

5-18-20

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SCE&G Directional Drill Report

244867

Pg 3

Date

WYHCO Boring

Contractor

FRANSISCO L.R.

Operator

Autoer Z.C.

Locator

vermeer 20+22 10' FT

Rod Size

Rod Length

Work Order #

Cultivation LN.

Street Location

Begin Station

N. Palmetto St 50

Cultivation Lane 19

End Station

N. Palmetto St 42

Cultivation Lane 19

Plan Size

Plan Type

Reference Daily #

Locate #

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		Comment
				TYPE	DEPTH					TYPE	DEPTH	
1	-30	3.0				26						
2	-20	5.5				27						
3	-5	6.8	Water			28						
4	+1	6.6				29						
5	+2	6.4				30						
6	+6	5.6				31						
7	+8	4.4				32						
8	+5	4.6				33						
9	+5	4.3	(90' FT)			34						
10	+9	3.4				35						
11						36						
12						37						
13						38						
14						39						
15						40						
16						41						
17						42						
18						43						
19						44						
20						45						
21						46						
22						47						
23						48						
24						49						
25						50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Above

LOCATION/DESCR. OF BORE: _____

CONTRACTOR COMPANY NAME: Pike

FOREMAN RESPONSIBLE FOR PROJECT: Austin Kulas

DATE WORK WAS PERFORMED: 5-18-20

HDD SUBCONTRACTOR: Wynco Boring
(COMPANY NAME & OPERATOR NAME)

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY SCE&G ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER _____

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>Vermeer 20x22</u>
	OTHER _____

TRACKING SYSTEM

☐ VERMEER DIGITRACK

☐ DITCH WITCH SUB SITE

☒ F-2 Dig. track

OTHER _____

MUD MIXING SYSTEM

☒ VERMEER 125

☐ DITCHWITCH MM9

OTHER _____

RODS

LENGTH OF RODS (ft) ☒ 10 ☐ 15 ☐ 20 ☐ OTHER _____

OF RODS 10

DRILL BIT

☒ DUCK BILL ☐ OTHER _____

☐ RAILHEAD

BREAK AWAY CONNECTOR

TYPE USED

☐ SMALLER DIA PIPE
DIAMETER _____ SDR _____

☒ MECHANICAL
SETTING (LBS) 5250

☐ N/A _____
(INCLUDE EXPLANATION IF N/A)

DID IT BREAK DURING PULLBACK?
☐ YES ☒ NO

HORIZONTAL DISTANCE OF BORE 90 (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____

TASTE SALT? ☐ Y ☒ N

SMELL CHLORINE? ☒ Y ☐ N

AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)

FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam

☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam

☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

NAME OF DRILLING FLUID MANUFACTURER: Midland

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2			
REAMER SIZE		8		
REAMER TYPE (barrel, fluted, open, etc)		Fluted		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>Max Bore</u> (# / 100 gal)	30	30		
ADDITIVE #2: <u>Quiktol</u> (# / 100 gal)	.25	.25		
ADDITIVE #3: <u>Super Vis</u> (# / 100 gal)	.25	.25		
ADDITIVE #4: (# / 100 gal)				
ADDITIVE #5: (# / 100 gal)				
ADDITIVE #6: (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90		
INITIAL FLUID DENSITY (# / gal)	9.5	9.5		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200		
EST. VOL. OF FLUID USED THIS PASS (gal)	50	150		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? WAC / H. V. L.

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

5-18-20



SCE&G Directional Drill Report

Pg 3

244867

Date

Wynco Boring

Work Order #

Cultiviti L.R.

Contractor

Francisco L.R.

Street Location

Operator

Rafael Z.C.

Begin Station

Cultivation Lane 20

Locator

vermeer 20x22 10 FT

End Station

Pipe/Rod Size

Rod Length

Plan Size

Plan Type

Reference Daily #

Locate #

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		Comment
				TYPE	DEPTH					TYPE	DEPTH	
1	-26	2.10				26						
2	-20	4.10				27						
3	-18	5.2				28						
4	-13	6.10				29						
5	-5	7.4	storm drain			30						
6	+1	7.3				31						
7	+8	6.4				32						
8	+12	5.2	80' FT			33						
9	+15	4.0				34						
10						35						
11						36						
12						37						
13						38						
14						39						
15						40						
16						41						
17						42						
18						43						
19						44						
20						45						
21						46						
22						47						
23						48						
24						49						
25						50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: _____

DATE WORK WAS PERFORMED: 5-18-20

LOCATION/DESCR. OF BORE: _____

HDD SUBCONTRACTOR: WYNCO Boring
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: _____

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY SCE&G ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER _____

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>Vermeer 20x22</u>
	OTHER _____

TRACKING SYSTEM

☐ VERMEER DIGITRACK
☐ DITCH WITCH SUB SITE
☒ <u>F2 Digitrack</u>
OTHER _____

MUD MIXING SYSTEM

☒ VERMEER 125
☐ DITCHWITCH MM9
OTHER _____

RODS

LENGTH OF RODS (ft)

☒ 10 ☐ 15 ☐ 20 ☐ OTHER _____

OF RODS 7

DRILL BIT

☒ DUCK BILL ☐ OTHER _____

☐ RAILHEAD

BREAK AWAY CONNECTOR

TYPE USED

☐ SMALLER DIA PIPE
DIAMETER _____ SDR _____

☒ MECHANICAL
SETTING (LBS) 4,950

☐ N/A _____
(INCLUDE EXPLANATION IF N/A)

DID IT BREAK DURING PULLBACK ?

☐ YES ☒ NO

HORIZONTAL DISTANCE OF BORE 70' (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____

TASTE SALT ? ☐ Y ☒ N

SMELL CHLORINE ? ☒ Y ☐ N

AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)

FINAL pH X FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam

☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam

☐ Marl ☐ Granite ☐ Other: _____

(2)

DIRECTIONAL DRILLING AS-BUILT FORM

NAME OF DRILLING FLUID MANUFACTURER:

miswork

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2			
REAMER SIZE		8"		
REAMER TYPE (barrel, fluted, open, etc)		Fluted		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>MaxDote</u> (# / 100 gal)	30	30		
ADDITIVE #2: _____ (# / 100 gal)				
ADDITIVE #3: _____ (# / 100 gal)				
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90		
INITIAL FLUID DENSITY (# / gal)	95	95		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200		
EST. VOL. OF FLUID USED THIS PASS (gal)	50	50		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT?

vac / haul

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

SCE&G Directional Drill Report

5-19-20

244867

Pg 2

Date

WYCO BORING

Work Order #

Cultivation L.A.

Contractor

FRANCISCO L.D.

Street Location

N. Palmetto Fort 254'

Cultivation 24'

Operator

Rafael Z.C.

Begin Station

Locator

VERMEER 20422 10' FT

End Station

No Palmetto Fort 654

Cultivation 20

Pipe/Rod Size

Rod Length

Plan Size

Plan Type

Reference Daily #

Locate #

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		Comment
				TYPE	DEPTH					TYPE	DEPTH	
1	-26	3.0				26	-2	10.4				
2	-26	5.8				27	+0	10.1				
3	-21	8.2				28	-1	10.4				
4	-10	9.3	Storm drain			29	-2	10.6				
5	-4	9.6				30	+1	10.4				
6	+0	9.6				31	+2	10				
7	-1	9.8				32	+4	9.9				
8	-0	9.9				33	+1	10				
9	+1	9.7				34	+4	9.6				
10	-2	10				35	+4	9.0				
11	+0	9.1				36	+5	8.6				
12	-1	10.1				37	+8	8.0				
13	+0	10				38	+10	7.4				
14	+1	9.10				39	+12	5.4				
15	-1	10	Power			40	+15	4.3				
16	+0	10				41	+13	3.9				
17	-1	10.1				42	+10	3.6				
18	+2	9.8				43						
19	+1	9.7				44						
20	+2	9.5				45						
21	-1	9.8				46						
22	+1	9.6				47						
23	-2	9.10				48						
24	-1	10				49						
25	-0	10.1				50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: G 7354 Rifle Range Rd Napa Palatka DATE WORK WAS PERFORMED: 5-19-2020

LOCATION/DESCR. OF BORE: Fort W

HDD SUBCONTRACTOR: Wyooco Boring
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: _____

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY DOMINION ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>VERMEER-20X22</u>
	OTHER _____

TRACKING SYSTEM

☐ VERMEER DIGITRACK
☐ DITCH WITCH SUB SITE
☒ <u>F2 Digitrack</u>
OTHER _____

MUD MIXING SYSTEM

☒ VERMEER 125
☐ DITCHWITCH MM9
OTHER _____

RODS

LENGTH OF RODS (ft)
☒ 10 ☐ 15 ☐ 20 ☐ OTHER
OF RODS <u>42</u>

DRILL BIT

☒ DUCK BILL	☐ OTHER
☐ RAILHEAD	

BREAK AWAY CONNECTOR

TYPE USED	
☐ SMALLER DIA PIPE	DIAMETER _____ SDR _____
☒ MECHANICAL	SETTING (LBS) <u>5,250</u>
☐ N/A	(INCLUDE EXPLANATION IF N/A)
DID IT BREAK DURING PULLBACK?	
☐ YES	☐ NO

HORIZONTAL DISTANCE OF BORE <u>400'</u>	(ft)
PIPE STRING DISTANCE OF BORE _____	(ft)

MAKE UP WATER

INITIAL pH <u>8</u>	INITIAL HARDNESS (ppm) _____
TASTE SALT ?	☐ Y ☒ N
SMELL CHLORINE?	☒ Y ☐ N
AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)	
FINAL pH <u>8</u>	FINAL HARDNESS (ppm) _____

SOIL TYPE:	☐ Clay	☐ Silt	☒ Sand	☐ Silty Clay	☐ Sandy Clay	☐ Sandy Clay Loam
	☐ Silty Clay Loam	☐ Clay Loam	☐ Silt Loam	☐ Sandy Loam	☐ Loamy Sand	☐ Shale
	☐ Marl	☐ Granite	☐ Other: _____			☐ Loam

DIRECTIONAL DRILLING AS-BUILT FORM

NAME OF DRILLING FLUID MANUFACTURER: MISWACO

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2"			
REAMER SIZE		8"	8"	
REAMER TYPE (barrel, fluted, open, etc)		Fluted	Fluted	
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>max bore</u> (# / 100 gal)	30	30	30	
ADDITIVE #2: <u>quickol</u> (# / 100 gal)	-25	-25	-25	
ADDITIVE #3: <u>super-wis</u> (# / 100 gal)	-25	-25	-25	
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90	90	
INITIAL FLUID DENSITY (# / gal)	9.5	9.5	9.5	
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200	1200	
EST. VOL. OF FLUID USED THIS PASS (gal)	400	1700	450	
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25	20-25	
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? vac / Hauled

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

SCE&G Directional Drill Report

Pg 3

244867

Date 5-20-20 (4)
WTHCO Boring
 Contractor FRANCISCO L-R
 Operator Rafael Z C
 Locator Werner 20+22 10' FI
 Pipe/Rod Size _____ Rod Length _____

Work Order # _____
Cultiviti LA Cultivation for _____
 Street Location _____
 Begin Station _____
 End Station 4"
 Plan Size _____ Plan Type _____

Reference Daily #

Locate #

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		Comment
				TYPE	DEPTH					TYPE	DEPTH	
1	-26	2.11				26						
2	-15	4.3				27						
3	-8	5.0				28						
4	-2	5.6				29						
5	-3	5.11				30						
6	-0	6.0				31						
7	-1	6.2				32						
8	+1	6.0	water			33						
9	+5	5.5				34						
10	+1	4.4	(100' FI)			35						
11	+12	3.6				36						
12						37						
13						38						
14						39						
15						40						
16						41						
17						42						
18						43						
19						44						
20						45						
21						46						
22						47						
23						48						
24						49						
25						50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: 67359

DATE WORK WAS PERFORMED: 5-20-2020

LOCATION/DESCR. OF BORE: _____

HDD SUBCONTRACTOR: WYMANCO Drilling
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY DOMINION ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER _____

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>Vermeer 20x22</u>
	OTHER _____

TRACKING SYSTEM

☐ VERMEER DIGITRACK

☐ DITCH WITCH SUB SITE

☒ F2 Digitrack

OTHER _____

MUD MIXING SYSTEM

☒ VERMEER 125

☐ DITCHWITCH MM9

☐ _____

OTHER _____

RODS

LENGTH OF RODS (ft)

☒ 10 ☐ 15 ☐ 20 ☐ _____

OF RODS 11 OTHER _____

DRILL BIT

☒ DUCK BILL

☐ RAILHEAD

OTHER _____

BREAK AWAY CONNECTOR

TYPE USED

☐ SMALLER DIA PIPE

DIAMETER _____ SDR _____

☒ MECHANICAL

SETTING (LBS) 5,250

☐ N/A _____
(INCLUDE EXPLANATION IF N/A)

DID IT BREAK DURING PULLBACK?

☐ YES ☐ NO

HORIZONTAL DISTANCE OF BORE 100' (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____

TASTE SALT? ☐ Y ☒ N

SMELL CHLORINE? ☒ Y ☐ N

AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)

FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam

☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam

☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

4/1

NAME OF DRILLING FLUID MANUFACTURER:

miswac d

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2			
REAMER SIZE		8"		
REAMER TYPE (barrel, fluted, open, etc)		fluted		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>MaxBore</u> (# / 100 gal)	30	30		
ADDITIVE #2: _____ (# / 100 gal)				
ADDITIVE #3: _____ (# / 100 gal)				
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90		
INITIAL FLUID DENSITY (# / gal)	95	95		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200		
EST. VOL. OF FLUID USED THIS PASS (gal)	100	50		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT?

vac / hole

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

SCE&G Directional Drill Report

5-20-20

67359

244867

8-4

Date
WYCO BORING

Contractor
FRANCISCO L.R.

Operator
Rafael Z. C.

Locator
Vermeer 20122 10' FT

File/Rod Size
Rod Length

Work Order #
Cultiviti L.N.

Street Location

Begin Station
Cultivation Lane

End Station
Cultivation Lane

Plan Size
Plan Type

Reference Daily #

Locate #

				Existing Utilities						Existing Utilities			
ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	Comment	
1	-26	2.7				26							
2	-18	4.3				27							
3	-12	5.6				28							
4	-11	6.5				29							
5	-5	8.8	STOP IN CROWN			30							
6	+3	6.0				31							
7	+10	4.11	(70' FT)			32							
8	+12	3.6				33							
9						34							
10						35							
11						36							
12						37							
13						38							
14						39							
15						40							
16						41							
17						42							
18						43							
19						44							
20						45							
21						46							
22						47							
23						48							
24						49							
25						50							

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Rifle Range Rd & North Palmetto Farm Pr

DATE WORK WAS PERFORMED: 5-20-2020

LOCATION/DESCR. OF BORE: _____

HDD SUBCONTRACTOR: Wynco Boring
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY DOMINION ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER _____

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>Vermeer 20x22</u>
	☐ OTHER _____

TRACKING SYSTEM

☐ VERMEER DIGITRACK
☐ DITCH WITCH SUB SITE
☒ <u>F2 Digitrack</u>
☐ OTHER _____

MUD MIXING SYSTEM

☒ VERMEER 125
☐ DITCHWITCH MM9
☐ OTHER _____

RODS

LENGTH OF RODS (ft) ☒ 10 ☐ 15 ☐ 20 ☐ OTHER _____

OF RODS 8

DRILL BIT

☒ DUCK BILL	☐ OTHER _____
☐ RAILHEAD	

BREAK AWAY CONNECTOR

TYPE USED

☐ SMALLER DIA PIPE
DIAMETER _____ SDR _____

☒ MECHANICAL
SETTING (LBS) 5,250

☐ N/A _____
(INCLUDE EXPLANATION IF N/A)

DID IT BREAK DURING PULLBACK?
☐ YES ☐ NO

HORIZONTAL DISTANCE OF BORE 70' (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____

TASTE SALT? ☐ Y ☒ N

SMELL CHLORINE? ☒ Y ☐ N

AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)

FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam

☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam

☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

NAME OF DRILLING FLUID MANUFACTURER: Dr. Kewell

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	<u>4 1/2</u>			
REAMER SIZE		<u>8"</u>		
REAMER TYPE (barrel, fluted, open, etc)		<u>Fluted</u>		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO	☒ YES ☐ NO
ADDITIVE #1: <u>Apex Bore</u> (# / 100 gal)	<u>30</u>	<u>20</u>		
ADDITIVE #2: _____ (# / 100 gal)				
ADDITIVE #3: _____ (# / 100 gal)				
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	<u>90</u>	<u>90</u>		
INITIAL FLUID DENSITY (# / gal)	<u>95</u>	<u>95</u>		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	<u>1200</u>	<u>1200</u>		
EST. VOL. OF FLUID USED THIS PASS (gal)	<u>50</u>	<u>50</u>		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	<u>8-10</u>	<u>20-25</u>		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? vac / Hawk

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

SCE&G Directional Drill Report

5-21-20

6

244867

Pg 1 of 2

Date

WYNCO Boring

Work Order #

Cultiviti LN.

Contractor

FRANISCO LP.

Street Location

N. Palmetto Fort 660 Cultivation 20

Operator

Rafael Z C

Begin Station

N. Palmetto Fort 1020 Cultivation 21

Locator

vermeer 20x22 10' FT

End Station

4'

Pipe/Rod Size

Rod Length

Plan Size

Plan Type

Reference Daily #

Locate #

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		Comment
				TYPE	DEPTH					TYPE	DEPTH	
1	-28	2.9				26	-0	11.1				
2	-20	3.6				27	+3	10.10				
3	-13	6.8				28	-0	10.11				
4	-7	7.6				29	+1	10.9				
5	-7	8.1				30	+2	10.5				
6	-4	8.7				31	+4	10.2				
7	-4	9.4				32	+6	9.0				
8	-1	9.7				33	+15	7.6				
9	-3	9.11				34	+20	5.4				
10	-3	10.1				35	+20	4.6				
11	-1	10.4				36	+18	4.2				
12	+0	10.3				37	+20	3.7				
13	+0	10.4				38						
14	+1	10.1				39						
15	+0	10				40						
16	-1	10.3				41						
17	-0	10.7				42						
18	-1	10.11				43						
19	-1	11				44						
20	+1	10.8				45						
21	-1	10.11				46						
22	-0	11				47						
23	+2	10.7				48						
24	+1	10.5				49						
25	-1	10.8				50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Rifle Range Rd to Norm Palmetto Fwy
 LOCATION/DESCR. OF BORE: Feeder
 CONTRACTOR COMPANY NAME: Pike
 FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

DATE WORK WAS PERFORMED: 5-21-2020
 HDD SUBCONTRACTOR: WYNCO Drilling
(COMPANY NAME & OPERATOR NAME)
 HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)
 MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY SCE&G ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

TRACKING SYSTEM

☐ VERMEER DIGITRACK
☐ DITCH WITCH SUB SITE
☒ E2 Digitrack
☐ OTHER

MUD MIXING SYSTEM

☒ VERMEER 125
☐ DITCHWITCH MM9
☐ OTHER

HDD MACHINE USED

☐ VERMEER 7 x 11
☐ VERMEER 16 x 20a
☐ VERMEER 18 x 22
☐ VERMEER 24 x 40
☐ VERMEER 36 x 50
☐ DITCH WITCH 27 x 20
☒ VERMEER 20x22
☐ OTHER

RODS

LENGTH OF RODS (ft)
☒ 10 ☐ 15 ☐ 20 ☐ OTHER
 # OF RODS 37

DRILL BIT

☒ DUCK BILL ☐ OTHER
☐ RAILHEAD

BREAK AWAY CONNECTOR

TYPE USED
☐ SMALLER DIA PIPE
 DIAMETER _____ SDR _____
☒ MECHANICAL
 SETTING (LBS) 5,250
☐ N/A (INCLUDE EXPLANATION IF N/A)
 DID IT BREAK DURING PULLBACK?
☐ YES ☐ NO

HORIZONTAL DISTANCE OF BORE 360' (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____
 TASTE SALT? ☐ Y ☒ N
 SMELL CHLORINE? ☒ Y ☐ N
 AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)
 FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam
☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam
☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

Procedure 1015
Page 25 of 28
Effective Date: 1/1/10

NAME OF DRILLING FLUID MANUFACTURER: Misvaco

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2"			
REAMER SIZE		8"	8"	
REAMER TYPE (barrel, fluted, open, etc)		Fluted	Fluted	
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>Max Bore</u> (# / 100 gal)	30	30	30	
ADDITIVE #2: <u>Quicktrol</u> (# / 100 gal)	25	25	25	
ADDITIVE #3: <u>Super-Vis</u> (# / 100 gal)	25	25	25	
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90	90	
INITIAL FLUID DENSITY (# / gal)	9.5	9.5	9.5	
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200	1200	
EST. VOL. OF FLUID USED THIS PASS (gal)	450	1500	350	
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-21	20-21	
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? vac / Hauled

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

SCE&G Directional Drill Report

Pg 1

5-26-20

7

244867

Date

Work Order #

WYNCO BORING

Cultivation L.V.

Contractor

Street Location

FRANCISCO L.R.

Operator

Begin Station

Rafael Z. C.

Rifle Range Rd 120

cultivation 30

Locator

End Station

vermeer 20x22 10' FT

Rifle Range Rd 20

cultivation

Pipe/Rod Size

Rod Length

Plan Size

Plan Type

Reference Daily #

Locate #

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		Comment
				TYPE	DEPTH					TYPE	DEPTH	
1	-26	2.7				26						
2	-17	3.10				27						
3	-7	5.7				28						
4	-4	6.5				29						
5	-0	6.6				30						
6	+2	6.3				31						
7	-1	6.5				32						
8	+3	6.0				33						
9	+5	5.8				34						
10	+6	5.6				35						
11	+2	5.5				36						
12	+3	5.2				37						
13	-2	5.5				38						
14	+4	5.0	140' FT			39						
15	+6	4.7				40						
16						41						
17						42						
18						43						
19						44						
20						45						
21						46						
22						47						
23						48						
24						49						
25						50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: N. Palmetto Forest Rifle Range Rd

DATE WORK WAS PERFORMED: 5-26-2020

LOCATION/DESCR. OF BORE:

HDD SUBCONTRACTOR: WYNCO BORING
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY SCE&G ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

TRACKING SYSTEM

☐ VERMEER DIGITRACK
☐ DITCH WITCH SUB SITE
☒ F2 Digitrack
 OTHER _____

HDD MACHINE USED

☐ VERMEER 7 x 11
☐ VERMEER 16 x 20a
☐ VERMEER 18 x 22
☐ VERMEER 24 x 40
☐ VERMEER 36 x 50
☐ DITCH WITCH 27 x 20
☒ Vermeer 20x22
 OTHER _____

MUD MIXING SYSTEM

☒ VERMEER 125
☐ DITCHWITCH MM9
 OTHER _____

RODS

LENGTH OF RODS (ft)
☒ 10 ☐ 15 ☐ 20 ☐ OTHER
 # OF RODS 15

DRILL BIT

☒ DUCK BILL ☐ OTHER
☐ RAILHEAD

BREAK AWAY CONNECTOR

TYPE USED
☐ SMALLER DIA PIPE
 DIAMETER _____ SDR _____
☒ MECHANICAL
 SETTING (LBS) 5,260
☐ N/A (INCLUDE EXPLANATION IF N/A)
 DID IT BREAK DURING PULLBACK?
☐ YES ☐ NO

HORIZONTAL DISTANCE OF BORE 140' (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____
 TASTE SALT? ☐ Y ☒ N
 SMELL CHLORINE? ☒ Y ☐ N
 AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)
 FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam
☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam
☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

Procedure 1015
Page 25 of 28
Effective Date: 1/1/10

NAME OF DRILLING FLUID MANUFACTURER: Miswaco

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2"			
REAMER SIZE		8"	8"	
REAMER TYPE (barrel, fluted, open, etc)		Fluted	Fluted	
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO
ADDITIVE #1: <u>max bore</u> (# / 100 gal)	30	30	30	
ADDITIVE #2: <u>quicktol</u> (# / 100 gal)	.25	.25	.25	
ADDITIVE #3: <u>super-vis</u> (# / 100 gal)	.25	.25	.25	
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90	90	
INITIAL FLUID DENSITY (# / gal)	9.5	9.5	9.5	
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)	rix			
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200	1200	
EST. VOL. OF FLUID USED THIS PASS (gal)	150	350	100	
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25	20-25	
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? vac / Hauled

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

SCE&G Directional Drill Report

P91

5-28-20

Bore 8

244867

Date

Work Order #

WYNCO BORING

Cultivation L.N.

Contractor

Street Location

FRANCISCO L.R.

Rifle Range 432

cultivation 19

Operator

Begin Station

Rafael Z. C.

End Station

Vermeer 20x22 10' FT

Rifle Range 112

Cultivation 30

File/Rod Size

Rod Length

Plan Size

Plan Type

Reference Daily #

Locate #

Existing Utilities

Existing Utilities

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	Comment
1	-28	2.8				26	-8	10.10				
2	-19	5.2				27	+0	10.8				
3	-12	6.5				28	-0	10.8				
4	-7	7.2				29	-1	10.9				
5	-8	8.8				30	+4	10.2				
6	-6	9.0				31	+8	8.3				
7	-5	9.5				32	+12	6.3				
8	-4	9.9				33	+16	4.5				
9	+0	9.8				34	+18	4.2				
10	+1	9.8				35						
11	-1	9.10				36						
12	-1	1.0				37						
13	+0	9.11				38						
14	-1	1.0				39						
15	+1	9.9				40						
16	+2	9.8				41						
17	+2	9.5				42						
18	+6	9.4				43						
19	+1	9.0				44						
20	-1	9.2				45						
21	-2	9.4				46						
22	+0	9.4				47						
23	-2	9.6				48						
24	-4	10.3				49						
25	-6	10.6				50						

320' FT

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Rifle Range Rd & N. Palmetto Fwy Dr

DATE WORK WAS PERFORMED: 5-28-2020

LOCATION/DESCR. OF BORE: _____

HDD SUBCONTRACTOR: WYNCO BORING
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY SCE&G ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11
☐ VERMEER 16 x 20a
☐ VERMEER 18 x 22
☐ VERMEER 24 x 40
☐ VERMEER 36 x 50
☐ DITCH WITCH 27 x 20
☒ Vermeer 20x22
☐ OTHER

TRACKING SYSTEM

☐ VERMEER DIGITRACK
☐ DITCH WITCH SUB SITE
☒ F2 Digitrack
☐ OTHER

MUD MIXING SYSTEM

☒ VERMEER 125
☐ DITCHWITCH MM9
☐ OTHER

RODS

LENGTH OF RODS (ft)
☒ 10 ☐ 15 ☐ 20 ☐ OTHER
 # OF RODS 33

DRILL BIT

☒ DUCK BILL ☐ OTHER
☐ RAILHEAD

BREAK AWAY CONNECTOR

TYPE USED
☐ SMALLER DIA PIPE
 DIAMETER _____ SDR _____
☒ MECHANICAL
 SETTING (LBS) 5,250
☐ N/A (INCLUDE EXPLANATION IF N/A)
 DID IT BREAK DURING PULLBACK?
☐ YES ☐ NO

HORIZONTAL DISTANCE OF BORE 320' (ft)
 PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____
 TASTE SALT? ☐ Y ☒ N
 SMELL CHLORINE? ☒ Y ☐ N
 AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)
 FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam
☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam
☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

Procedure 1015
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Effective Date: 1/1/10

NAME OF DRILLING FLUID MANUFACTURER: Miswood

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2			
REAMER SIZE		8"	8"	
REAMER TYPE (barrel, fluted, open, etc)		Fluted	Fluted	
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>MaxBore</u> (# / 100 gal)	30	30	30	
ADDITIVE #2: <u>Quickrol</u> (# / 100 gal)	25	25	25	
ADDITIVE #3: <u>Super-vis</u> (# / 100 gal)	25	25	25	
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90	90	
INITIAL FLUID DENSITY (# / gal)	9.5	9.5	9.5	
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)	9.5			
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200	1200	
EST. VOL. OF FLUID USED THIS PASS (gal)	400	1500	300	
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25	20-25	
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? vac / hauled

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

6-9-20

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SCE&G Directional Drill Report

244867

Pg 4

Date

WYNCO BORING

Work Order #

Cultivation LN.

Contractor

FRANSISCO L.R.

Street Location

Operator

RUFACI Z C.

Begin Station

Tillage 43

Cultivation 18

Locator

vermeer 20x22 10' FT

End Station

Tillage 47

Cultivation 18

Pipe/Rod Size

Rod Length

Plan Size

Plan Type

Reference Daily #

Locate #

Existing Utilities

Existing Utilities

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	Comment
1	-27	3.0				26						
2	-18	4.11				27						
3	-12	6.4				28						
4	-4	7.0				29						
5	+3	6.8				30						
6	+8	5.7				31						
7	+7	4.10				32						
8	+5	4.3				33						
9	+6	3.10	(90' FT)			34						
10	+8	3.2				35						
11						36						
12						37						
13						38						
14						39						
15						40						
16						41						
17						42						
18						43						
19						44						
20						45						
21						46						
22						47						
23						48						
24						49						
25						50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Pike Range Rd & N.P. Into Forest

DATE WORK WAS PERFORMED: 6-9-2020

LOCATION/DESCR. OF BORE: _____

HDD SUBCONTRACTOR: WYDSCO BOVING
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY DOMINION ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER _____

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>Vermeer 20x22</u>
	OTHER _____

TRACKING SYSTEM

☒ VERMEER DIGITRACK

☐ DITCH WITCH SUB SITE

☒ F-2 Digitrack

OTHER _____

MUD MIXING SYSTEM

☒ VERMEER 125

☐ DITCHWITCH MM9

☐ _____

OTHER _____

RODS

LENGTH OF RODS (ft)

☒ 10 ☐ 15 ☐ 20 ☐ OTHER _____

OF RODS 10

DRILL BIT

☒ DUCK BILL

☐ RAILHEAD

OTHER _____

BREAK AWAY CONNECTOR

TYPE USED

☐ SMALLER DIA PIPE
DIAMETER _____ SDR _____

☒ MECHANICAL

SETTING (LBS) 5,250

☐ N/A _____
(INCLUDE EXPLANATION IF N/A)

DID IT BREAK DURING PULLBACK?

☐ YES ☐ NO

HORIZONTAL DISTANCE OF BORE 90 (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____

TASTE SALT? ☐ Y ☒ N

SMELL CHLORINE? ☒ Y ☐ N

AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)

FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam

☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam

☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

Procedure 1015
Page 25 of 28
Effective Date: 1/1/10

NAME OF DRILLING FLUID MANUFACTURER: Misward

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2			
REAMER SIZE		8		
REAMER TYPE (barrel, fluted, open, etc)		fluted		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>max Bone</u> (# / 100 gal)	30	30		
ADDITIVE #2: <u>quick hole</u> (# / 100 gal)	-25	-25		
ADDITIVE #3: <u>supr-vis</u> (# / 100 gal)	-25	-25		
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90		
INITIAL FLUID DENSITY (# / gal)	9.5	9.5		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200		
EST. VOL. OF FLUID USED THIS PASS (gal)	80	150		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? vac / Houled

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

SCE&G Directional Drill Report

Pg 4

6-9-20

244867

Date

Work Order #

WYHCO BORING

Cultivation LN.

Contractor

Street Location

FRANCISCO L.R.

Operator

Begin Station

Rafael Z. C.

Cultura 120

Cultivation Lane 19

Locator

End Station

Vermeer 20+22 10 FT

Cultura, " 221

Cultivation Lane 19

File/Rod Size

Rod Length

Plan Size

Plan Type

Reference Daily #

Locate #

ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	Existing Utilities		Comment
				TYPE	DEPTH					TYPE	DEPTH	
1	-26	2.9				26						
2	-19	4.11				27						
3	-10	6.9	storm drain			28						
4	-4	7.8				29						
5	+2	7.6				30						
6	+8	6.4				31						
7	+9	5.5				32						
8	+10	4.3				33						
9	+6	3.10				34						
10	+4	3.6	100 FT			35						
11	+5	3.0				36						
12						37						
13						38						
14						39						
15			landscape Easement			40						
16						41						
17						42						
18						43						
19						44						
20						45						
21						46						
22						47						
23						48						
24						49						
25						50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Pike Range Rd. & N. Palmto Fort

DATE WORK WAS PERFORMED: 6-9-2020

LOCATION/DESCR. OF BORE:

HDD SUBCONTRACTOR: Wynco Boring
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE:

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

MAX ANTICIPATED PRESSURE:

(TO BE ENTERED BY DOMINION ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>Vermeer 20x22</u>
	☐ OTHER

TRACKING SYSTEM

☐ VERMEER DIGITRACK
☐ DITCH WITCH SUB SITE
☒ <u>Vermeer Digitrack</u>
☐ OTHER

MUD MIXING SYSTEM

☒ VERMEER 125
☐ DITCHWITCH MM9
☐ OTHER

RODS

LENGTH OF RODS (ft)
☒ 10 ☐ 15 ☐ 20 ☐ OTHER
OF RODS <u>11</u>

DRILL BIT

☒ DUCK BILL	☐ OTHER
☐ RAILHEAD	

BREAK AWAY CONNECTOR

TYPE USED	
☐ SMALLER DIA PIPE	DIAMETER _____ SDR _____
☒ MECHANICAL	SETTING (LBS) <u>5,250</u>
☐ N/A	(INCLUDE EXPLANATION IF N/A)
DID IT BREAK DURING PULLBACK?	
☐ YES	☐ NO

HORIZONTAL DISTANCE OF BORE	<u>100'</u> (ft)
PIPE STRING DISTANCE OF BORE	_____ (ft)

MAKE UP WATER

INITIAL pH <u>8</u>	INITIAL HARDNESS (ppm) _____
TASTE SALT? ☐ Y ☒ N	
SMELL CHLORINE? ☒ Y ☐ N	
AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)	
FINAL pH <u>8</u>	FINAL HARDNESS (ppm) _____

SOIL TYPE:	☐ Clay	☐ Silt	☐ Sand	☐ Silty Clay	☐ Sandy Clay	☐ Sandy Clay Loam
	☐ Silty Clay Loam	☐ Clay Loam	☐ Silt Loam	☐ Sandy Loam	☐ Loamy Sand	☐ Shale
	☐ Marl	☐ Granite	☐ Other: _____			

DIRECTIONAL DRILLING AS-BUILT FORM

NAME OF DRILLING FLUID MANUFACTURER: Miswac

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	9.75			
REAMER SIZE		8		
REAMER TYPE (barrel, fluted, open, etc)		fluted		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>Max Bore</u> (# / 100 gal)	30	30		
ADDITIVE #2: <u>Guixtral</u> (# / 100 gal)	-25	-25		
ADDITIVE #3: <u>Super-vis</u> (# / 100 gal)	-25	-25		
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90		
INITIAL FLUID DENSITY (# / gal)	9.5	9.5		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200		
EST. VOL. OF FLUID USED THIS PASS (gal)	50	200		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? vac / Hauled

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

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SCE&G Directional Drill Report

Pg 4

6-9-20

244867

Date: Wmco Boring
Contractor: Francisco L. R.
Operator: Rafael Z. C.
Locator: vermeer 20422 10' FT
Pipe/Rod Size: _____ Rod Length: _____

Work Order #: Cultiviti LN.
Street Location: _____
Begin Station: cultura 45 cultivation 20
End Station: cultura 72 cultivation 20
Plan Size: _____ Plan Type: _____

Reference Daily #

Locate #

Existing Utilities						Existing Utilities						Comment
ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	
1	-26	2.9				26						
2	-21	4.10				27						
3	-18	6.3				28						
4	-9	6.10	water			29						
5	-4	7.8				30						
6	+6	6.10				31						
7	+10	5.7				32						
8	+10	4.9				33						
9	+8	4.2				34						
10	+3	3.8				35						
11	+4	3.3				36						
12	+3	3.0	(115' FT)			37						
13	+0	3.0				38						
14						39						
15						40						
16						41						
17						42						
18						43						
19						44						
20						45						
21						46						
22						47						
23						48						
24						49						
25						50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Riftk Range Rd & No. 10th St Fort & Pr

DATE WORK WAS PERFORMED: 6-9-2020

LOCATION/DESCR. OF BORE: _____

HDD SUBCONTRACTOR: WYNCO BORING
(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE: _____
(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

MAX ANTICIPATED PRESSURE: _____
(TO BE ENTERED BY DOMINION ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER _____

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>vermeer 20x22</u>
	OTHER _____

TRACKING SYSTEM

☐ VERMEER DIGITRACK

☐ DITCH WITCH SUB SITE

☒ F2 Digitrack

OTHER _____

MUD MIXING SYSTEM

☒ VERMEER 125

☐ DITCHWITCH MM9

OTHER _____

RODS

LENGTH OF RODS (ft)

☒ 10 ☐ 15 ☐ 20 ☐ OTHER _____

OF RODS 13

DRILL BIT

☒ DUCK BILL

☐ RAILHEAD

OTHER _____

BREAK AWAY CONNECTOR

TYPE USED

☐ SMALLER DIA PIPE

DIAMETER _____ SDR _____

☒ MECHANICAL

SETTING (LBS) 5,250

☐ N/A _____
(INCLUDE EXPLANATION IF N/A)

DID IT BREAK DURING PULLBACK?

☐ YES ☐ NO

HORIZONTAL DISTANCE OF BORE 115' (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____

TASTE SALT? ☐ Y ☒ N

SMELL CHLORINE? ☒ Y ☐ N

AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)

FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam

☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam

☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

NAME OF DRILLING FLUID MANUFACTURER: Miswac

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2			
REAMER SIZE		8"		
REAMER TYPE (barrel, fluted, open, etc)		fluted		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>max Bore</u> (# / 100 gal)	30	30		
ADDITIVE #2: <u>quickset</u> (# / 100 gal)	25	25		
ADDITIVE #3: <u>Super-VIS</u> (# / 100 gal)	25	25		
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90		
INITIAL FLUID DENSITY (# / gal)	9.5	9.5		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200		
EST. VOL. OF FLUID USED THIS PASS (gal)	50X	250		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT?

vac / Hauled

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

SCE&G Directional Drill Report

Pg 5

6-10-20

12

12

244867

Date

WYHCO BORING

Work Order #

Cultivation L.V.

Contractor

FRANSISCO L.R.

Street Location

Operator

Rafael Z. C.

Begin Station

Tillage 538

Cultivation 18

Locator

Vermeer 20x22 10' FT

End Station

Tillage 413

Cultivation 18

Rod Size

Rod Length

Plan Size

Plan Type

Reference Daily #

Locate #

Existing Utilities						Existing Utilities						Comment
ROD #	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	ROD#	PITCH +/-	DEPTH	DISTANCE FROM EOP	TYPE	DEPTH	
1	-26	2.10				26						
2	-18	4.5				27						
3	-11	5.8	Power			28						
4	-5	6.2				29						
5	+2	5.10				30						
6	+4	5.4				31						
7	+3	4.8				32						
8	+5	4.6				33						
9	-1	4.8				34						
10	-5	5.6				35						
11	-4	6.1	storm drain			36						
12	+5	5.8				37						
13	+8	4.3	125' FT			38						
14	+12	3.6				39						
15						40						
16						41						
17						42						
18						43						
19						44						
20						45						
21						46						
22						47						
23						48						
24						49						
25						50						

Supervisor Signature

Customer Representative Signature

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Rifle Range Rd + N. Palmetto Fort Dr

DATE WORK WAS PERFORMED: 6-10-20

LOCATION/DESCR. OF BORE:

HDD SUBCONTRACTOR: WYNCE Boring

(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE:

(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulos

MAX ANTICIPATED PRESSURE :

(TO BE ENTERED BY SC&G ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>Vermeer 20x22</u>
	☐ OTHER

TRACKING SYSTEM

☐ VERMEER DIGITRACK

☐ DITCH WITCH SUB SITE

☒ F2 Digi track

☐ OTHER

MUD MIXING SYSTEM

☐ VERMEER 125

☐ DITCHWITCH MM9

☐ OTHER

RODS

LENGTH OF RODS (ft)

☒ 10 ☐ 15 ☐ 20 ☐ OTHER

OF RODS 13

DRILL BIT

☒ DUCK BILL

☐ RAILHEAD

☐ OTHER

BREAK AWAY CONNECTOR

TYPE USED

☐ SMALLER DIA PIPE

DIAMETER _____ SDR _____

☒ MECHANICAL

SETTING (LBS) 5250

☐ N/A

(INCLUDE EXPLANATION IF N/A)

DID IT BREAK DURING PULLBACK ?

☐ YES ☒ NO

HORIZONTAL DISTANCE OF BORE 125 (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____

TASTE SALT ? ☐ Y ☒ N

SMELL CHLORINE ? ☒ Y ☐ N

AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)

FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam

☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam

☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

NAME OF DRILLING FLUID MANUFACTURER: Misworld

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2			
REAMER SIZE		8"		
REAMER TYPE (barrel, fluted, open, etc)		Fluted		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☒ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>Max Bone</u> (# / 100 gal)	30	30		
ADDITIVE #2: <u>Ben tail</u> (# / 100 gal)	.25	.25		
ADDITIVE #3: <u>Super V's</u> (# / 100 gal)	.25	.25		
ADDITIVE #4: (# / 100 gal)				
ADDITIVE #5: (# / 100 gal)				
ADDITIVE #6: (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90		
INITIAL FLUID DENSITY (# / gal)	9.5	9.5		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200		
EST. VOL. OF FLUID USED THIS PASS (gal)	500	250		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? Vac / Haul

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.

DIRECTIONAL DRILLING AS-BUILT FORM

PROJECT NAME: Rifle Range Rd & N. Palmetto Fort

DATE WORK WAS PERFORMED: 6-10-20

LOCATION/DESCR. OF BORE:

HDD SUBCONTRACTOR: WYNCO Boring

(COMPANY NAME & OPERATOR NAME)

CONTRACTOR COMPANY NAME: Pike

HDD FLUID REPRESENTATIVE:

(ONLY IF ON-SITE)

FOREMAN RESPONSIBLE FOR PROJECT: Dustin Kulas

MAX ANTICIPATED PRESSURE :

(TO BE ENTERED BY SCE&G ENGINEER)

CARRIER PIPE

MATERIAL	NOMIAL DIA	PLASTIC SDR	STEEL WALL THICKNESS
☒ PLASTIC	☐ 2"	☐ 7	☐ .154"
	☒ 4"	☐ 11	☐ .188"
	☐ 6"	☒ 11.5	☐ .203"
☐ STEEL	☐ 8"	☐ 13.5	☐ .219"
	☐ 10"		☐ .237"
			☐ OTHER

CASING PIPE

MATERIAL	NOMINAL DIA
☐ PLASTIC	☐ 4"
	☐ 6"
☐ STEEL	☐ 8"
	☐ 10"
☐ N/A	☐ 12"

HDD MACHINE USED

☐ VERMEER 7 x 11	☐ VERMEER 24 x 40
☐ VERMEER 16 x 20a	☐ VERMEER 36 x 50
☐ VERMEER 18 x 22	☐ DITCH WITCH 27 x 20
	☒ <u>Vermeer 20x20</u>
	OTHER

TRACKING SYSTEM

☐ VERMEER DIGITRACK

☐ DITCH WITCH SUB SITE

☒ FD-Digitrack

OTHER

MUD MIXING SYSTEM

☒ VERMEER 125

☐ DITCHWITCH MM9

☐ OTHER

RODS

LENGTH OF RODS (ft)

☒ 10 ☐ 15 ☐ 20 ☐ OTHER

OF RODS 6

DRILL BIT

☒ DUCK BILL

☐ RAILHEAD

OTHER

BREAK AWAY CONNECTOR

TYPE USED

☐ SMALLER DIA PIPE

DIAMETER _____ SDR _____

☒ MECHANICAL

SETTING (LBS) 5250

☐ N/A

DID IT BREAK DURING PULLBACK ?

☐ YES ☐ NO

HORIZONTAL DISTANCE OF BORE 60 (ft)

PIPE STRING DISTANCE OF BORE _____ (ft)

MAKE UP WATER

INITIAL pH 8 INITIAL HARDNESS (ppm) _____

TASTE SALT ? ☐ Y ☒ N

SMELL CHLORINE? ☒ Y ☐ N

AMOUNT OF SODA ASH PER 100 GAL ADDED _____ (LBS)

FINAL pH 8 FINAL HARDNESS (ppm) _____

SOIL TYPE: ☐ Clay ☐ Silt ☒ Sand ☐ Silty Clay ☐ Sandy Clay ☐ Sandy Clay Loam

☐ Silty Clay Loam ☐ Clay Loam ☐ Silt Loam ☐ Sandy Loam ☐ Loamy Sand ☐ Shale ☐ Loam

☐ Marl ☐ Granite ☐ Other: _____

DIRECTIONAL DRILLING AS-BUILT FORM

NAME OF DRILLING FLUID MANUFACTURER: miswell

	PILOT BORE	REAM 1	REAM 2	REAM 3
PILOT HOLE SIZE	4 1/2"			
REAMER SIZE		8"		
REAMER TYPE (barrel, fluted, open, etc)		Fluted		
WAS PIPE PULLED BACK ON THIS PASS? (Y/N)	☐ YES ☒ NO	☒ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
ADDITIVE #1: <u>Max Bore</u> (# / 100 gal)	30	30		
ADDITIVE #2: _____ (# / 100 gal)				
ADDITIVE #3: _____ (# / 100 gal)				
ADDITIVE #4: _____ (# / 100 gal)				
ADDITIVE #5: _____ (# / 100 gal)				
ADDITIVE #6: _____ (# / 100 gal)				
INITIAL FLUID VISCOSITY (sec / qt)	90	90		
INITIAL FLUID DENSITY (# / gal)	95	95		
DENSITY OF RETURN FLUID @ BORE MIDPT (#/gal)				
DENSITY OF RETURN FLUID @ END OF BORE (#/gal)				
MAX. MUD PUMPING PRESSURE (psi, if known)	1200	1200		
EST. VOL. OF FLUID USED THIS PASS (gal)	50	50		
AVG. FLUID PUMPING RATE THIS PASS (gal/rod)	8-10	20-25		
AVG. THRUST/PULL SPEED THIS PASS (min / rod)				
INADVERTENT RETURNS (FRAC-OUTS)?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO
EXPERIENCE ANY LOSS OF RETURNS?	☐ YES ☒ NO	☐ YES ☒ NO	☐ YES ☐ NO	☐ YES ☐ NO

WHERE WERE SPENT FLUIDS DISPOSED AT? Rec/Haul

ADDITIONAL NOTES & COMMENTS:

GENERAL NOTES: ACTUAL PATH ALIGNMENT AND DEPTH OF COVER FOR CASING/CARRIER PIPE TO BE INDICATED ON AS-BUILT DRAWINGS AND TABLES. CARRIER PIPE PRESSURE TEST REPORTS TO BE INDICATED ON ATTACHED TEST REPORTS.