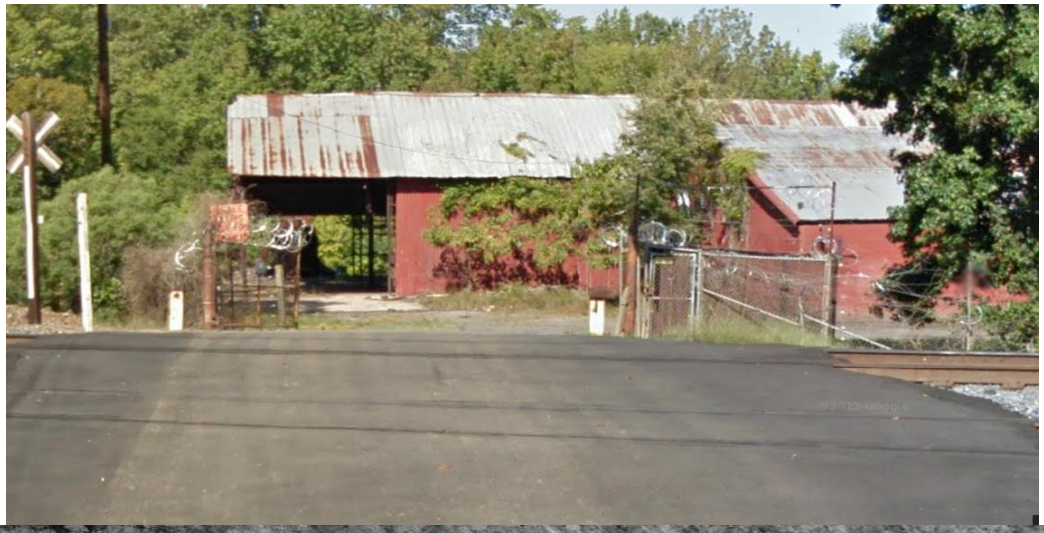
Top view toward the west circa 2011 (Google Streetview), Bottom view NCDOT historic photo 1974.

This parcel is located on northeast corner of the Morris Field Road and Seymour Drive intersection. According to the UST Section Registry, there was a tank installed in 1959 and removed in 1993. Plato Price School was on this property from 1937 to the 1960's. Then, the school was used for storage under the name Plato Price Warehouse. Currently, there is no building or UST on site. **This site is anticipated to present low geoenvironmental impacts to the project.**

2) **Property Name**
Vacant Lot
Formerly United Scarp, Inc.
3600 Primrose Ave
Charlotte, NC 28208
Facility ID: UST# MO-2453
Incident: N/A

Property Owner:
SFF Holdings LLC
2823 Providence Rd. Suite 323
Charlotte, NC 28211

UST Owner: N/A



Top view toward the northwest circa 2011 (Google Maps), Bottom view NCDOT historic photo 1974

This site is currently a vacant lot and is located at the western end of Primrose Avenue, west of the train track, it is the former location of United Scrap Inc. This facility does not appear in the UST Section Registry. The facility does appear in NCDEQ's groundwater database (UST # MO-2453). There is no incident or facility ID associated with it. According to the database the site was closed out in 1990 with no contamination. The buildings were razed between 2013 and 2014. **This site is anticipated to present low to moderate geoenvironmental impacts to the project.**

3) **Property Name**
RGA Enterprises
4001 Morris Field Dr.
Charlotte, NC 28208

Property Owner:
BBM III Holdings LLC
PO Box 669226
Charlotte, NC 28266

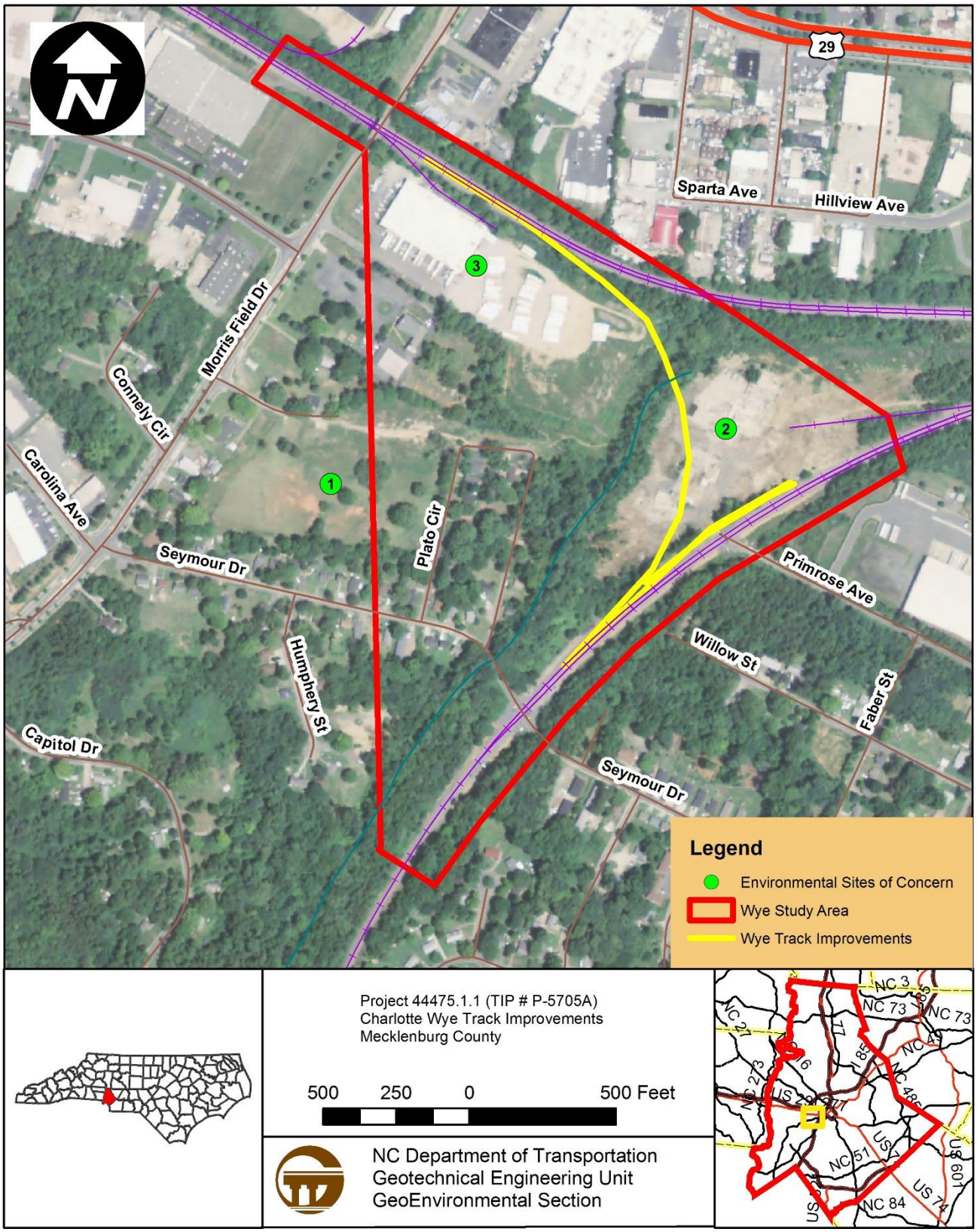
Facility ID: N/A
Incident: N/A

UST Owner: N/A

View toward the northeast circa 2015 (Google Maps)

This facility is located on the south east quadrant of Morris Field Drive and the train track intersection. RGA Enterprises, Inc. is a manufacturer and wholesaler of household cleaning products. The back lot was graded in 2009 and is currently used for additional tractor trailer parking. This facility does not appear in the UST Section Registry there are no know groundwater incidents associated with this site, **This site is anticipated to present low geoenvironmental impacts to the project.**

Appendix A
Location of GeoEnvironmental Sites of Concern



Project 44475.1.1 (TIP # P-5705A)
Charlotte Wye Track Improvements
Mecklenburg County

500 250 0 500 Feet

NC Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section

Prepared for:

North Carolina Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina, 27699-1589

Preliminary Site Assessment Report

RLF II East, LLC Property (Parcel PIN #11711112 – ROW Only)
Parcel # 1
4001 Morris Field Drive
Charlotte, Mecklenburg County, North Carolina
Charlotte Wye Track Improvements
TIP Number: P-5705A
WBS Element: 44475.1.1

Apex Companies, LLC
10610 Metromont Parkway, Suite 206
Charlotte, North Carolina 28269

Prepared by:

DocuSigned by:
Troy Holzschuh
2D73445FBBB9455...

Troy L. Holzschuh
Assistant Project Manager

Reviewed by:

DocuSigned by:

Eric Wysong, L.G.
Project Manager
NC Geologist License No. 2581

April 2, 2019

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents the results of a Preliminary Site Assessment (PSA) for the North Carolina Department of Transportation (NCDOT) RLF II East, LLC (RLF II East) Property performed by Apex Companies, LLC (Apex) (dba Apex Engineering, PC) on behalf of the NCDOT. The subject site of this PSA report will be affected by the Charlotte Wye Track improvements. The Site (Parcel PIN #11711112) is located at 4001 Morris Field Drive and is identified as Parcel 1, RLF II East Property, within the NCDOT P-5705A design project. The property is located at the southeastern quadrant of Morris Field Drive and the Norfolk Southern Rail-line intersection in Charlotte, Mecklenburg County, North Carolina, as shown in the attached Site Location Map (**Figure 1)**. The site investigation was conducted in accordance with Apex's Technical and Cost proposal dated June 13, 2018.

NCDOT contracted Apex to perform the PSA within the existing right-of-way (ROW) of the Parcel 1, RLF II East property due to the potential presence of contamination at the site and because excavation and grading may occur within the area. The PSA was performed to evaluate if soils have been impacted by petroleum hydrocarbons as a result of past and present uses of the property within the proposed investigation area, especially around the storm drain structure lines, excavation areas, utility lines and slope stake cuts. Additionally, the PSA was performed to determine if groundwater is impacted.

The following report presents the results of an electromagnetic (EM) and ground penetrating radar (GPR) evaluation to identify potential underground storage tanks (USTs) in the investigation area and describes the subsurface field investigation at the site. The report includes the evaluation of field screening, as well as field and laboratory analyses with regards to the presence or absence of soil contamination within the area of investigation across the RLF II East property. **Appendix A** includes a Photograph log for the site.

1.1 Site History

Parcel 1 has been identified with the address of 4001 Morris Field Drive. Based on a search of the North Carolina Department of Environmental Quality (NCDEQ) UST database registry, no registered tanks were identified for the 4001 Morris Field Drive site. No visual evidence of USTs was noted during field activities. Currently the site operates as 48forty Solutions Pallet Facility in an office/warehouse building constructed in 1969. The building is located on the western portion of the property. Apex personnel also reviewed the NCDEQ Incident Management Database and no groundwater incidents are associated with this parcel.

1.2 Site Description

The site is located in a mixed commercial, light industrial, and residential area of Charlotte in Mecklenburg County. The property is developed with one structure on the western portion of the site, currently occupied by 48forty Solutions Pallet Facility. The eastern portion of the property is used as a gravel, dirt and/or grass parking area. The site is bordered to the south by Moore's Sanctuary A.M.E. Zion Church. Wurth Wood Group is located just beyond Morris Field Drive which borders the site to the west. Norfolk Southern Rail-line borders the site to the north, followed by Napa Auto Parts, Rain for Rent, and Southern Electrical Equipment Company. A vacant lot (3600 Primrose Avenue, Parcel 2) formerly a metal scrap yard is located to the east. Parcel 1 does not appear on the NCDEQ UST database registry and is not associated with known USTs. The geophysical surveyor, ESP Associates, Inc. (ESP) did not identify anomalies characteristic of a UST in the investigation area.

2.0 GEOLOGY

2.1 Regional Geology

Parcel 1, the RLF II East property, is located within the Charlotte Belt of the Piedmont Physiographic Province. According to the US Geological Survey Hydrogeological framework of the North Carolina Charlotte Belt, the geology consists of mostly 300 to 500 million year old igneous rocks such as granite, diorite, and gabbro. The igneous rocks are good sources for crushed and dimension stone for road aggregate and buildings (M.D. Winner Jr. and R.W. Coble, 1996, *Hydrogeologic Framework of the North Carolina Coastal Plain, Regional Aquifer-System Analysis – Northern Atlantic Coastal Plain*, USGS Professional Paper 1404-I).

2.2 Site Geology

Site geology was observed through the drilling and sampling of five direct push probe soil borings (SB) onsite. **Figure 2** presents the boring locations and site layout. Borings did not exceed a total depth of 13 feet below ground surface (bgs) since that depth was the maximum excavation depth for proposed drainage features. Soil consisting predominantly of tan silt to brown or orange clayey silts were observed across the parcel (see Boring Logs included in **Appendix B**). According to the topographical maps found on the Mecklenburg County Geographic Information System (GIS) site, the parcel is located in an area of little topographic relief. Although groundwater does not always follow topographic changes, based on the topography of surrounding parcels, groundwater flow is likely to be toward branches of Taggart Creek located east and southeast.

3.0 FIELD ACTIVITIES

3.1 Preliminary Activities

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. A Health and Safety Plan (HASP) was prepared to include the site-specific health and safety information necessary for the field activities. North Carolina-One Call was contacted on June 28, 2018 and again on March 12, 2019 to report the proposed drilling activities and notify affected utilities. Apex subcontracted ESP to locate subsurface utilities and other subsurface drilling hazards as well as to perform a geophysical survey. An additional private utility locate was conducted on March 18, 2019 by Priority Locating. Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina was retained by Apex to perform the direct push sampling for soil borings. REDLAB, LLC (REDLAB) provided an ultraviolet fluorescence (UVF) Hydrocarbon Analyzer and Eastern Solutions provided a calibrated Flame Ionization/Photoionization Detector (FID/PID). Boring locations were strategically placed in a pattern within the area of investigation to maximize the opportunity to encounter potentially contaminated soil.

3.2 Site Reconnaissance

Apex personnel performed a site reconnaissance on March 18, 2019 to investigate the presence of USTs or areas/obstructions that could potentially affect the subsurface investigation. During the site reconnaissance, the area was visually examined for the presence of USTs or areas/obstructions that could potentially affect the subsurface investigation. The proposed boring locations were marked based on the site inspection and geophysical survey results. Apex personnel also used the site visit as an opportunity to contact the property manager/owner to inform them of upcoming field activities.

3.3 Geophysical Survey Results

The geophysical survey of the site was conducted from June 21 through June 28, 2018. ESP performed an electromagnetic (EM) induction metal survey followed by a GPR survey. A copy of the Geophysical Report is presented in **Appendix C**. The results of the geophysical survey did not record any evidence of unknown metallic USTs at the property. All of the EM features observed corresponded with the fence located on the north side, numerous parked trailers or miscellaneous metallic features located on the ground surface. Follow-up GPR scans adjacent to areas of EM interference did not record any evidence of subsurface structures such as USTs.

3.4 Well Survey

No water supply or groundwater monitoring wells were observed on Parcel 1.

3.5 Soil Sampling

Apex conducted drilling activities at the site on March 19, 2019. Apex drilling subcontractor, CSI, advanced five direct push soil borings within the proposed investigation area. These five boring locations were placed in a pattern to maximize the likelihood of intercepting potential soil contamination. **Figure 2** presents the Site Map with boring locations and identifications.

The purpose of soil sampling was to determine if a petroleum release has occurred within the investigation area, and if so, to estimate the volume of impacted soil that might require special handling during construction activities.

Soil sampling was performed utilizing hand auger and direct push methods accompanied by field screening with the FID/PID unit and onsite quantitative analyses with the UVF Hydrocarbon Analyzer. Two to three intervals of the soil boring, exhibiting the most elevated FID/PID readings, were selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAH) in soil using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Troy Holzschuh, a certified REDLAB UVF technician with Apex. The UVF results were generated concurrent with soil boring activities so that rapid assessment could be utilized for strategic boring placement.

3.6 Groundwater Sampling

Groundwater was not encountered on site.

4.0 SAMPLING RESULTS

4.1 Soil Sampling Results

Based on FID/PID field screening and onsite UVF hydrocarbon analysis from the March 2019 soil sampling there is no evidence of petroleum hydrocarbon contamination above NCDEQ Action Levels onsite within the area of investigation.

Elevated FID/PID readings, above ten parts per million (ppm), were not observed in the borings conducted at the site. The PID readings ranged from non-detectable to 8.7 ppm and the FID readings were non-detectable. The FID/PID field screening results are provided on the boring logs in **Appendix B**.

Soil concentrations of TPH gasoline range organics (GRO) and diesel range organics (DRO) measured using the onsite UVF unit are presented in **Table 1**, with instrument generated tables and chromatographs in **Appendix D**. **Figure 3** presents the TPH-GRO and TPH-DRO results at each boring. Based on the UVF analyses, TPH-GRO and TPH-DRO was identified in soils on

Parcel 1. TPH-GRO concentrations ranged from below detectable levels to 2.8 milligram per kilogram (mg/kg) (P1-SB2). TPH-DRO concentrations ranged from below detectable levels to 67.2 mg/kg (P1-SB3). TPH-GRO concentrations did not exceed the regulatory action level of 50 mg/kg and the TPH-DRO concentrations did not exceed the regulatory action level of 100 mg/kg.

4.2 Groundwater Sampling Results

Groundwater was not encountered on site.

5.0 CONCLUSIONS

Based on site observations and onsite UVF analysis, no petroleum-impacted soil contamination was identified above the NCDEQ Action level of 50 mg/kg for TPH-GRO or above the NCDEQ Action level of 100 mg/kg for TPH-DRO.

The following bulleted summary is based upon Apex's evaluation of field observations and onsite quantitative analyses of samples collected from the Site on June 8, 2017.

- Results of the geophysical survey did not produce evidence of anomalies characteristic of USTs.
- Five soil borings were advanced onsite. Soil samples collected from each boring were analyzed in the field using a REDLAB UVF Hydrocarbon Analyzer.
- Soil samples analyzed using the UVF did not contain either TPH-DRO or TPH-GRO concentrations above their respective NCDEQ Action levels of 100 mg/kg and 50 mg/kg.

6.0 RECOMMENDATIONS

Based on these PSA results, Apex does not recommend further assessment or soil sampling in the area of investigation.

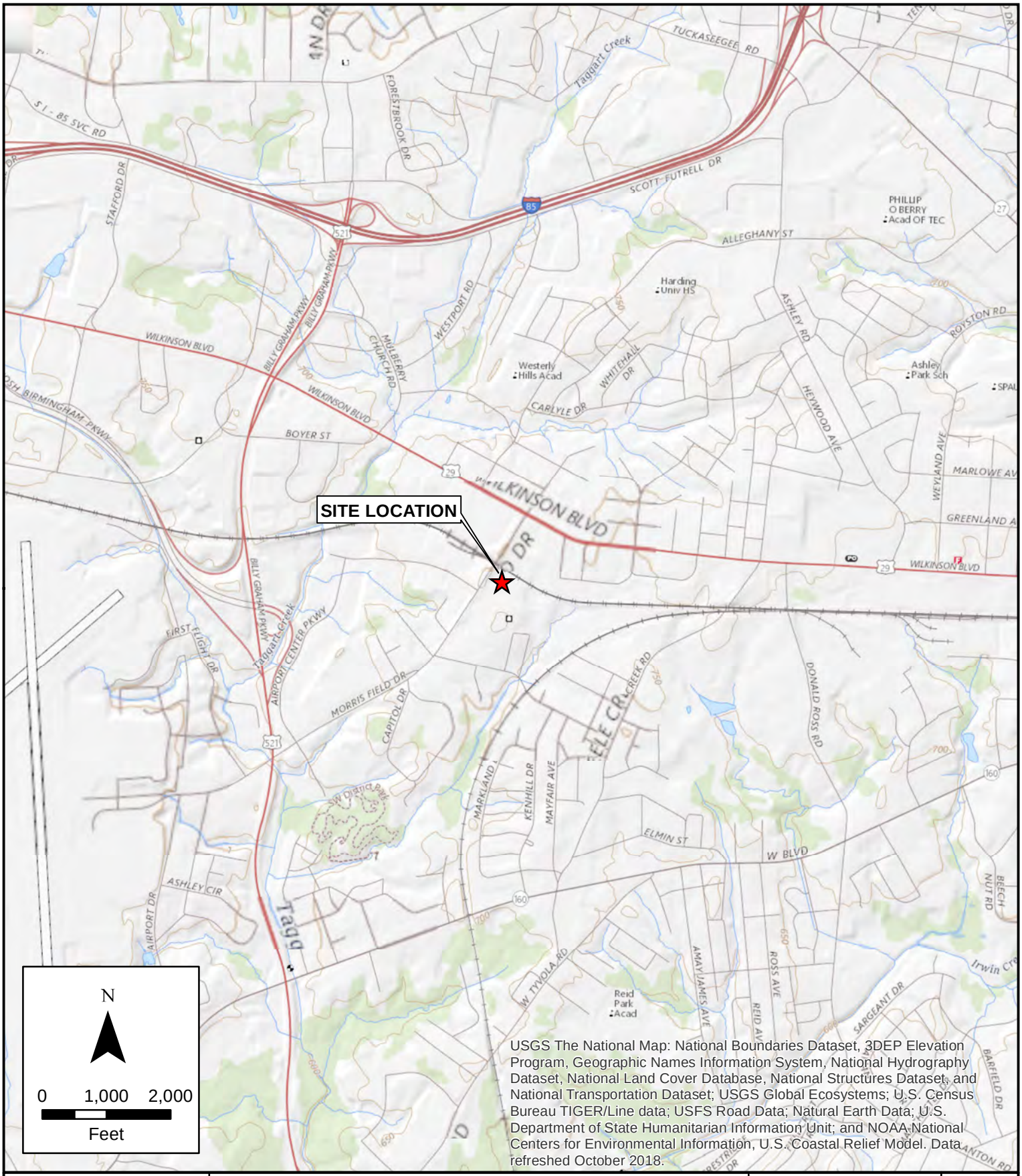
TABLES

Table 1
UVF Onsite Hydrocarbon Analytical Soil Data from March 2019
P-5705A, Parcel 1, RLF II East LLC Property
Charlotte, North Carolina

Sample ID	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
NCDEQ Action Level in mg/kg			**50**	**100**
P1-SB1 (4-5)	3/19/2019	4-5	<0.54	2
P1-SB1 (9-10)	3/19/2019	9-10	<0.58	0.11
P1-SB2 (4-5)	3/19/2019	4-5	<0.66	9.4
P1-SB2 (6-7)	3/19/2019	6-7	<0.49	2
P1-SB2 (12-13)	3/19/2019	12-13	2.8	1.1
P1-SB3 (4-5)	3/19/2019	4-5	<0.77	67.2
P1-SB3 (6-7)	3/19/2019	6-7	<0.68	4.3
P1-SB3 (12-13)	3/19/2019	12-13	<0.64	13.1
P1-SB4 (4-5)	3/19/2019	4-5	<0.52	0.61
P1-SB4 (9-10)	3/19/2019	9-10	<0.75	1.3
P1-SB5 (4-5)	3/19/2019	4-5	<0.65	46.9
P1-SB5 (9-10)	3/19/2019	9-10	<0.79	7.6

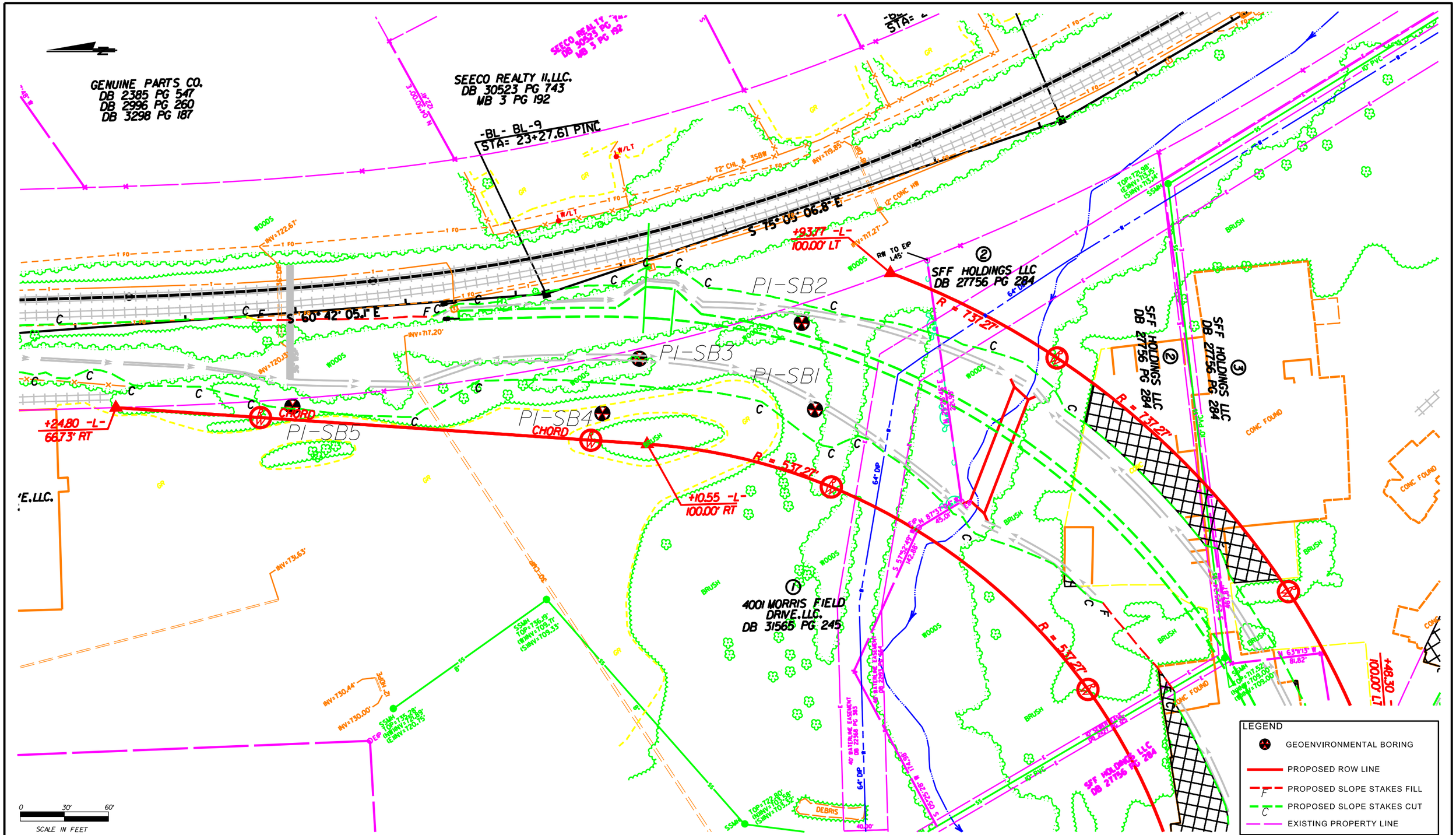
NOTES:
(mg/kg) = Milligrams per kilogram
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
ft bgs = feet below ground surface
TPH - GRO values in exceedance of NCDEQ Action Level of 50 mg/kg are shown in Bold
TPH - DRO values in exceedance of NCDEQ Action Level of 100 mg/kg are shown in Bold

FIGURES



CHECK BY: TH	SITE LOCATION MAP	FIGURE
DRAWN BY: SP		
DATE: 3/27/19	PARCEL 1	1
SCALE: AS SHOWN	4001 MORRIS FIELD DRIVE	
CAD NO.: NCDOT-003	CHARLOTTE, NORTH CAROLINA	
PRJ NO.: NCDOT-003		

APEX



APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 2
PARCEL 1
SITE MAP WITH SOIL BORING LOCATIONS

Date:	3/26/19
Proj. #	NCDOT-003
CAD File:	pc__1__fig 2.dgn
Project Title:	P5705a
Approx. Scale:	1" = 80'
Drawn by:	MJO
Client:	NC DOT

Sample Identification	P1-SB2		
Sample Depth (Feet bgs)	4-5	6-7	12-13
TPH GRO (mg/kg)	<0.66	<0.49	2.8
THP DRO (mg/kg)	9.4	2	1.1

Sample Identification	P1-SB3		
Sample Depth (Feet bgs)	4-5	6-7	12-13
TPH GRO (mg/kg)	<0.77	<0.68	<0.64
THP DRO (mg/kg)	67.2	4.3	13.1

Sample Identification	P1-SB5	
Sample Depth (Feet bgs)	4-5	9-10
TPH GRO (mg/kg)	<0.65	<0.79
THP DRO (mg/kg)	46.9	7.6

Sample Identification	P1-SB4	
Sample Depth (Feet bgs)	4-5	9-10
TPH GRO (mg/kg)	<0.52	<0.75
THP DRO (mg/kg)	0.61	1.3

Sample Identification	P1-SB1	
Sample Depth (Feet bgs)	4-5	9-10
TPH GRO (mg/kg)	<0.54	<0.58
THP DRO (mg/kg)	2	0.11

GENUINE PARTS CO.
DB 2385 PG 547
DB 2996 PG 260
DB 3298 PG 187

SEECO REALTY II,LLC.
DB 30523 PG 743
MB 3 PG 192

-BL- BL-9
STA= 23+27.61 PINC

S 75° 05' 06.8" E

S 60° 42' 05.1" E

+93.77 -L-
100.00' LT

+24.80 -L-
66.73' RT

+10.55 -L-
100.00' RT

+48.30 -L-
100.00' LT

R = 537.27'

CHORD

PI-SB1
PI-SB2
PI-SB3
PI-SB4
PI-SB5

RW TO E/P
4.45'

② SFF HOLDINGS LLC
DB 27756 PG 284

③ SFF HOLDINGS LLC
DB 27756 PG 284

① 4001 MORRIS FIELD DRIVE,LLC.
DB 31565 PG 245

40' WATERLINE EASEMENT
DB 22568 PG 383

SSMH
TOP=724.98'
(E)INV=715.85'
(S)INV=713.34'

SSMH
TOP=735.49'
(W)INV=729.89'
(E)INV=720.75'

SSMH
TOP=722.80'
(W)INV=705.58'
(S)INV=705.52'

SSMH
TOP=735.49'
(W)INV=709.21'
(S)INV=709.33'

SSMH
TOP=711.52'
(W)INV=709.00'
(E)INV=709.00'

INV=730.44'
INV=730.00'

DEBRIS

LEGEND
- GEOENVIRONMENTAL BORING
- PROPOSED ROW LINE
- PROPOSED SLOPE STAKES FILL
- PROPOSED SLOPE STAKES CUT
- EXISTING PROPERTY LINE

0 30' 60'
SCALE IN FEET

APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 3
PARCEL 1
ONSITE UVF HYDOCARBON ANALYSIS RESULTS

Date: 3/26/19			
Proj. # NCDOT-003			
CAD File: pc__1__fig 3.dgn		Project Title: P5705a	
Approx. Scale: 1" = 80'	Drawn by: MJO	Client: NC DOT	

APPENDIX A
PHOTOGRAPH LOG

Photo 1

Overview of Parcel 1 prior to PSA activities.

Photo 2

View of investigation area prior to PSA activities.

Photo 3

Photo shows CSI hand clearing for utilities.

Photo 4

Photo shows CSI preparing to drill.

APPENDIX B
BORING LOGS

Apex Companies, LLC

Boring Log

Boring/Well No.: P1-SB1	**Site Name: Parcel 1**
Date: 3/19/2019	**Location: Charlotte, Mecklenburg County, NC**
Job No.: NCDOT-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2856**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	<0.1	<0.1		0-2' Orange, Clayey Silt, Moist
1				
2				
	<0.1	1.2		2-4' Brown, Clayey Silt, Moist
3				
4				
	<0.1	2.3	P1-SB1 (4-5)	4-6' Grey, Clayey Silt, Moist
5				
6				
	<0.1	<0.1		6-10' Orange and White, Marbled Silt, Dry
7				
8				
9				
			P1-SB1 (9-10)	
10				
				Boring Terminated at 10 feet BGS
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P1-SB2	**Site Name: Parcel 1**
Date: 3/19/2019	**Location: Charlotte, Mecklenburg County, NC**
Job No.: NCDOT-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2856**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	<0.1	<0.1		0-2' Tan, Clayey Silt, Moist
1				
2				
	<0.1	<0.1		2-6' Orange, Clayey Silt, Moist
3				
4				
	<0.1	2.7	P1-SB2 (4-5)	
5				
6				
	<0.1	<0.1	P1-SB2 (6-7)	6-7' Grey, Clayey Silt, Moist'
7				7-13' Yellow, Silt, Dry
8				
	<0.1	<0.1		
9				
10				
	<0.1	<0.1		
11				
12				
			P1-SB2 (12-13)	
13				
				Boring Terminated at 13 feet BGS
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P1-SB3	**Site Name: Parcel 1**
Date: 3/19/2019	**Location: Charlotte, Mecklenburg County, NC**
Job No.: NCDOT-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2856**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	<0.1	<0.1		0-3' Tan, Silt, Moist
1				
2				
3				
	<0.1	8.7		3-6' Brown, Clayey Silt, Moist
4				
			P1-SB3 (4-5)	
5				
6				
	<0.1	2.7	P1-SB3 (6-7)	6-7' Grey, Clayey Silt, Moist'
7				
	<0.1	<0.1		7-13' Orange and Yellow, Marbled Silt, Dry
8				
9				
	<0.1	<0.1		
10				
11				
	<0.1	4.5		
12				
			P1-SB3 (12-13)	
13				
				Boring Terminated at 13 feet BGS
14				

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P1-SB4	**Site Name: Parcel 1**
Date: 3/19/2019	**Location: Charlotte, Mecklenburg County, NC**
Job No.: NCDOT-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2856**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	<0.1	<0.1		0-2' Tan, Silt, Moist
1				
2				
	<0.1	0.15		2-6' Brown, Clayey Silt, Moist
3				
4				
			P1-SB4 (4-5)	
5				
6				
	<0.1	0.25		6-10' Orange, Clayey Silt, Moist
7				
8				
9				
			P1-SB4 (9-10)	
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P1-SB5	**Site Name: Parcel 1**
Date: 3/19/2019	**Location: Charlotte, Mecklenburg County, NC**
Job No.: NCDOT-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2856**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	<0.1	<0.1		0-5' Brown, Clayey Silt, Moist
1				
2				
	<0.1	5.1		
3				
4				
			P1-SB5 (4-5)	
5				
	<0.1	<0.1		5-7' Orange, Clayey Silt, Moist
6				
7				
	<0.1	0.9		7-10' Tan, Silt, Dry
8				
9				
			P1-SB5 (9-10)	
10				
				Boring Terminated at 10 feet BGS
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

APPENDIX C
GEOPHYSICAL REPORT

December 21, 2018

Ms. Katie Lippard
Apex Companies, LLC
1071 Pemberton Hill Rd, Ste 203
Apex, NC 27502

Reference: **REPORT ON GEOPHYSICAL SERVICES FOR PARCEL 1 – REVISION 1**
4001 Morris Field Dr. LLC Property
4001 Morris Field Dr., Charlotte NC
ESP Project No. EO73.302

State Project: P-5705A
WBS Element: 44475.1.1
County: Mecklenburg
Description: Charlotte Wye Track Improvements

Dear Ms. Lippard:

ESP Associates, Inc. (ESP) is pleased to present this report to Apex Companies, LLC (Apex) on the geophysical services we provided for the referenced project. This work was performed under our subconsultant agreement dated March 29, 2015 and in accordance with our cost proposal to you dated May 24, 2018.

1.0 UTILITY DESIGNATION

ESP contacted NC811 to determine which utilities were listed as having facilities in the project location and then contacted the utility companies to request copies of their facility records. On June 25 and 28, 2018, ESP performed inductive sweeps and GPR scans in order to designate and attempt to identify unknown utility lines. The results did not indicate buried utility lines in the accessible areas of Parcel 1. A sketch of the results is provided in Appendix A, following by relative information from the utility companies.

2.0 GEOPHYSICAL DATA COLLECTION

On June 21, 2018, ESP performed geophysical studies within the accessible areas of the proposed easements of Parcel 1 located at 4001 Morris Field Dr. in Charlotte, North Carolina. Parcel 1 is currently occupied by a pallet company. The work consisted of metal detection using a Geonics EM61 MK2 instrument. Representative photographs of the geophysical study areas are provided on Figure 1.

The EM61 data were collected over the accessible areas of the site using a line spacing of approximately 3 feet. We were unable to collect geophysical data in the areas occupied by trailers and in the heavily wooded area north of the fence. We used a Hemisphere XF101 differential GPS instrument (DGPS) connected to an Archer field computer to provide approximate locations of the EM61 data in real time. The DGPS instrument was also used to obtain the approximate location of site features that could affect the EM61 readings.

3.0 GEOPHYSICAL DATA ANALYSIS AND PRESENTATION

The EM61 data were gridded and contoured to produce plan view contour maps of the early time gate response (Figure 2) and the differential response (Figure 3). The differential response is calculated by subtracting the response of the bottom coil from the response of the top coil of the EM61. Typically, the differential response diminishes the response from smaller, near-surface metallic objects, thus emphasizing the response from deeper and larger metallic objects. The DGPS locations of observed site features were superimposed on the EM61 contour maps so that anomalies caused by site features such as metal objects on the ground surface could be recognized. Therefore, the above mentioned figures show the EM61 data and the site features that we observed and mapped in the field with DGPS; these figures do not necessarily show all existing site features.

The EM61 early time gate response and differential response were exported from Surfer as geo-referenced images and attached to the NCDOT plan sheet in MicroStation (Figures 4 and 5). The legend for the NCDOT line types and symbols is shown on Figure 6.

4.0 DISCUSSION OF GEOPHYSICAL RESULTS

The EM61 differential contour plot indicates high amplitude responses (anomalies) that correspond to the fence on the north side of the site, numerous parked trailers, and a few miscellaneous metallic features on the ground surface. The EM61 differential data did not show anomalies that would indicate unknown buried metallic objects. Since there were no significant EM61 differential anomalies, there was no need to perform ground-penetrating radar (GPR) imaging on this parcel.

5.0 SUMMARY AND CONCLUSIONS

Our review of the geophysical data collected for this project does not indicate the presence of possible USTs or buried metal drums in the geophysical study area. Please note that the presence of numerous parked trailers and heavy brush prevented us from collecting geophysical data in some areas.

6.0 LIMITATIONS

These services have been provided to Apex in accordance with generally accepted guidelines for performing geophysical surveys. It is recognized that the results of geophysical surveys are non-unique and subject to interpretation. Further, the locations of data and features included in this report are approximate and were collected using a DGPS instrument. ESP makes no guarantee as to the accuracy

of these locations. Also, due to the nature of utility installation, site conditions, and limitations of equipment, the results of the utility designation may not indicate all utilities within the project area.

Thank you for the opportunity to be of service to Apex on this project. Please contact us if you have any questions or need further information.

Sincerely,

ESP ASSOCIATES, Inc.

Edward D. Billington, PG

EDB/DMN/PLD

Attachments: Figures 1 – 6
Appendix A (Utility Designation Sketch and Relevant Information)

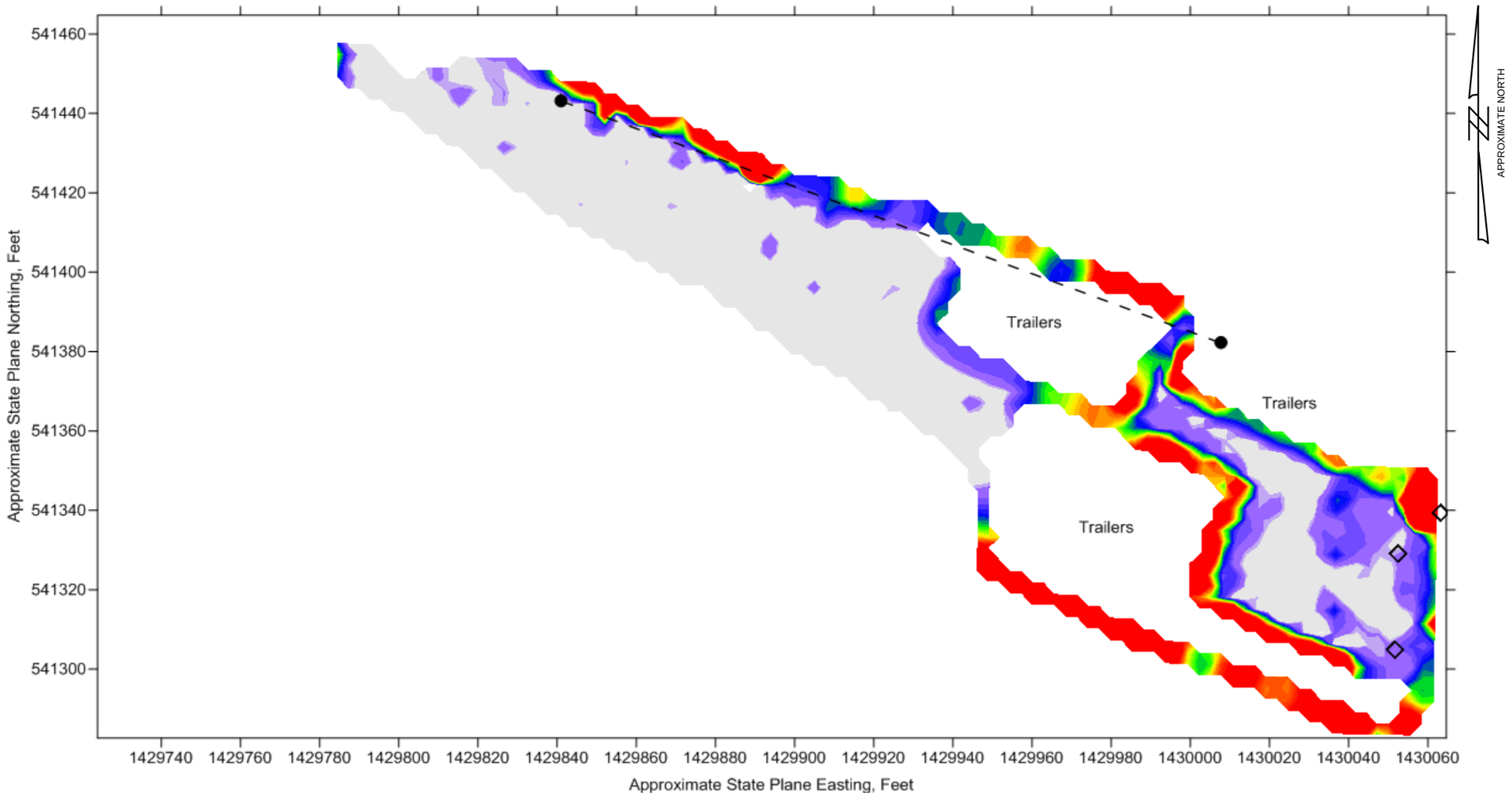
A. Photo from center of site, looking west.

B. Photo from east side of site, looking west.

C. Photo from west side of site, looking east.

D. Photo showing fence on north side of site.

PROJECT NO. EO73.302	***FIGURE 1 – PARCEL 1 PHOTOS OF SITE***	ESP Associates, Inc. 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE NTS		
DATE 7/18/18	***P-5705A, CHARLOTTE WYE TRACK IMPROVEMENTS MECKLENBURG COUNTY, NORTH CAROLINA***	
BY DMN/EDB		



EM61 Early Time Gate Response (mV)

-200 30 40 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000

EXPLANATION

- Fence and fencepost
- Miscellaneous metal objects on ground surface
- EM61 data collection areas

Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	EO73.302
SCALE	AS SHOWN
DATE	7/18/18
BY	DMN/EDB

FIGURE 2 – PARCEL 1
EM61 EARLY TIME GATE RESPONSE

P-5705A, CHARLOTTE WYE TRACK IMPROVEMENTS
MECKLENBURG COUNTY, NORTH CAROLINA

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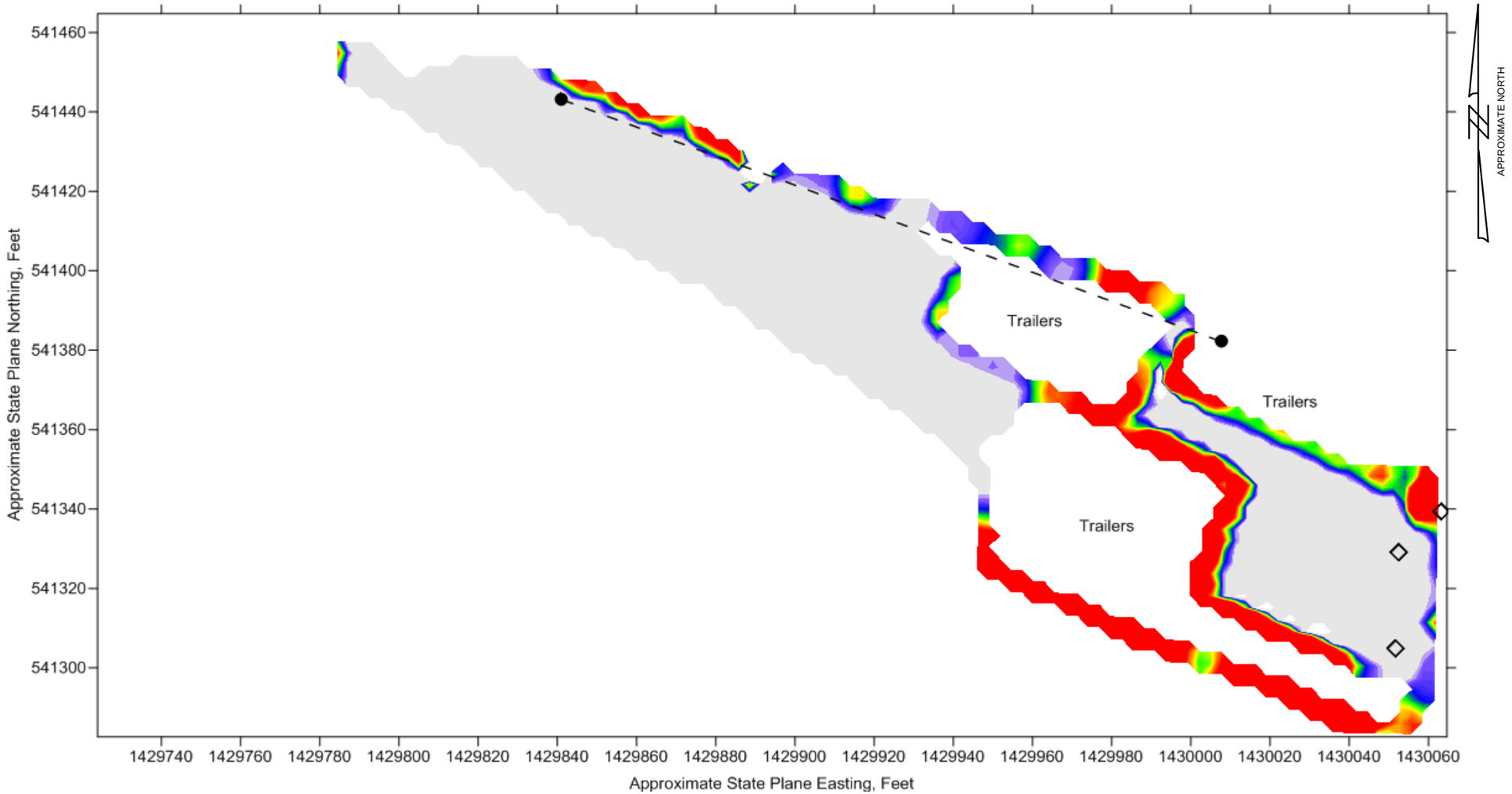
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com



EM61 Differential Response (mV)

-50 70 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500

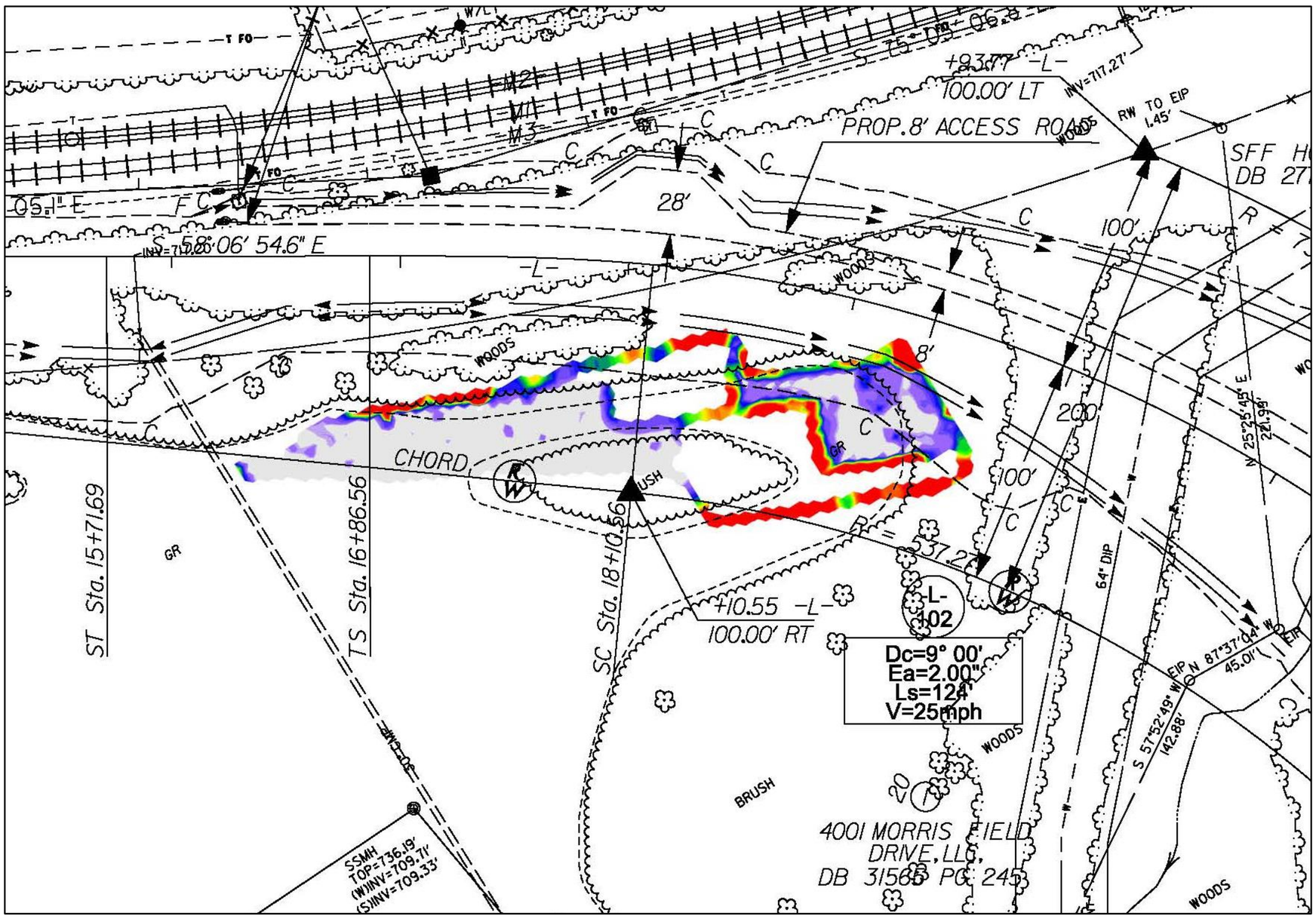
EXPLANATION

- Fence and fencepost
- Miscellaneous metal objects on ground surface
- EM61 data collection areas

Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO. EO73.302	***FIGURE 3 – PARCEL 1*** ***EM61 DIFFERENTIAL RESPONSE***
SCALE AS SHOWN	
DATE 7/18/18	***P-5705A, CHARLOTTE WYE TRACK IMPROVEMENTS*** ***MECKLENBURG COUNTY, NORTH CAROLINA***
BY DMN/EDB	

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com



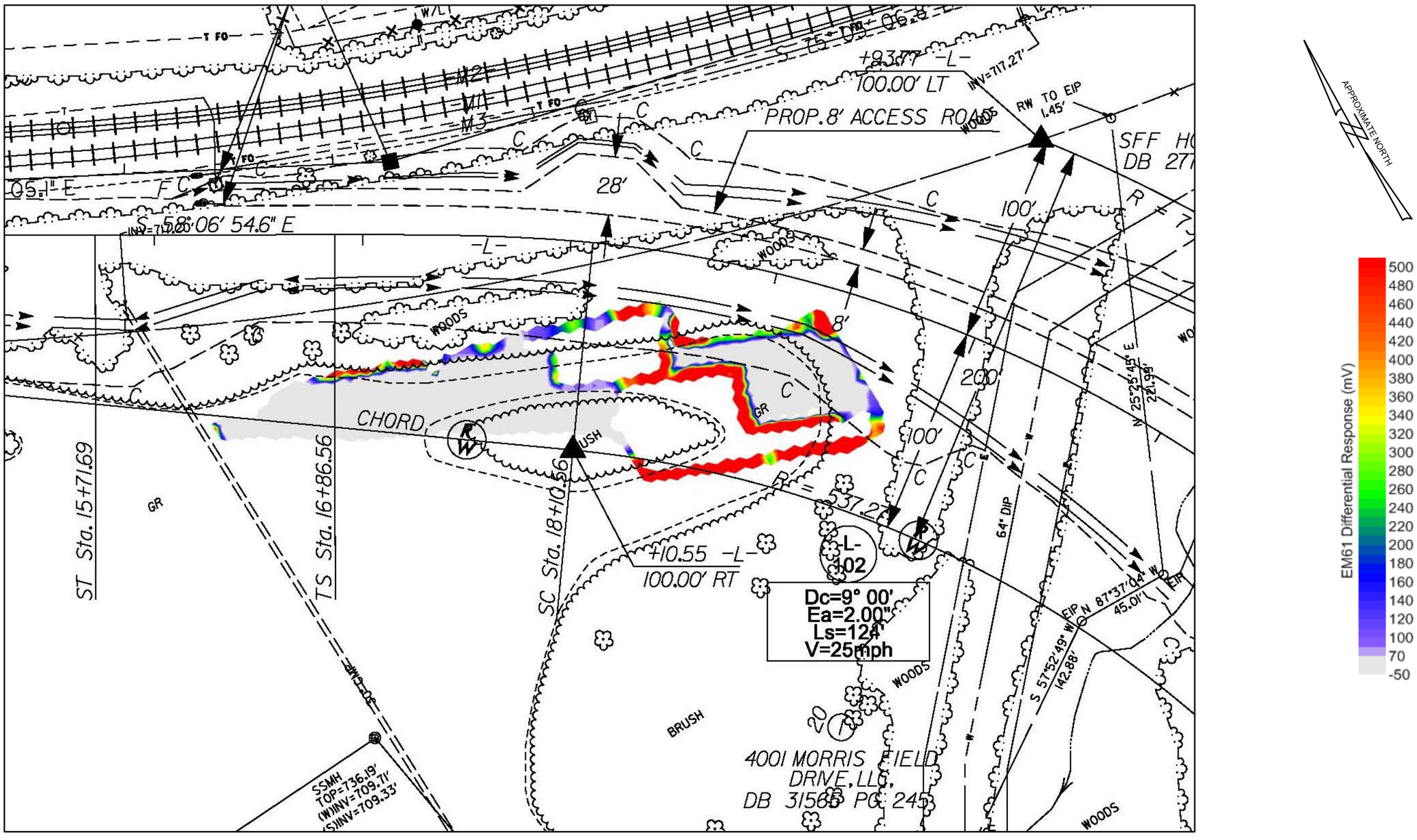
List of NCDOT reference files

- p5705a_rr_dsn.dgn
  - p5705a_ncdot_fs.dgn
  - p5705a_rr_ss.dgn
  - p5705a_rr_row.dgn
  - p5705a_rr_aln.dgn

See Figure 6 for explanation of symbols and line types

PROJECT NO. EO73.302	***FIGURE 4 – PARCEL 1***
SCALE 1" = 50'	***EM61 EARLY TIME GATE RESPONSE ON PLAN SHEET***
DATE 7/18/18	***P-5705A, CHARLOTTE WYE TRACK IMPROVEMENTS***
BY DMN/EDB	***MECKLENBURG COUNTY, NORTH CAROLINA***

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com



List of NCDOT reference files

- p5705a_rr_dsn.dgn
  - p5705a_ncdot_fs.dgn
  - p5705a_rr_ss.dgn
  - p5705a_rr_row.dgn
  - p5705a_rr_aln.dgn

See Figure 6 for explanation of symbols and line types

PROJECT NO. EO73.302	***FIGURE 5 – PARCEL 1***
SCALE 1" = 50'	***EM61 DIFFERENTIAL RESPONSE ON PLAN SHEET***
DATE 7/18/18	***P-5705A, CHARLOTTE WYE TRACK IMPROVEMENTS***
BY DMN/EDB	***MECKLENBURG COUNTY, NORTH CAROLINA***

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com

04/26/15

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

PROJECT REFERENCE NO. | SHEET NO.

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Property Corner
- Property Monument
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch (Ave)
- False Sump

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite R/W Marker
- Proposed Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line (E)
- Proposed Temporary Construction Easement (E)
- Proposed Temporary Drainage Easement (TDE)
- Proposed Permanent Drainage Easement (PDE)
- Proposed Permanent Drainage / Utility Easement (DUE)
- Proposed Permanent Utility Easement (PUE)
- Proposed Temporary Utility Easement (TUE)
- Proposed Aerial Utility Easement (AUE)
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*)
- U/G Power Line LOS C (S.U.E.*)
- U/G Power Line LOS D (S.U.E.*)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Pedestal
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- U/G Telephone Cable LOS B (S.U.E.*)
- U/G Telephone Cable LOS C (S.U.E.*)
- U/G Telephone Cable LOS D (S.U.E.*)
- U/G Telephone Conduit LOS B (S.U.E.*)
- U/G Telephone Conduit LOS C (S.U.E.*)
- U/G Telephone Conduit LOS D (S.U.E.*)
- U/G Fiber Optics Cable LOS B (S.U.E.*)
- U/G Fiber Optics Cable LOS C (S.U.E.*)
- U/G Fiber Optics Cable LOS D (S.U.E.*)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*)
- U/G Water Line LOS C (S.U.E*)
- U/G Water Line LOS D (S.U.E*)
- Above Ground Water Line (A/G Water)

TV:

- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (H)
- U/G TV Cable LOS B (S.U.E.*)
- U/G TV Cable LOS C (S.U.E.*)
- U/G TV Cable LOS D (S.U.E.*)
- U/G Fiber Optic Cable LOS B (S.U.E.*)
- U/G Fiber Optic Cable LOS C (S.U.E.*)
- U/G Fiber Optic Cable LOS D (S.U.E.*)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*)
- U/G Gas Line LOS C (S.U.E.*)
- U/G Gas Line LOS D (S.U.E.*)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*)
- SS Forced Main Line LOS C (S.U.E.*)
- SS Forced Main Line LOS D (S.U.E.*)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line LOS B (S.U.E.*)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

PROJECT NO.	EO73.302
SCALE	N/A
DATE	7/18/18
BY	DMN/EDB

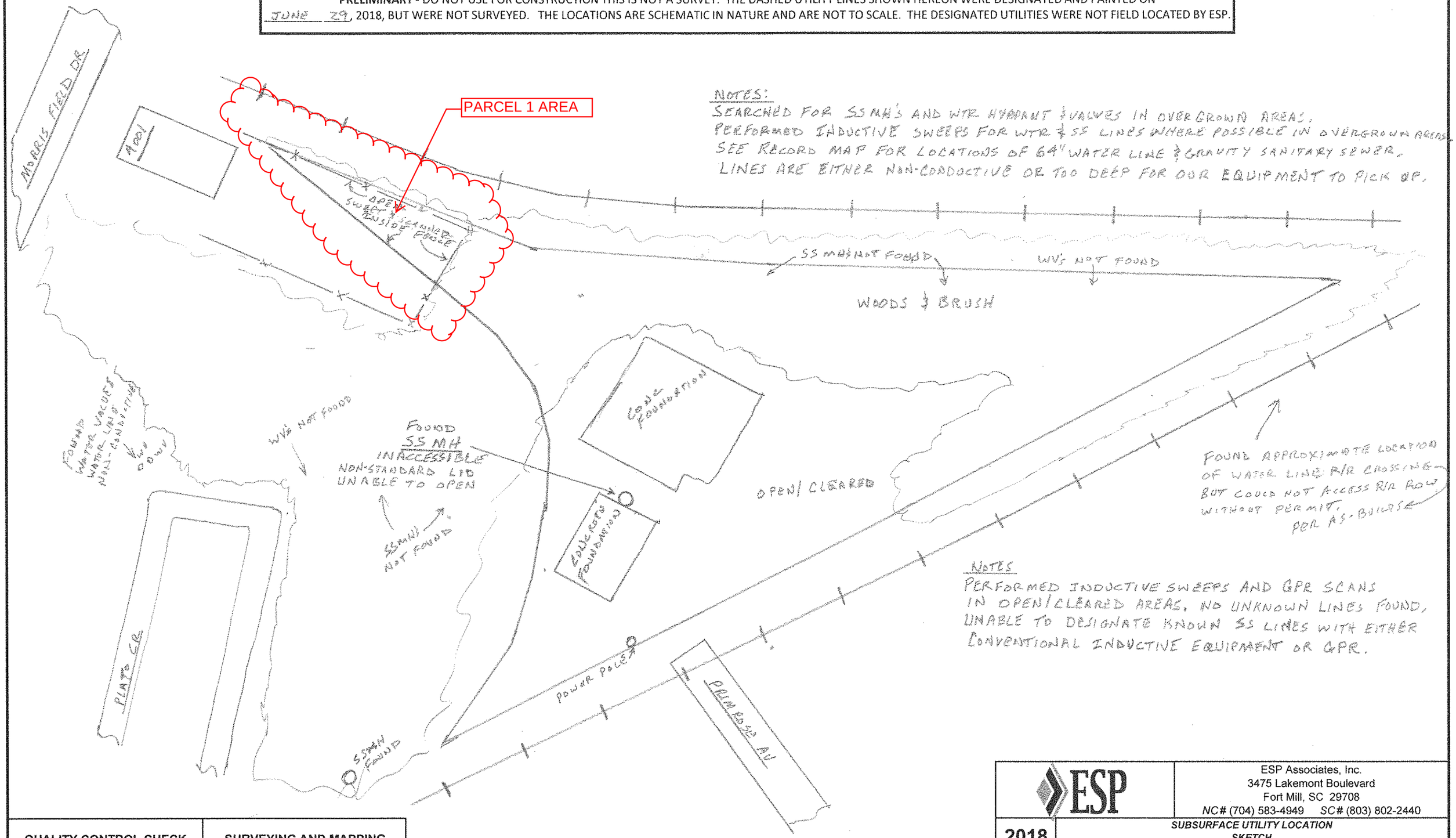
FIGURE 6
LEGEND FOR PLAN SHEET FIGURES

P-5705A, CHARLOTTE WYE TRACK IMPROVEMENTS
MECKLENBURG COUNTY, NORTH CAROLINA

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com

APPENDIX A
UTILITY DESIGNATION

PRELIMINARY - DO NOT USE FOR CONSTRUCTION THIS IS NOT A SURVEY. THE DASHED UTILITY LINES SHOWN HEREON WERE DESIGNATED AND PAINTED ON JUNE 29, 2018, BUT WERE NOT SURVEYED. THE LOCATIONS ARE SCHEMATIC IN NATURE AND ARE NOT TO SCALE. THE DESIGNATED UTILITIES WERE NOT FIELD LOCATED BY ESP.



NOTES:
SEARCHED FOR SS MH'S AND WTR HYDRANT & VALVES IN OVERGROWN AREAS.
PERFORMED INDUCTIVE SWEEPS FOR WTR & SS LINES WHERE POSSIBLE IN OVERGROWN AREAS
SEE RECORD MAP FOR LOCATIONS OF 64" WATER LINE & GRAVITY SANITARY SEWER.
LINES ARE EITHER NON-CONDUCTIVE OR TOO DEEP FOR OUR EQUIPMENT TO PICK UP.

NOTES
PERFORMED INDUCTIVE SWEEPS AND GPR SCANS IN OPEN/CLEARED AREAS. NO UNKNOWN LINES FOUND, UNABLE TO DESIGNATE KNOWN SS LINES WITH EITHER CONVENTIONAL INDUCTIVE EQUIPMENT OR GPR.

QUALITY CONTROL CHECK	SURVEYING AND MAPPING
PERFORMED BY: TW/PD	PERFORMED BY:
DATE CHECKED: 6-29-18	DATE CHECKED: N/A

ESP
ESP Associates, Inc.
3475 Lakemont Boulevard
Fort Mill, SC 29708
NC# (704) 583-4949 SC# (803) 802-2440

2018 **SUBSURFACE UTILITY LOCATION SKETCH**

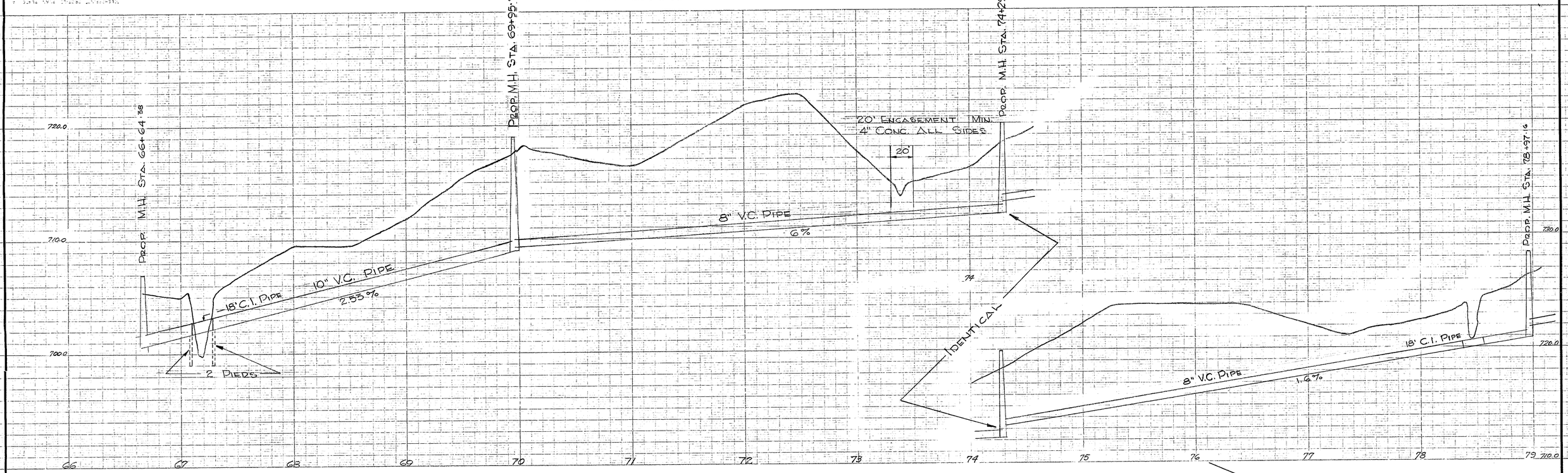
PROJECT NAME: Apex NCDOT R-5705A
PROJECT Number: ED79.302 Sheet 1 of 1

CHARLOTTE WATER

Project: <PROJECT NAME>

Map Number: 1

Created By: Abe Collins
Technology Services - GIS Group
6/15/2018



AS BUILT X-1

CITY OF CHARLOTTE
NORTH CAROLINA
ENGINEERING DEPARTMENT

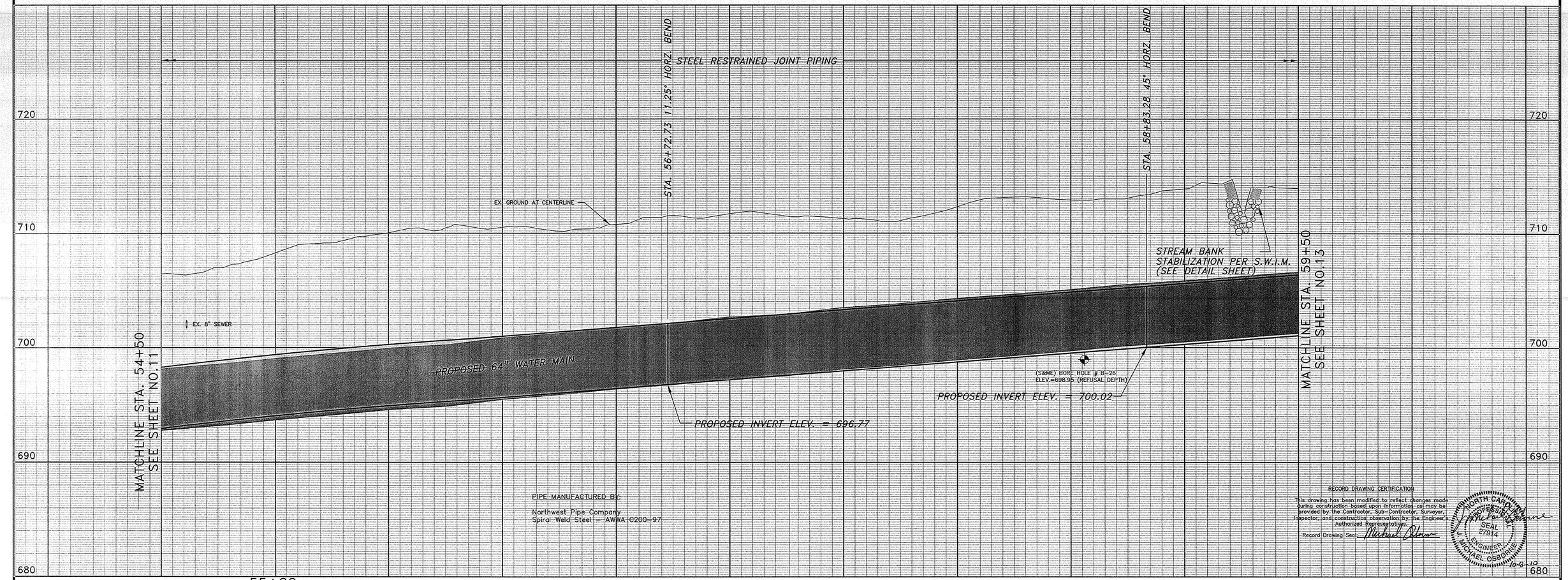
16-7

REVISIONS		
NO.	DATE	DESCRIPTION
3	7/23	Relocation
4	10/16	As Built

DRAWN BY SHAW
CHECKED BY CDR
CITY ENGINEER

SANITARY SEWER IMPROVEMENTS
WILKINSON BOULV'D AREA
FROM
STA. 66+64.38 TO STA. 79+02.15
WILKINSON BOULV'D TRUNK
DATE JULY 22, 1963 SCALE 1"-40'

JOB NO. 331
FILE NO. E-52
SHEET 14 OF



PIPE MANUFACTURED BY:

Northwest Pipe Company
Spiral Weld Steel — AWWA C200-97

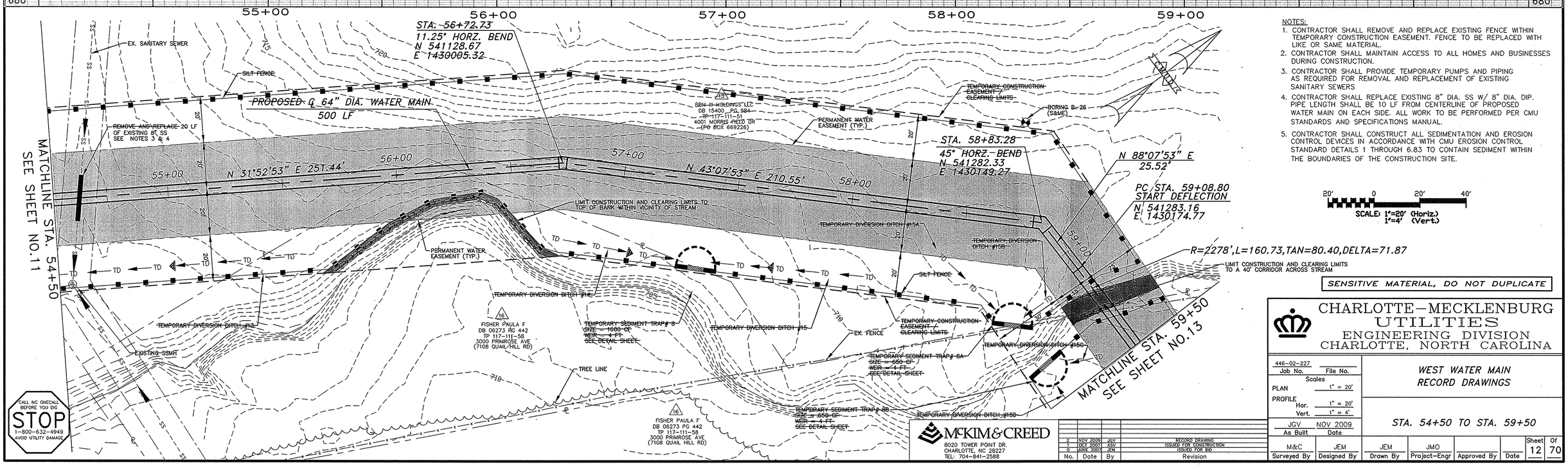
RECORD DRAWING CERTIFICATION

This drawing has been modified to reflect changes made during construction based upon information as may be provided by the Contractor, Sub-Contractor, Surveyor, Inspector, and construction observation by the Engineer's Authorized Representatives.

Record Drawing Seal: Michael Osborne

NORTH CAROLINA PROFESSIONAL SEAL 27914 ENGINEER MICHAEL OSBORNE

10-9-10



NOTES:

1. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE WITHIN TEMPORARY CONSTRUCTION EASEMENT. FENCE TO BE REPLACED WITH LIKE OR SAME MATERIAL.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL HOMES AND BUSINESSES DURING CONSTRUCTION.
3. CONTRACTOR SHALL PROVIDE TEMPORARY PUMPS AND PIPING AS REQUIRED FOR REMOVAL AND REPLACEMENT OF EXISTING SANITARY SEWERS
4. CONTRACTOR SHALL REPLACE EXISTING 8" DIA. SS W/ 8" DIA. DIP. PIPE LENGTH SHALL BE 10 LF FROM CENTERLINE OF PROPOSED WATER MAIN ON EACH SIDE. ALL WORK TO BE PERFORMED PER CMU STANDARDS AND SPECIFICATIONS MANUAL.
5. CONTRACTOR SHALL CONSTRUCT ALL SEDIMENTATION AND EROSION CONTROL DEVICES IN ACCORDANCE WITH CMU EROSION CONTROL STANDARD DETAILS 1 THROUGH 6.83 TO CONTAIN SEDIMENT WITHIN THE BOUNDARIES OF THE CONSTRUCTION SITE.

CALL NC ONECALL BEFORE YOU DIG
STOP
1-800-632-4949
AVOID UTILITY DAMAGE

SENSITIVE MATERIAL, DO NOT DUPLICATE

McKIM & CREED
8020 TOWER POINT DR.
CHARLOTTE, NC 28227
TEL: 704-841-2588

No.	Date	By	Revision
2	NOV 2009	JGV	RECORD DRAWING
1	OCT 2007	ASV	ISSUED FOR CONSTRUCTION
0	JUNE 2007	JEM	ISSUED FOR BID

CHARLOTTE–MECKLENBURG UTILITIES
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

446-02-227 Job No. / File No.	WEST WATER MAIN RECORD DRAWINGS
Scales: PLAN 1" = 20'	
PROFILE Hor. 1" = 20' / Vert. 1" = 4'	
JGV As Built / NOV 2009 Date	STA. 54+50 TO STA. 59+50

M&C Surveyed By	JEM Designed By	JEM Drawn By	JMO Project-Engr	Approved By	Date	Sheet 12 of 70

STEEL RESTRAINED JOINT PIPING

STA. 60+00.03

STREAM BANK STABILIZATION PER S.W.I.M. (SEE DETAIL SHEET)

EX. GROUND AT CENTERLINE

EX. SS M/H

EX. 10" SEWER

EX. 10" SS

EXISTING 10" SS 468.37 LF @ 1.39%

PROPOSED 64" WATER MAIN

MATCHLINE STA. 59+50
SEE SHEET NO. 12

MATCHLINE STA. 65+50
SEE SHEET NO. 14

730
720
710
700
690

PIPE MANUFACTURED BY:

Northwest Pipe Company
Spiral Weld Steel – AWWA C200-97

RECORD DRAWING CERTIFICATION

This drawing has been modified to reflect changes made during construction based upon information as may be provided by the Contractor, Sub-Contractor, Surveyor, Inspector, and construction observation by the Engineer's Authorized Representatives.

Record Drawing Seal: Michael Osborne

NORTH CAROLINA PROFESSIONAL SEAL 27914 ENGINEER MICHAEL OSBORNE 10-6-10

60+00 61+00 62+00 63+00 64+00 65+00

15 BBM III HOLDINGS LLC
DB 15400 PG 984
TP 117-111-51
4001 MORRIS FIELD DR
(PO BOX 669226)

EX. FENCE

NORFOLK SOUTHERN RAILROAD R/W

PERMANENT WATER EASEMENT

PT STA. 60+69.53
END DEFLECTION
N 541282.74
E 1430335.46

LIMIT CONSTRUCTION WIDTH TO 40' BETWEEN TOP OF BANKS AT STREAM CROSSING

PERMANENT SEWER EASEMENT (TYP)

SILT FENCE

EX. SANITARY SEWER

CMUD

60+00 TEMPORARY DIVERSION DITCH #1SF

TEMPORARY DIVERSION DITCH #1SE

TEMPORARY DIVERSION DITCH #2SE

TEMPORARY DIVERSION DITCH #3SE

TEMPORARY DIVERSION DITCH #4SE

TEMPORARY SEDIMENT TRAP # 8D SIZE: 650 CF WEIR = 4 FT. SEE DETAIL SHEET 9A

TEMPORARY SEDIMENT TRAP # 8C SIZE: 650 CF WEIR = 4 FT. SEE DETAIL SHEET

TEMPORARY CONSTRUCTION EASEMENT / CLEARING LIMITS

DEBRIS PILE

DEBRIS PILE SEE NOTE 5

REMOVE AND REPLACE 20 LF OF EXISTING 8" SS SEE NOTES 3 & 4

R=2,278
T=160.73
TAN=80.40
DELTA=71.87

S 88°07'19" E 608.19'

PROPOSED ℄ 64" DIA. WATER MAIN
600 LF

EX. 15' PERM. SS EASEMENT

PERMANENT WATER EASEMENT (TYP.)

16 FISHER PAULA F
DB 06273 PG 442
TP 117-111-58
3000 PRIMROSE AVE
(7108 QUAIL HILL RD)

TREE LINE

SCALE: 1"=20' (Horiz.)
1"=4' (Vert.)

NOTES:

1. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE WITHIN TEMPORARY CONSTRUCTION EASEMENT. FENCE TO BE REPLACED WITH LIKE OR SAME MATERIAL.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL HOMES AND BUSINESSES DURING CONSTRUCTION.
3. CONTRACTOR SHALL PROVIDE TEMPORARY PUMPS AND PIPING AS REQUIRED FOR REMOVAL AND REPLACEMENT OF EXISTING SANITARY SEWERS
4. CONTRACTOR SHALL REPLACE EXISTING 8" DIA. SS W/ 8" DIA. DIP. PIPE LENGTH SHALL BE 10 LF FROM CENTERLINE OF PROPOSED WATER MAIN ON EACH SIDE. ALL WORK TO BE PERFORMED PER CMU STANDARDS AND SPECIFICATIONS MANUAL.
5. CONTRACTOR SHALL RELOCATE DEBRIS PILE WITHIN TRENCH LIMITS. COORDINATE WITH PROPERTY OWNER FOR RECOMMENDATION.
6. CONTRACTOR SHALL CONSTRUCT ALL SEDIMENTATION AND EROSION CONTROL DEVICES IN ACCORDANCE WITH CMU EROSION CONTROL STANDARD DETAILS 1 THROUGH 6.83 TO CONTAIN SEDIMENT WITHIN THE BOUNDARIES OF THE CONSTRUCTION SITE.

CALL NC ONECALL BEFORE YOU DIG
STOP
1-800-632-4949
AVOID UTILITY DAMAGE

SENSITIVE MATERIAL, DO NOT DUPLICATE

McKIM & CREED
8020 TOWER POINT DR.
CHARLOTTE, NC 28227
TEL: 704-841-2588

No.	Date	By	Revision
2	NOV 2009	JGV	RECORD DRAWING
1	OCT 2007	ASV	ISSUED FOR CONSTRUCTION
0	JUN 2007	JEM	ISSUED FOR BID

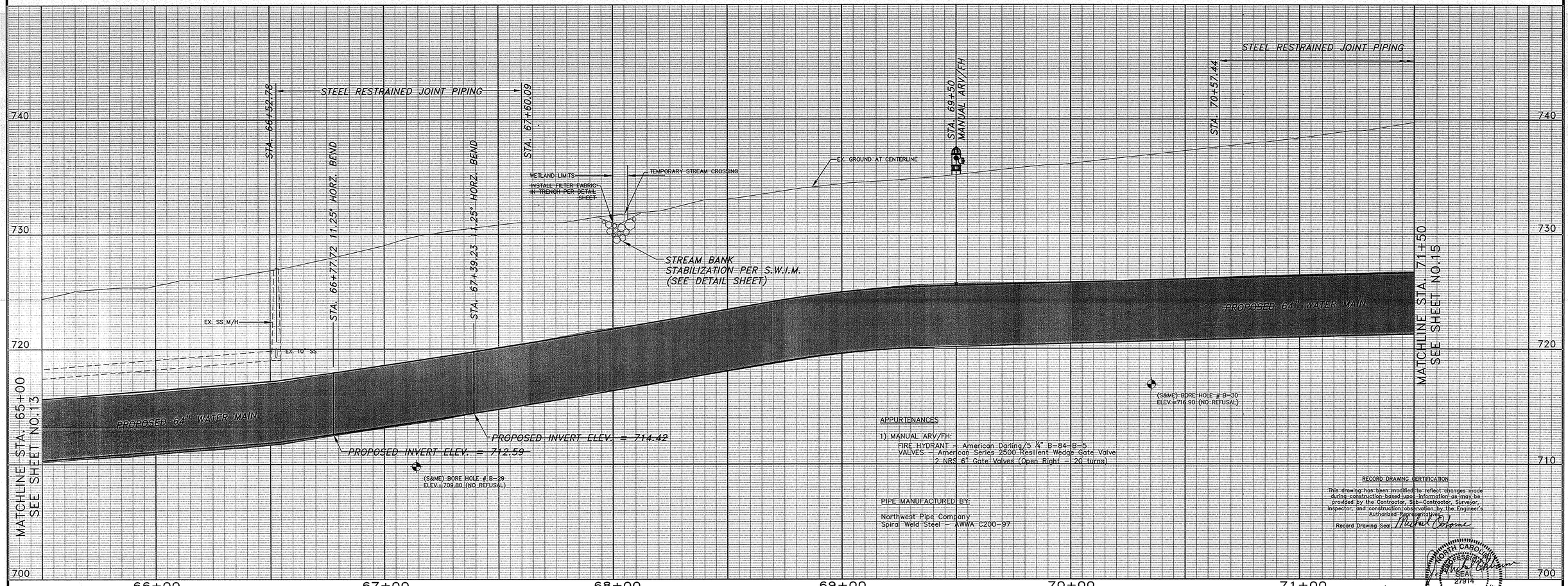
CHARLOTTE–MECKLENBURG UTILITIES
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

446-02-227 Job No.	File No.
Scales	
PLAN	1" = 20'
PROFILE Hor.	1" = 20'
Vert.	1" = 4'
JGV	NOV 2009
As Built	Date
M&C	JEM
Surveyed By	Designed By
JEM	JMO
Drawn By	Project–Engr
Approved By	Date

WEST WATER MAIN
RECORD DRAWINGS

STA. 59+50 TO STA. 65+50

Sheet 13 Of 70



APPURTENANCES

1) MANUAL ARV/FH:
FIRE HYDRANT – American Darling/5 ¼" B-84-B-5
VALVES: – American Series 2500 Resilient Wedge Gate Valve
2 NRS 6" Gate Valves (Open Right – 20 turns)

PIPE MANUFACTURED BY:

Northwest Pipe Company
Spiral Weld Steel – AWWA C200-97

RECORD DRAWING CERTIFICATION

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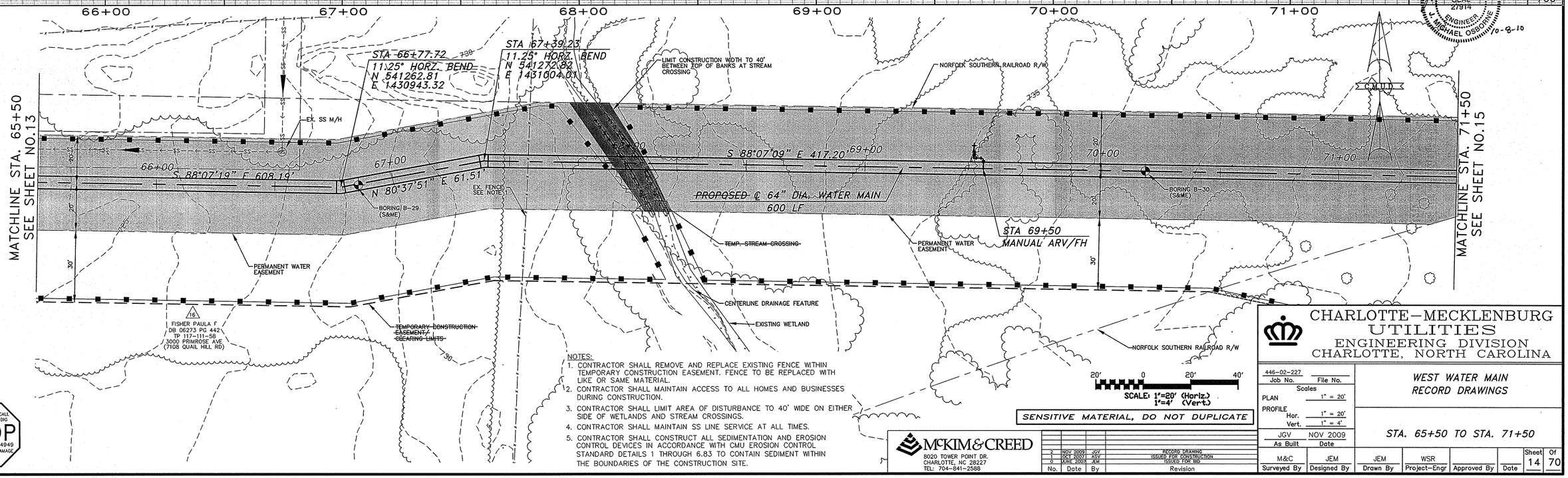
Record Drawing Seal: Michael Osborne

NORTH CAROLINA PROFESSIONAL SEAL 27914 ENGINEER J. MICHAEL OSBORNE
10-8-10



NOTES:
1. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE WITHIN TEMPORARY CONSTRUCTION EASEMENT. FENCE TO BE REPLACED WITH LIKE OR SAME MATERIAL.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL HOMES AND BUSINESSES DURING CONSTRUCTION.
3. CONTRACTOR SHALL LIMIT AREA OF DISTURBANCE TO 40' WIDE ON EITHER SIDE OF WETLANDS AND STREAM CROSSINGS.
4. CONTRACTOR SHALL MAINTAIN SS LINE SERVICE AT ALL TIMES.
5. CONTRACTOR SHALL CONSTRUCT ALL SEDIMENTATION AND EROSION CONTROL DEVICES IN ACCORDANCE WITH CMU EROSION CONTROL STANDARD DETAILS 1 THROUGH 6.83 TO CONTAIN SEDIMENT WITHIN THE BOUNDARIES OF THE CONSTRUCTION SITE.

CALL NC ONECALL BEFORE YOU DIG
STOP
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SENSITIVE MATERIAL, DO NOT DUPLICATE

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8020 TOWER POINT DR.
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TEL: 704-841-2588

No.	Date	By	Revision
2	NOV 2009	JGV	RECORD DRAWING
1	OCT 2007	ASV	ISSUED FOR CONSTRUCTION
0	JUNE 2007	JEM	ISSUED FOR BID

CHARLOTTE–MECKLENBURG UTILITIES
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

446-02-227 Job No.	File No.
Scales	
PLAN	1" = 20'
PROFILE Hor.	1" = 20'
Vert.	1" = 4'
JGV	NOV 2009
As Built	Date
M&C	JEM
Surveyed By	Designed By
JEM	WSR
Drawn By	Project–Engr
Approved By	Date

WEST WATER MAIN
RECORD DRAWINGS

STA. 65+50 TO STA. 71+50

Sheet 14 Of 70

STEEL RESTRAINED JOINT PIPING

STEEL RESTRAINED JOINT PIPING

NORFOLK SOUTHERN R/W

STA. 71+56.43
45° HORZ. BEND

EX. GROUND AT CENTERLINE

STA. 72+37.80
BEGIN CASING

STA. 72+54.93
END CASING

RR TRACKS

ELEV. = 738.10

TUNNEL LAUNCHING PIT

8'-0" MIN. COVER UNDER TRACKS

PROPOSED 64" WATER MAIN

PROPOSED INVERT ELEV. = 721.35

PROPOSED 64" DIAMETER WATER MAIN

PROPOSED 120 LF OF 90" DIAMETER TUNNEL

2:1 THEORETICAL R.R. EMBANKMENT LINE

BRICK AND MORTAR END SEAL

(S&ME) BORE HOLE # B-31
ELEV.=711.75 (NO REFUSAL)

73+83.90
END CASING

STA. 73+84.92
BEGIN CASING

49.221°
45° VERT. BEND

STA. 73+85.11
45° VERT. BEND

STA. 73+75.35
45° VERT. BEND
49.209°

PROPOSED INVERT ELEV. = 734.17

PROPOSED INVERT ELEV. = 734.00

PROPOSED INVERT ELEV. = 722.56

TUNNEL RECEIVING PIT

(S&ME) BORE HOLE # B-32
ELEV.=718.93 (NO REFUSAL)

58.647°
45° HORZ. BEND

STA. 74+16.56

EX. GROUND AT CENTERLINE

EX. WATER

STA. 76+56.30
MANUAL ARV/FH

STA. 76+64.30
10.911°
VERT. BEND

STA. 76+97.01
60° HORZ. BEND

STA. 77+03.68
11.25° HORZ. BEND

PROPOSED INVERT ELEV. = 735.57

PROPOSED INVERT ELEV. = 729.42

PROPOSED INVERT ELEV. = 728.17

APPURTENANCES

1) MANUAL ARV/FH:
FIRE HYDRANT = American Darling/5 ¼" B-84-B-5
VALVES = American Series 2500 Resilient Wedge Gate Valve
2 NRS 6" Gate Valves (Open Right – 20 turns)

PIPE MANUFACTURED BY:

Northwest Pipe Company
Spiral Weld Steel – AWWA C200-97

RECORD DRAWING CERTIFICATION

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Record Drawing Seal: Michael Osborne 10-8-15

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27814 MICHAEL OSBORNE

MATCHLINE STA. 71+50
SEE SHEET NO.14

MATCHLINE STA. 77+50
SEE SHEET NO.16

(S&ME) BORE HOLE # B-33
ELEV.=712.38 (NO REFUSAL)

72+00 73+00 74+00 75+00 76+00 77+00

NORFOLK SOUTHERN RAILROAD R/W

FISHER PAULA F
DB 08273 PG 442
TP 117-111-58
3000 PRIMROSE AVE
(9108 QUAIL HILL RD)

PERMANENT WATER EASEMENT

SILT FENCE

TEMPORARY CONSTRUCTION EASEMENT / CLEARING LIMITS

STA. 71+56.43
45° HORZ. BEND
N 541259.13
E 1431420.99

BORING #B-31 (S&ME)

72+00

S 43°04'25" E 260.13'

73+00

PROPOSED TUNNEL PIT

PROPOSED 90" TUNNEL

PROPOSED ℄ 64" DIA. WATER MAIN
300 LF

EX. ELECTRICAL BOX

NORFOLK SOUTHERN RAILROAD R/W
BORING #B-32 (S&ME)

STA 74+16.56
58.647° HORZ. BEND
N 541069.17
E 1431598.64

74+00

TREE LINE

SYLTOM LLC TALUUN LLC
DB 12512 PG 659
TP 117-103-05
2246 OLD STEELE CREEK RD

PERMANENT WATER EASEMENT (TYP)

PROPOSED TUNNEL PIT – STA 73+75.35
49.209° 45° VERT. BEND
N 541099.30
E 1431570.41

MATCHLINE STA. 74+50
SEE THIS SHEET RIGHT VIEW

MATCHLINE STA. 74+50
SEE THIS SHEET LEFT VIEW

TEMPORARY CONSTRUCTION EASEMENT / CLEARING LIMITS

EX. R/W

SILT FENCE

DUNCAN HUGH M
DB 04225 PG 913
TP 117-105-08
2200 OLD STEELE CREEK RD

SYLTOM LLC TALUUN LLC
DB 12512 PG 664
TP 117-103-07
2245 OLD STEELE CREEK RD

STA 76+64.30
10.911° 11.25° VERT. BEND
N 541119.44
E 1431841.21

STA. 76+56.30
MANUAL ARV/FH

STA 76+97.01
60° HORZ. BEND
N 541126.08
E 1431873.24

STA 77+03.68
11.25° HORZ. BEND
N 541121.11
E 1431877.67

PROPOSED ℄ 64" DIA. WATER MAIN
300 LF

75+00 S 78°16'45" E 280.45'

76+00

PI STA 77+35.63
DEFLECT UOINT
N 541095.57
E 1431893.88
S 28°04'25" E
56.49'

S 41°43'15" E
6.67'
S 30°28'15" E
31.95'

PERMANENT WATER EASEMENT

TEMPORARY DIVERSION DITCH #17

TEMPORARY DIVERSION DITCH #16

TEMPORARY SEDIMENT TRAP # 9
SIZE 786 CF
WEIR 4 FT.
SEE DETAIL SHEET

8" WL TO REMAIN IN SERVICE

SYLTOM LLC TALUUN LLC
DB 12512 PG 664
TP 117-103-07
2245 OLD STEELE CREEK RD

PERMANENT WATER EASEMENT (TYP.)

50' ROAD R/W

EXISTING OLD STEELE CREEK EXTENSION R/W

CHECK DAM

TEMPORARY CONSTRUCTION EASEMENT / CLEARING LIMITS

BORING B-33 (S&ME)

MATCHLINE STA. 77+50
SEE SHEET NO.16

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)
1"=4' (Vert.)

CALL NC ONECALL BEFORE YOU DIG
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AVOID UTILITY DAMAGE

SENSITIVE MATERIAL, DO NOT DUPLICATE

McKIM & CREED
8020 TOWER POINT DR.
CHARLOTTE, NC 28227
TEL: 704-841-2588

No.	Date	By	Revision
3	NOV 2009	JGV	RECORD DRAWING
2	MAY 2008	JBL	UPDATED ADDDSONATE LABELS
1	OCT 2007	ASV	ISSUED FOR CONSTRUCTION
0	JUNE 2007	JCM	ISSUED FOR BID

CHARLOTTE–MECKLENBURG UTILITIES
ENGINEERING DIVISION
CHARLOTTE, NORTH CAROLINA

446-02-227 Job No.	File No.
Scales	
PLAN	1" = 20'
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Vert.	1" = 4'
JGV	NOV 2009
As Built	Date
M&C	JEM
Surveyed By	Designed By
JEM	JMO
Drawn By	Project-Engr
Approved By	Date

WEST WATER MAIN
RECORD DRAWINGS

STA. 71+50 TO STA. 77+50

Sheet 15 of 70

APPENDIX D
UVF HYDROCARBON ANALYSIS RESULTS

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 4001 Morris Field Dr., Charlotte, NC

Samples taken Tuesday, March 19, 2019
Samples extracted Tuesday, March 19, 2019
Samples analysed Tuesday, March 19, 2019

Contact: Gordon Box

Operator Troy Holzschuh

Project:

H09382

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
Soil	P1-SB1 (4-5)	21.5	<0.54	<0.54	2	2	0.71	0.05	0.001	0	96.3	3.7	Deg.PHC 61.1%,(FCM),(P)
Soil	P1-SB1 (9-10)	23.2	<0.58	<0.58	0.11	0.11	0.1	0.004	<0.007	0	43.7	56.3	Residual HC,(P)
Soil	P1-SB2 (4-5)	26.5	<0.66	<0.66	9.4	9.4	4.2	0.23	0.004	0	90.8	9.2	V.Deg.PHC 72.4%,(FCM),(P)
Soil	P1-SB2 (6-7)	19.6	<0.49	<0.49	2	2	1	0.04	0.002	0	92.3	7.7	Deg.PHC 65.5%,(FCM),(P)
Soil	P1-SB2 (12-13)	25.0	<0.63	2.8	1.1	3.9	0.78	0.05	<0.008	81	18.2	0.8	Deg.Light.Fuel 45.2%,(FCM)
Soil	P1-SB3 (4-5)	31.0	<0.77	<0.77	67.2	67.2	29.8	1.6	0.016	0	93.5	6.5	V.Deg.PHC 73.2%,(FCM)
Soil	P1-SB3 (6-7)	27.3	<0.68	<0.68	4.3	4.3	2.1	0.29	0.03	0	93.5	6.5	Pyrogenic HC 69%,(FCM),(P)
Soil	P1-SB3 (12-13)	25.7	<0.64	<0.64	13.1	13.1	2.4	0.22	0.028	0	94.8	5.2	No Match found
Soil	P1-SB4 (4-5)	20.6	<0.52	<0.52	0.61	0.61	0.58	0.08	0.012	0	91.8	8.2	No HC Match. Estimated values,(FCM)
Soil	P1-SB4 (9-10)	29.9	<0.75	<0.75	1.3	1.3	1.3	0.16	0.02	0	86.6	13.4	No HC Match. Estimated values,(FCM),(P)

Initial Calibrator QC check OK Final FCM QC Check OK 102.9%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

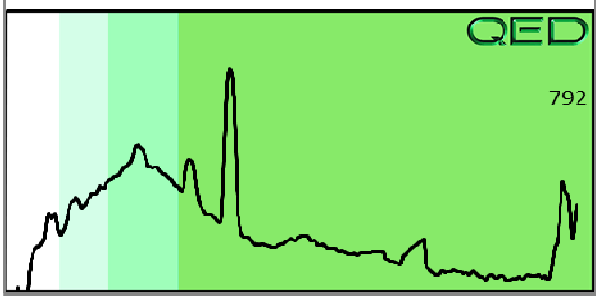
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

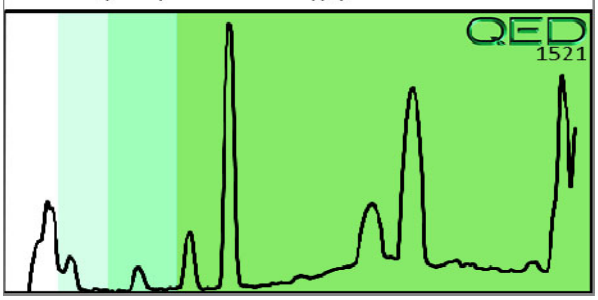
Project:

Tuesday, March 19, 2019

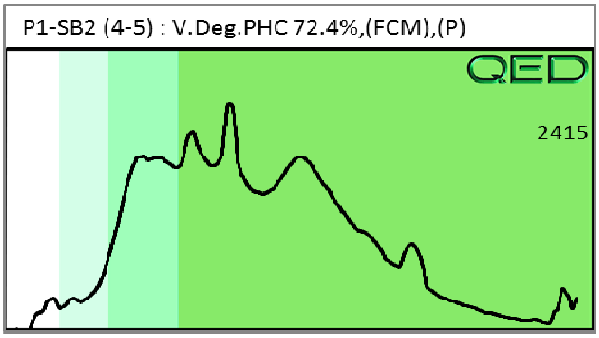
P1SB1 (4-5) : Deg.PHC 61.1%,(FCM),(P)



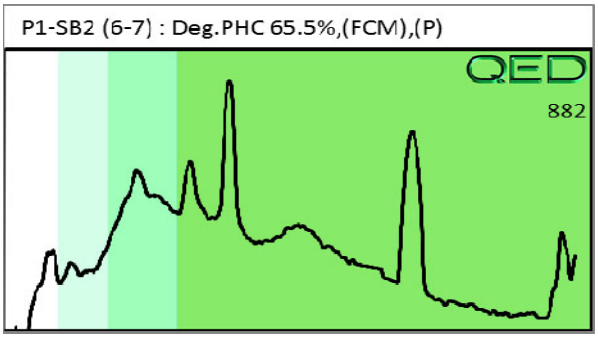
P1-SB1 (9-10) : Residual HC,(P)



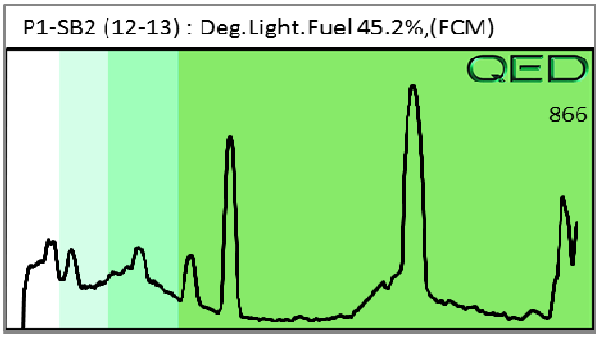
P1-SB2 (4-5) : V.Deg.PHC 72.4%,(FCM),(P)



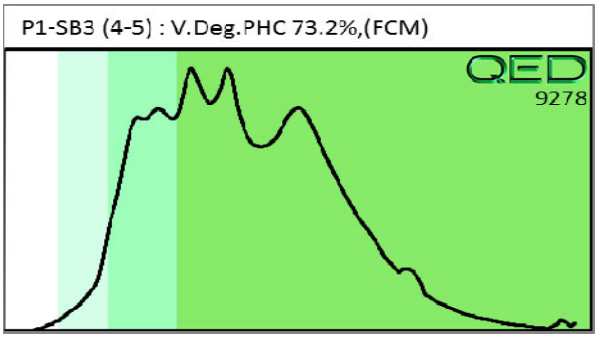
P1-SB2 (6-7) : Deg.PHC 65.5%,(FCM),(P)



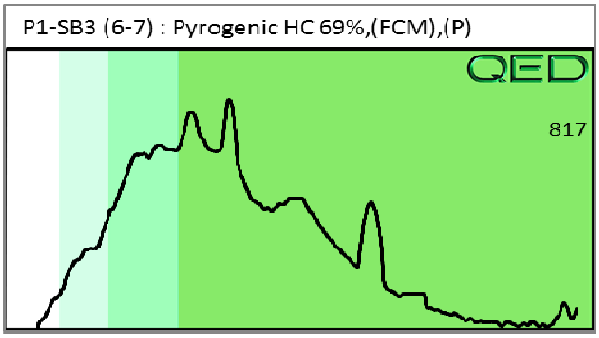
P1-SB2 (12-13) : Deg.Light.Fuel 45.2%,(FCM)



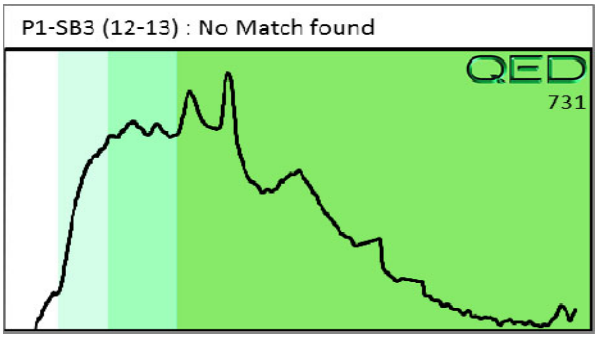
P1-SB3 (4-5) : V.Deg.PHC 73.2%,(FCM)



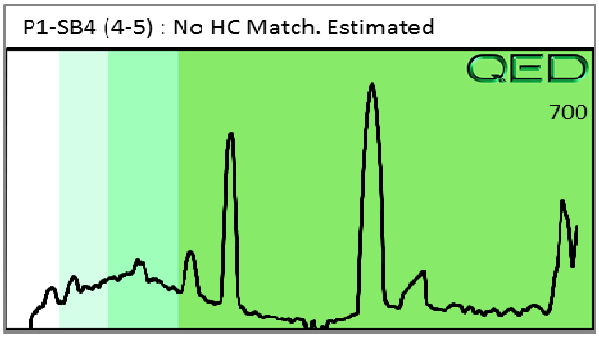
P1-SB3 (6-7) : Pyrogenic HC 69%,(FCM),(P)



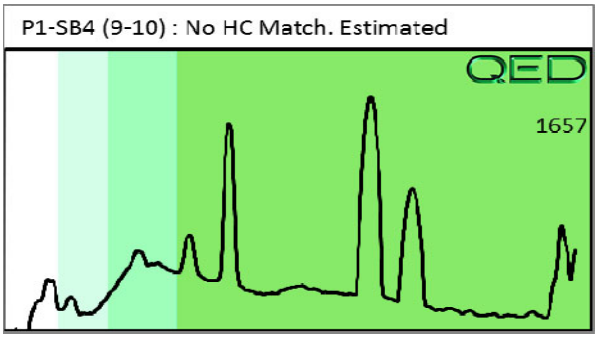
P1-SB3 (12-13) : No Match found



P1-SB4 (4-5) : No HC Match. Estimated



P1-SB4 (9-10) : No HC Match. Estimated



QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 4001 Morris Field Dr., Charlotte, NC

Samples taken Tuesday, March 19, 2019
Samples extracted Tuesday, March 19, 2019
Samples analysed Tuesday, March 19, 2019

Contact: Gordon Box

Operator Troy Holzschuh

Project:

H09382

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
Soil	P1-SB5 (4-5)	26.1	<0.65	<0.65	46.9	46.9	23.2	1.2	0.016	0	91.1	8.9	V.Deg.PHC 54.6%
Soil	P1-SB5 (9-10)	31.5	<0.79	<0.79	7.6	7.6	7.2	1.1	0.022	0	93.6	6.4	Coal Tar 53.2%,(FCM),(P)

Initial Calibrator QC check OK

Final FCM QC Check OK 99.0%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

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% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

Project:

Tuesday, March 19, 2019