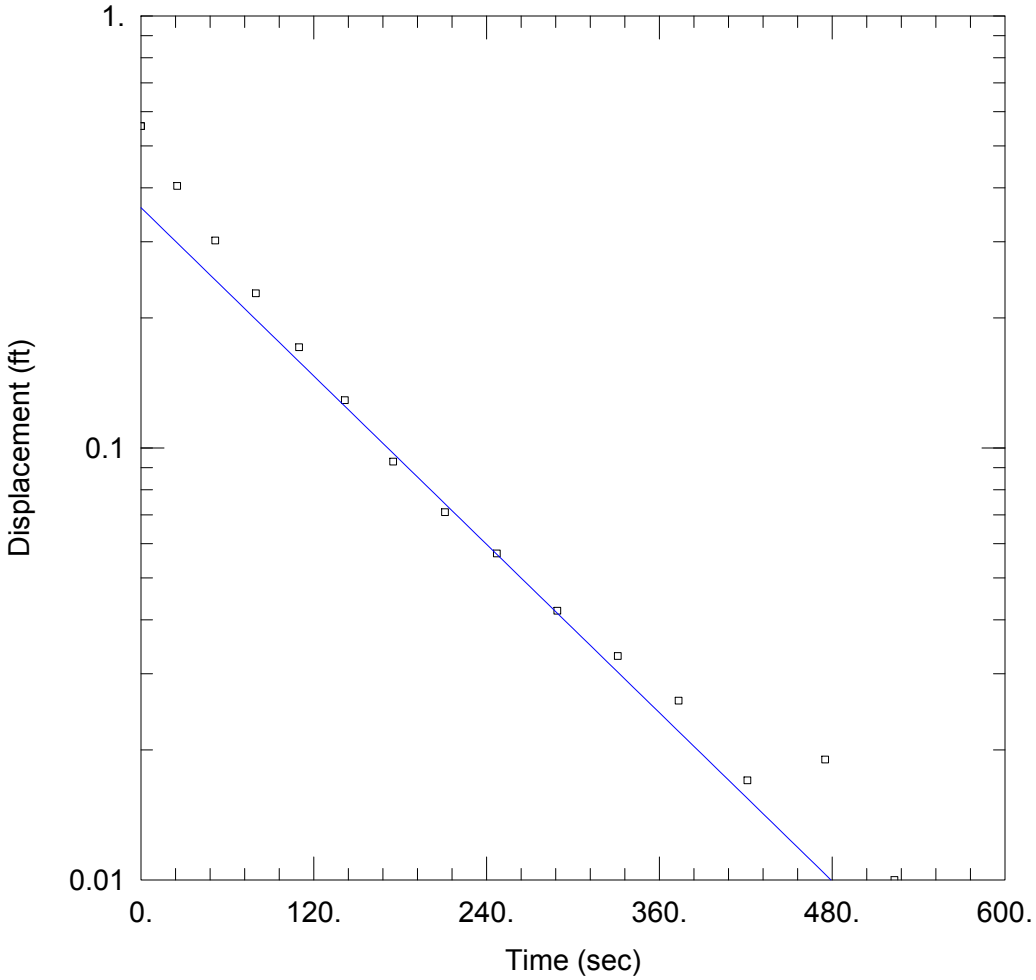
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Appendix E
Slug Test Calculations

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PZ-INT FALLING HEAD 1

Data Set: V:\...\PZ_Int_1.aqt
Date: 06/16/14 Time: 16:00:46

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Energy
Location: Sutton Generating Station
Test Well: PZ-INT
Test Date: 5/29/14

AQUIFER DATA

Saturated Thickness: 19.21 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (PZ-INT)

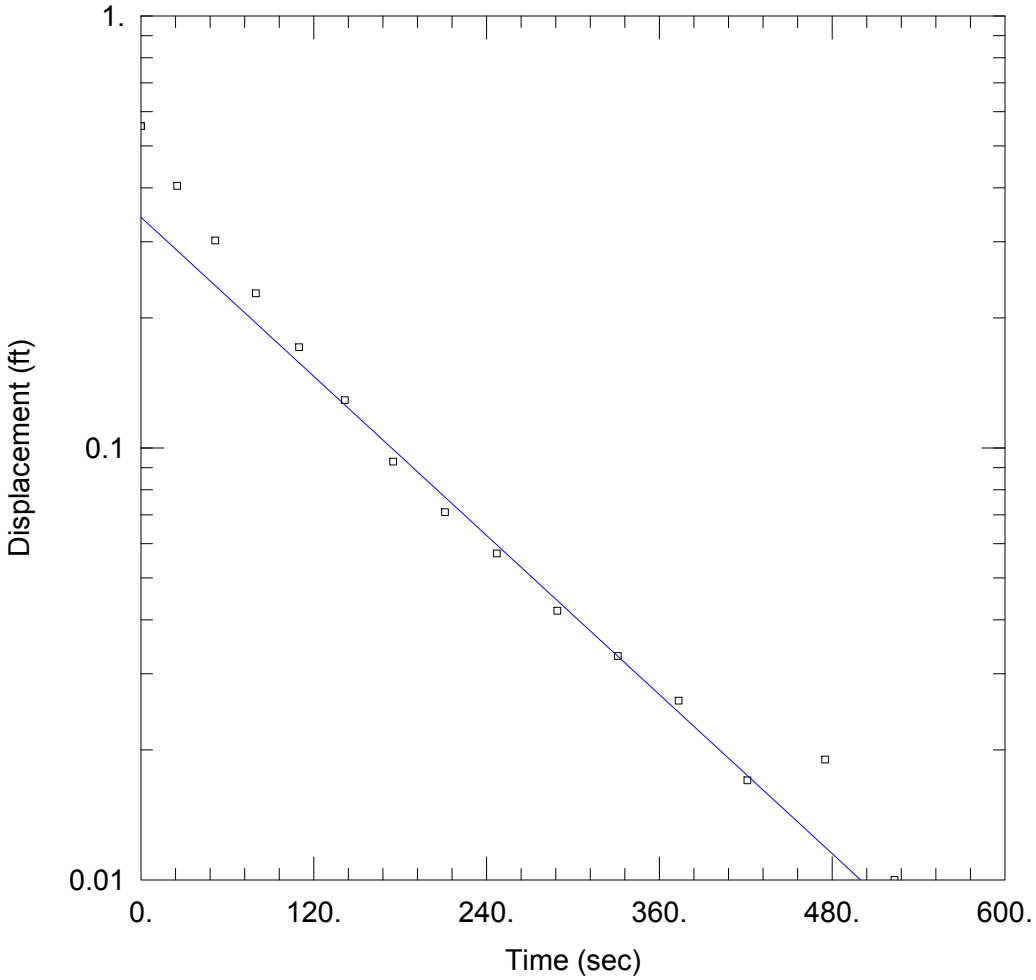
Initial Displacement: 0.556 ft
Total Well Penetration Depth: 11.31 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.48 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0006022 cm/sec y0 = 0.3599 ft

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PZ-INT FALLING HEAD 1

Data Set: V:\...\PZ_Int_falling_1.aqt
Date: 06/16/14 Time: 21:52:07

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Energy
Location: Sutton Generating Station
Test Well: PZ-INT
Test Date: 5/29/14

AQUIFER DATA

Saturated Thickness: 19.21 ft Anisotropy Ratio (Kz/Kr): 0.1

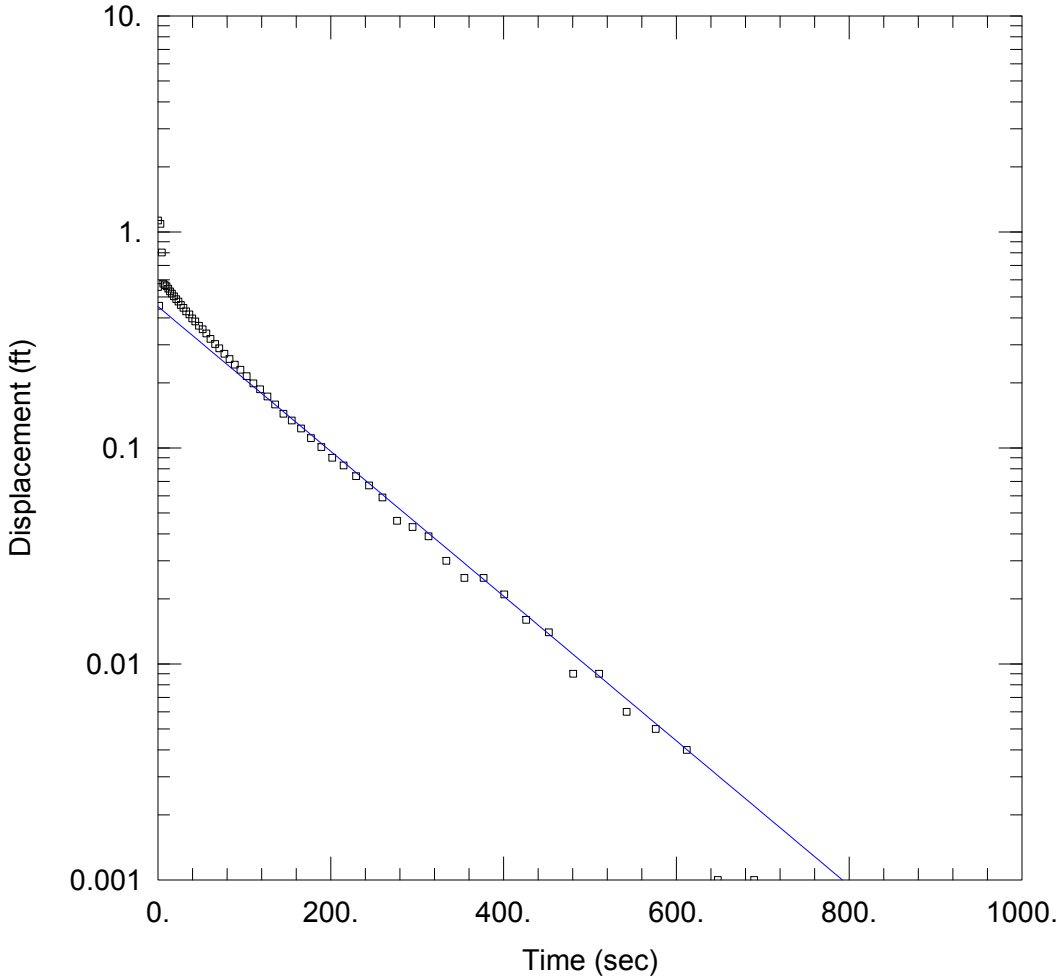
WELL DATA (PZ-INT)

Initial Displacement: 0.556 ft
Total Well Penetration Depth: 11.31 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.48 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.0007356 cm/sec
y0 = 0.3419 ft

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PZ-INT FALLING HEAD 2

Data Set: V:\...\PZ_Int_falling_2.aqt
Date: 06/16/14 Time: 16:53:37

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Energy
Location: Sutton Generating Station
Test Well: PZ-INT
Test Date: 5/29/14

AQUIFER DATA

Saturated Thickness: 19.21 ft Anisotropy Ratio (Kz/Kr): 0.1

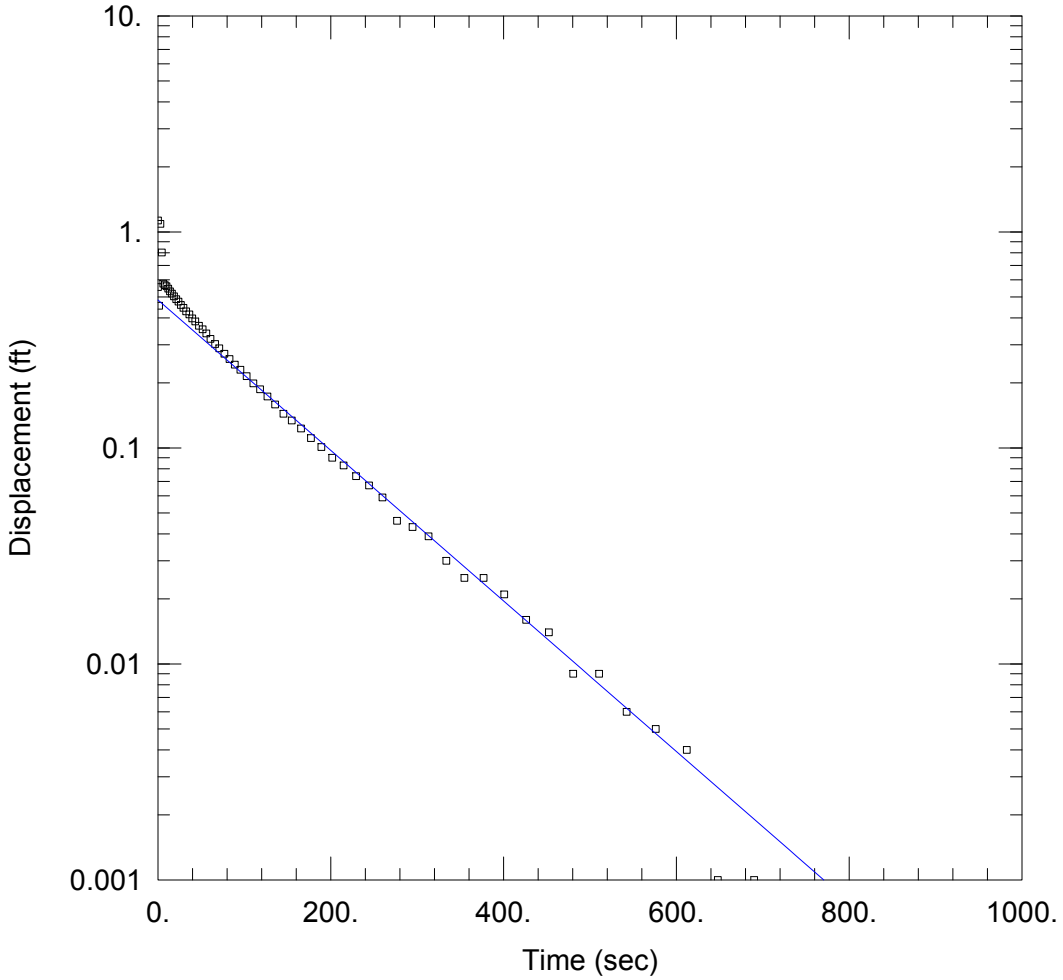
WELL DATA (PZ-INT)

Initial Displacement: 0.556 ft Static Water Column Height: 11.48 ft
Total Well Penetration Depth: 11.31 ft Screen Length: 5. ft
Casing Radius: 0.08333 ft Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.0006213 cm/sec y0 = 0.4512 ft

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PZ-INT FALLING HEAD 2

Data Set: V:\...\PZ_Int_falling_2.aqt
Date: 06/16/14 Time: 21:50:17

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Energy
Location: Sutton Generating Station
Test Well: PZ-INT
Test Date: 5/29/14

AQUIFER DATA

Saturated Thickness: 19.21 ft Anisotropy Ratio (Kz/Kr): 0.1

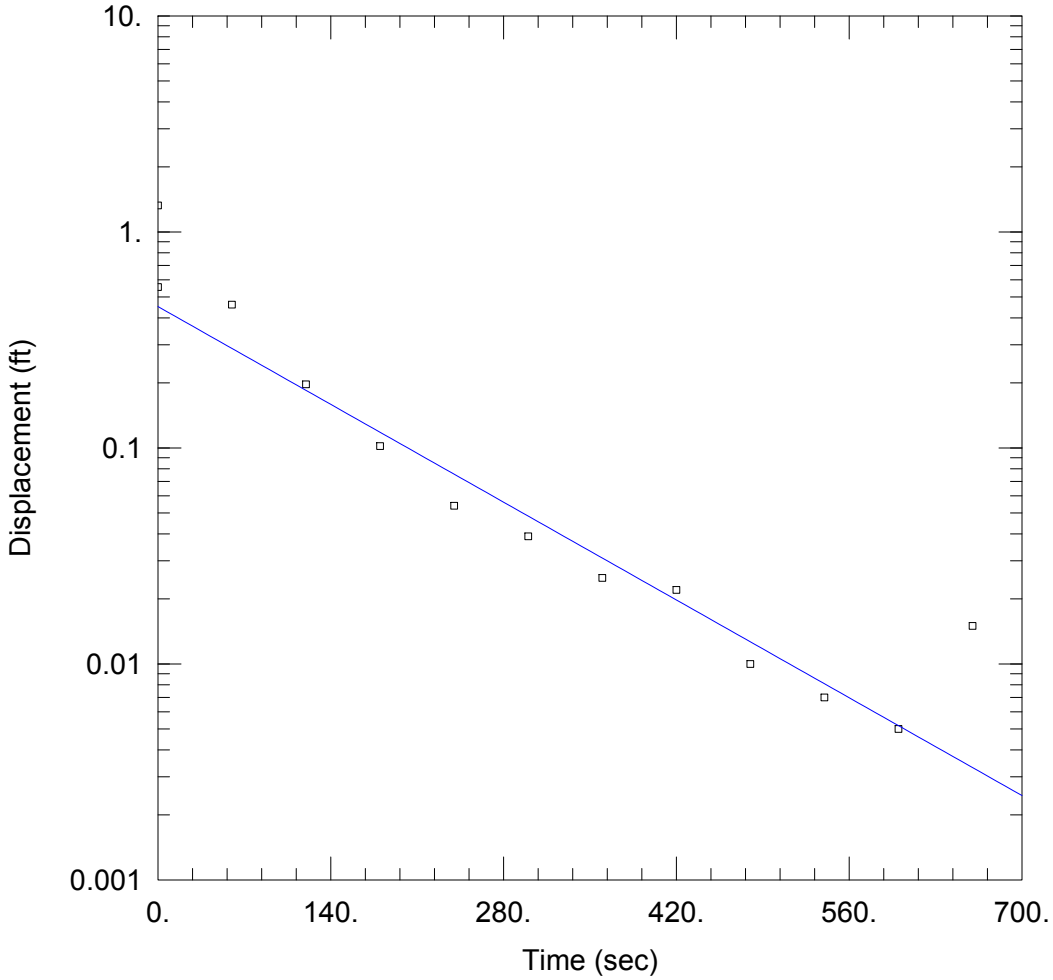
WELL DATA (PZ-INT)

Initial Displacement: 0.556 ft Static Water Column Height: 11.48 ft
Total Well Penetration Depth: 11.31 ft Screen Length: 5. ft
Casing Radius: 0.08333 ft Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 0.0008352 cm/sec y0 = 0.4844 ft

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PZ-INT RISING HEAD 1

Data Set: V:\...\PZ_Int_rising_1.aqt
Date: 06/16/14 Time: 21:55:12

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Energy
Location: Sutton Generating Station
Test Well: PZ-INT
Test Date: 5/29/14

AQUIFER DATA

Saturated Thickness: 19.21 ft Anisotropy Ratio (Kz/Kr): 0.1

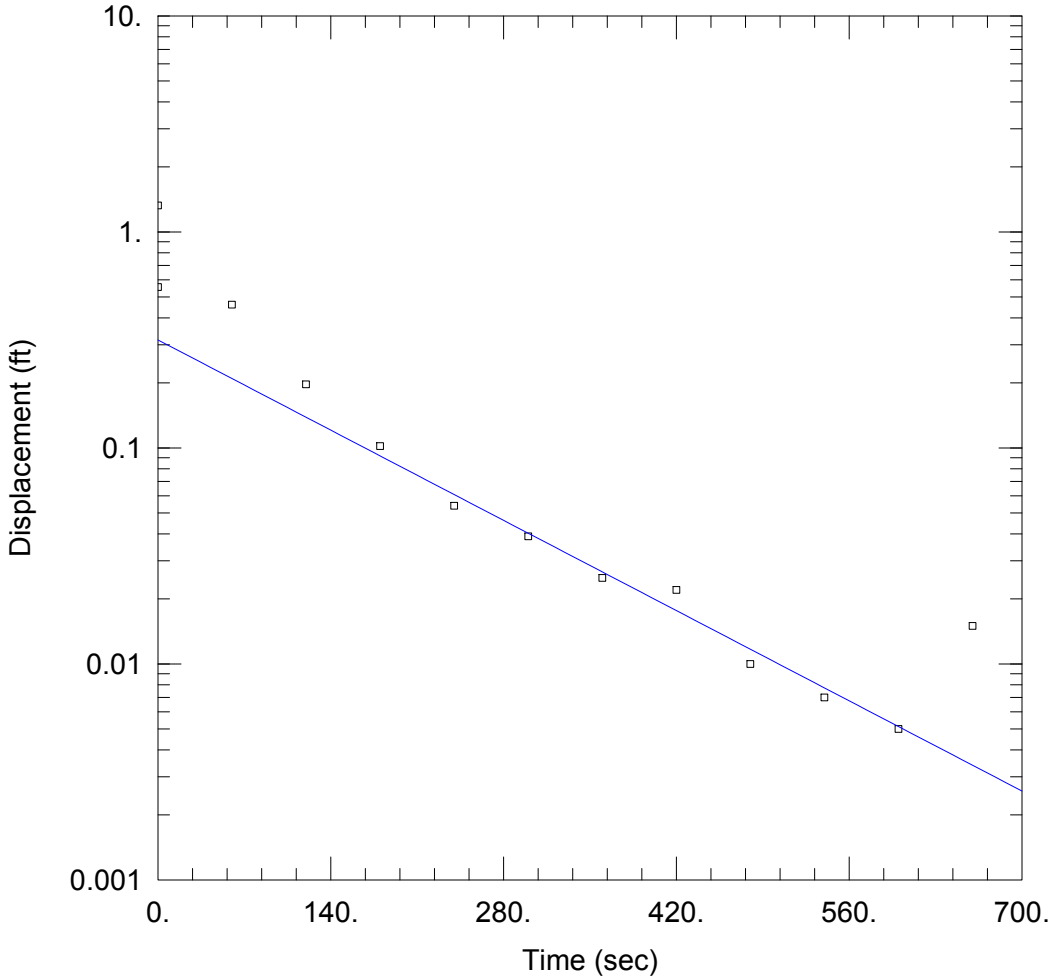
WELL DATA (PZ-INT)

Initial Displacement: 0.556 ft
Total Well Penetration Depth: 11.31 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.48 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.0005997 cm/sec y0 = 0.4512 ft

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PZ-INT RISING HEAD 1

Data Set: V:\...\PZ_Int_rising_1.aqt
Date: 06/16/14 Time: 21:54:17

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Energy
Location: Sutton Generating Station
Test Well: PZ-INT
Test Date: 5/29/14

AQUIFER DATA

Saturated Thickness: 19.21 ft Anisotropy Ratio (Kz/Kr): 0.1

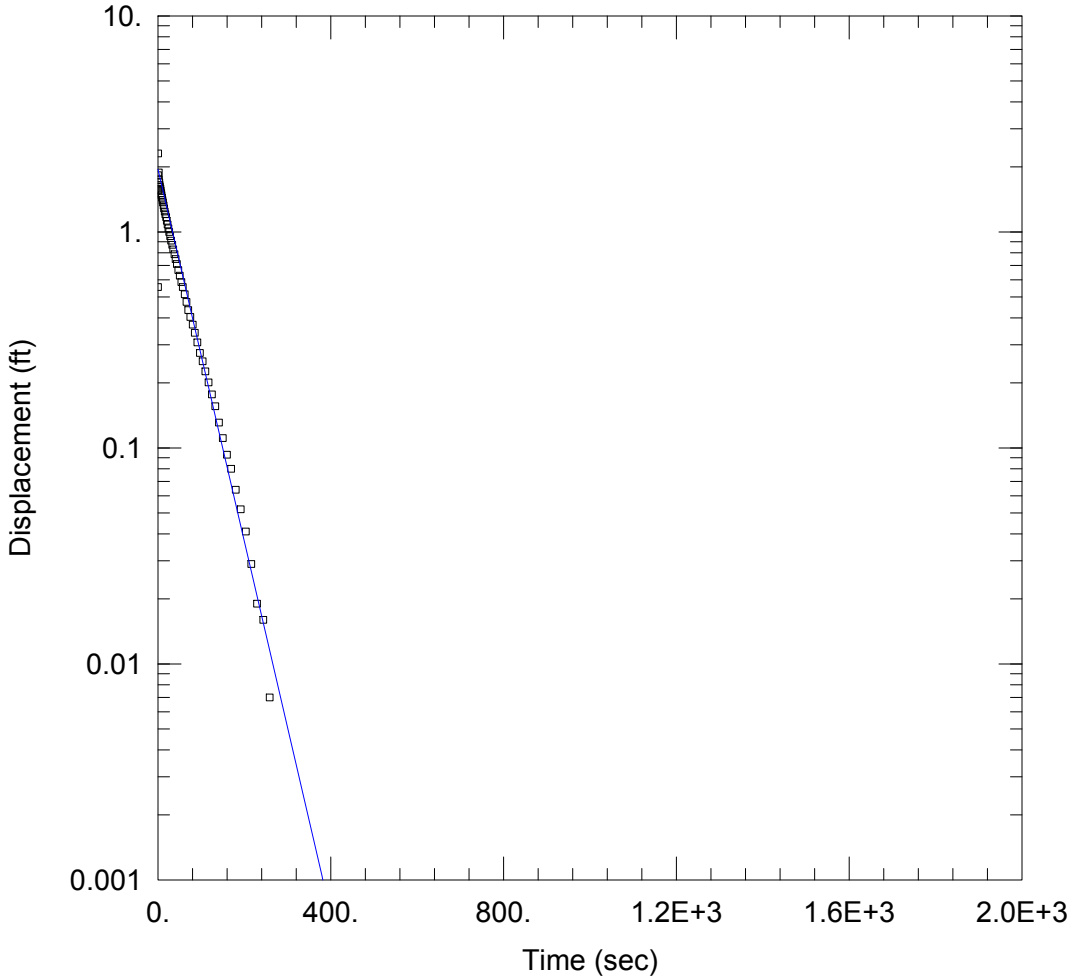
WELL DATA (PZ-INT)

Initial Displacement: 0.556 ft Static Water Column Height: 11.48 ft
Total Well Penetration Depth: 11.31 ft Screen Length: 5. ft
Casing Radius: 0.08333 ft Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 0.0007151 cm/sec y0 = 0.3162 ft

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PZ-INT RISING HEAD 2

Data Set: V:\...\PZ_Int_rising_2.aqt
Date: 06/16/14 Time: 21:45:04

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Energy
Location: Sutton Generating Station
Test Well: PZ-INT
Test Date: 5/29/14

AQUIFER DATA

Saturated Thickness: 19.21 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (PZ-INT)

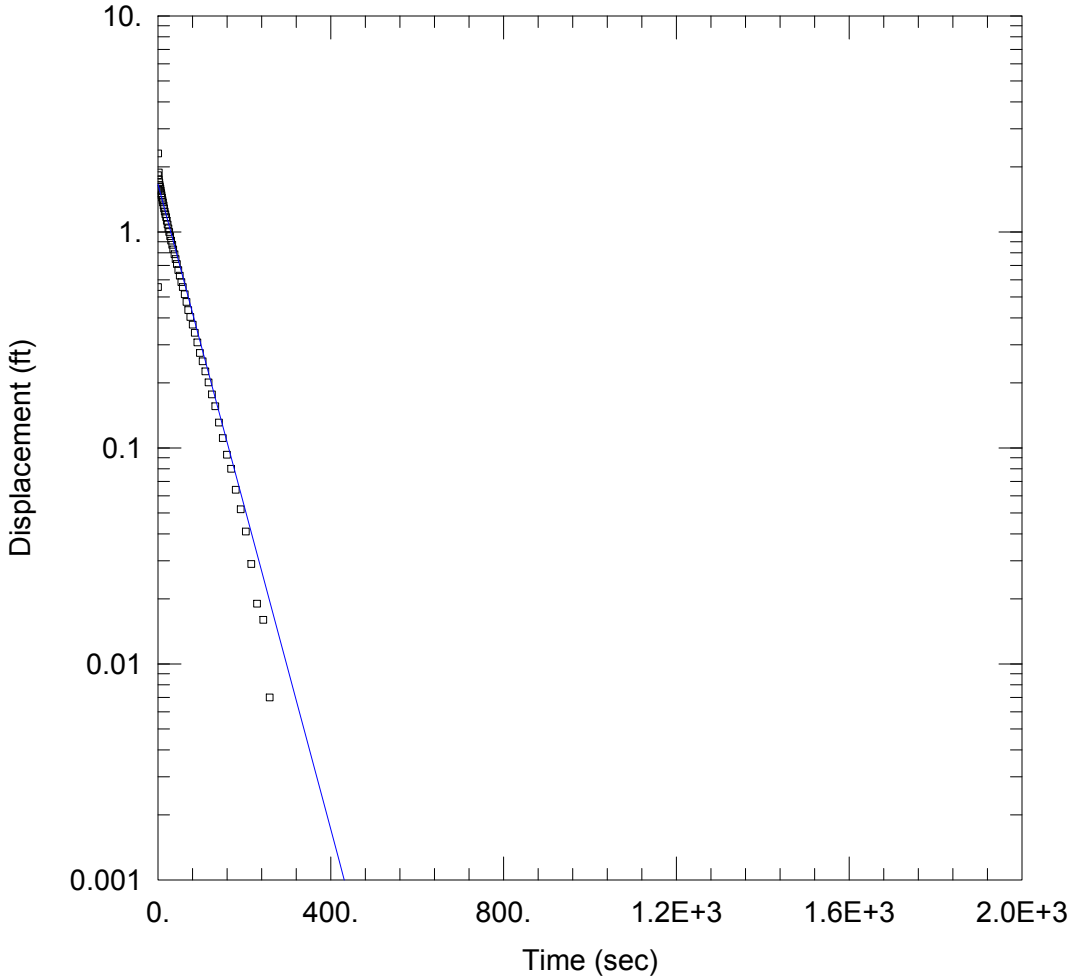
Initial Displacement: 0.556 ft
Total Well Penetration Depth: 11.31 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.48 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001598 cm/sec y0 = 1.948 ft

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PZ-INT RISING HEAD 2

Data Set: V:\...\PZ_Int_rising_2.aqt
Date: 06/16/14 Time: 21:48:46

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Energy
Location: Sutton Generating Station
Test Well: PZ-INT
Test Date: 5/29/14

AQUIFER DATA

Saturated Thickness: 19.21 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (PZ-INT)

Initial Displacement: 0.556 ft Static Water Column Height: 11.48 ft
Total Well Penetration Depth: 11.31 ft Screen Length: 5. ft
Casing Radius: 0.08333 ft Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
K = 0.001789 cm/sec y0 = 1.662 ft

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Appendix F
Aquifer Pumping Test Memo

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M E M O R A N D U M

Date: 19 May 2015

To: Matt Gozdor
Geosyntec Consultants

From: Michael Callahan and Matthew Wissler, P.G.
Geosyntec Consultants

RE: DRAFT Summary of Duke Sutton Aquifer Performance Test

At the request of Duke Energy Progress, Inc. (DEP), Geosyntec Consultants (Geosyntec) provided multidisciplinary environmental and geotechnical services for developing design plans for Onsite Landfill and CCR Basin Final Closure at the L.V. Sutton site (Sutton). As part of these multidisciplinary environmental and geotechnical services, a hydrogeologic characterization was conducted within the 1971 Ash Basin. This characterization consisted of a 46-hour constant-rate pumping test and the associated background and recovery monitoring, as well as, additional slug tests within the 1971 Ash Basin. The methods and results are provided in the following sections.

Methods

Four observation wells (PT-1, PT-2, PT-3, and PT-4) were used to monitor the response in the surficial aquifer during the pumping test within the 1971 Ash Basin (**Figure 1**). Observation wells were constructed of two inch diameter schedule 40 poly-vinyl chloride (PVC), additional well construction details and boring logs can be found in **Appendix A**. Observation wells PT-1 and PT-2 were located approximately 5 and 11 ft south of the pumping well EW-1, and observation wells PT-3 and PT-4 were located approximately 4 and 10 ft east of pumping well EW-1. Observation wells PT-1 and PT-2 were both screened at a depth of 25 to 40 ft below ground surface (bgs), corresponding to the upper sand unit of the surficial aquifer. Observation wells PT-3 and PT-4 were both screened at a depth of 59 to 69 ft bgs, corresponding to the lower sand unit of the surficial aquifer. The observation wells and the pumping well were outfitted with stand-alone pressure transducers (In-Situ, Level Troll 700 Data Loggers®). Additionally, water-

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level measurements were collected manually to evaluate data set integrity. Water quality parameters including field parameters (pH, conductivity, oxidation-reduction potential [ORP], dissolved oxygen, and temperature) were also monitored during the test. Monitoring wells MW-1A and PZ-105, located to the east (MW-1A) and southwest (PZ-105) of pumping well EW-1, were used as background monitoring wells during the pumping test (**Figure 1**). The reasoning for the background well selection was to determine potential background effects from the canal (PZ-105) and to the higher ground elevations to the east of the testing area (MW-1A).

The pumping test period lasted a total of approximately 10 days including background monitoring, the constant-rate test, and recovery. The background portion of the test started at 1500 13 March 2015 and ended with the initiation of the extraction phase of the constant-rate test at 1900 18 March 2015. The extraction phase of the constant-rate test lasted until 1630 20 March 2015. Recovery was monitored in the observation wells until 1400 23 March 2015. Water level data from pumping and recovery phases for the observation wells was analyzed in HydroSOLVE's (V 4.50) AQTESOLV using the Moench (1997) and Neuman (1974) methods.

In addition to the constant-rate pumping test, slug tests were conducted to estimate the in-situ saturated hydraulic conductivity within the 1971 Ash Basin. Pneumatic slug tests were performed on the four observation wells (PT-1, PT-2, PT-3, and PT-4) and one of the background monitoring wells (MW-1B) (**Figure 1**). Several trials were conducted at each of the wells and the results of the slug tests were analyzed in HydroSOLVE's (V 4.50) AQTESOLV using the Hvorslev (1951) and Bouwer-Rice (1976) methods. Since the water table elevation was consistently above the top of the well screen elevation during the duration of these tests, the Hvorslev (1951) method was considered to be a suitable analysis in addition to the Bouwer-Rice (1976) method (Batu, 1998).

Results

A summary of the pumping test results are included as **Table 1**. Manual water levels measured during the pumping test are summarized and presented in **Table 2**. In most instances, manual water levels correlated with water level measured from the pressure transducers. However, inadequate clearance due to pump drop pipe and electrical leads within the well casing at EW-1 prevented accurate manual water level measurements from being conducted at the pumping well. The data collected from manual measurements and from pressure transducers at each well were inspected to identify any data drift which may have occurred during the pumping test. Review of the data indicated the data drift was less than 0.1 feet and therefore was considered adequate for analysis without drift correction (**Appendix B**). The results of the water quality monitoring are

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presented as **Table 3**. Little change was documented among the water quality parameters. Small increases in conductivity, pH, and temperature were recorded near the end of the pumping test.

Curve matches were developed using both professional judgment and automatic matching techniques. Numerical solver results are provided in **Appendix C**. Water level data was analyzed from both the pumping phase and recovery phase of the pumping test. In general, hydraulic conductivity values derived from the pumping phase were lower than values derived from the recovery phase. The geometric mean of hydraulic conductivity for the pumping phase data was 266.5 feet per day (ft/day), compared to 431 ft/day for the recovery phase data. The overall geometric mean of the hydraulic conductivity was 339.2 ft/day and ranged from 220.2 to 613.8 ft/day. Transmissivity values ranged from 1.06×10^4 to 2.95×10^4 feet squared per day (ft^2/day).

A summary of the slug-test results are included as **Table 4** and numeric solver results are included in **Appendix D.** The geometric mean hydraulic conductivity was 67.9 feet per day (ft/day). Hydraulic conductivity values ranged from 22.5 to 189.6 ft/day. As is typically when comparing hydraulic conductivities between slug-test and pumping test data, an order of magnitude difference between the two values was observed (Butler and Healey, 1998). Typically, hydraulic conductivities derived from slug tests are lower and less representative than the larger scale and longer duration pumping tests. Slug tests usually have much smaller volumes of water being displaced and reflect the hydraulic conductivity of a small volume of the ground near the well (Schwartz and Zhang, 2003).

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References

Batu, V. 1998. Aquifer Hydraulics: A Comprehensive Guide to Hydrogeologic Data Analysis. New York: Wiley.

Bouwer, H. and R.C. Rice, 1976. A Slug Test Method for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells. Water Resources Research. 12(3): 423-428.

Butler, J.J. and J.M. Healey, 1998. Relationship Between Pumping-Test and Slug-Test Parameters: Scale Effect or Artifact? Ground Water. 36(2): 305-313.

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Groundwater Observations. U.S. Army Corps of Engineers, Waterways Experiment Station, Bulletin 36, Vicksburg, Mississippi. 50p.

Moench, A.F., 1997. Flow to a Well of Finite Diameter in a Homogeneous, Anisotropic Water Table Aquifer. Water Resources Research. 33(6): 1397-1407.

Neuman, S.P., 1974. Effect of Partial Penetration on Flow in Unconfined Aquifers Considering Delayed Gravity Response. Water Resources Research. 10(2): 303-312.

Schwartz, F.W. and H. Zhang, 2003. Fundamentals of Ground Water. New York: John Wiley and Sons, Inc.

* * * * * *

Attachments

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TABLES

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			Constant Rate Pumping Test Analysis									
			EW-1	PT-1		PT-2		PT-3		PT-4	
Well Information		Well Diameter (in)	4	2		2		2		2	
		Screen interval (ft bgs)	23.7-48.7	25.8-40.8		25.3-40.3		59.7-69.7		59.5-69.5	
		Well Depth (ft bgs)	48.7	40.8		40.3		69.7		69.5	
		Screen Length (ft) [AQTESOLV "L"]	25	15		15		10		10	
		Confined or Unconfined Aquifer	unconfined	unconfined		unconfined		unconfined		unconfined	
		Ground Surface Elevation (ft)	NA	NA		NA		NA		NA	
		TOC Elevation (ft NGVD 29)	GS + 3.12	GS + 3.02 ft		GS + 3.12 ft		GS + 2.96 ft		GS + 2.98 ft	
		Selected Well Configuration [1]	Partial Penetrating	Partial Penetrating		Partial Penetrating		Partial Penetrating		Partial Penetrating	
		X Coordinates (relative to pumping well)(ft)	0.00	0.00		0.00		3.97		9.66	
		Y Coordinates (relative to pumping well)(ft)	0.00	-5.31		-11.56		0.00		0.00	
		Pre-test Depth-to-groundwater (ft)	24.84	24.73		24.81		24.65		24.67	
		Pre-test water column height (ft) [AQTESOLV H]	26.98	19.19		18.61		48.17		47.95	
		Water level above top of well screen [AQTESOLV d]	1.98	4.09		3.61		38.01		37.81	
		Inside Radius of Well Casing (ft) [AQTESOLV r(c)]	0.167	0.083		0.083		0.083		0.083	
		Radius of Well (ft) [AQTESOLV r(w)]	0.333	0.167		0.167		0.250		0.250	
		Well Skin Radius (ft) [AQTESOLV r(sk)]	0.333	0.167		0.167		0.250		0.250	
		Formation Saturated Thickness (ft) [AQTESOLV b]	46.35	46.32		46.30		48.01		47.81	
		Vertical-to-Horizontal hydraulic conductivity anisotropy ratio [AQTESOLV Kv/Kh]	0.1	0.1		0.1		0.1		0.1	
Unconfined Analyses Results Summary	Moench (1997)	Test Phase (Pumping or Recovery)	NA	Pumping	Recovery	Pumping	Recovery	Pumping	Recovery	Pumping	Recovery
		Transmissivity (T) (ft^2/day)	NA	1.58E+04	2.18E+04	1.69E+04	1.69E+04	1.06E+04	1.46E+04	1.08E+04	1.92E+04
		Storage (S) (unitless)	NA	9.76E-07	2.73E-02	2.53E-06	4.21E-03	9.76E-07	6.43E-02	3.38E-06	0.006676
		Specific Yield (Sy) (unitless)	NA	0.002	0.000	0.001	0.010	0.271	2.766	0.044	0.1183
		Calculated Hydraulic Conductivity (K) (ft/day)	NA	341.3	470.2	363.9	365.2	220.2	304.3	226.1	401.8
	Neuman (1974)	Test Phase (Pumping or Recovery)	NA	Pumping	Recovery	Pumping	Recovery	Pumping	Recovery	Pumping	Recovery
		Transmissivity (T) (ft^2/day)	NA	1.17E+04	2.40E+04	1.50E+04	1.83E+04	1.06E+04	2.95E+04	1.09E+04	2.19E+04
		Storage (S) (unitless)	NA	3.85E-04	1.98E-02	1.95E-04	5.90E-03	2.34E-03	1.20E-04	3.55E-04	5.28E-05
		Specific Yield (Sy) (unitless)	NA	0.020	0.002	0.004	0.029	0.341	0.001	0.055	0.001
		Calculated Hydraulic Conductivity (K) (ft/day)	NA	253.0	517.3	323.5	395.2	220.0	613.8	228.2	457.9

Hydraulic Conductivity Summary	ft/day	cm/sec
Moench (1997) Geomean:	326.7	1.15E-01
Neuman (1974) Geomean:	352.1	1.24E-01
Overall Geomean:	339.2	1.20E-01

Specific Yield Summary	Unitless
Moench (1997) Geomean:	0.02
Neuman (1974) Geomean:	0.01
Overall Geomean:	0.01

Note(s):
in = inches
ft = feet
BGS = below ground surface
TOC = top of casing
NGVD = National Geodetic Vertical Datum
GS = ground surface
ft^2/day = feet squared per day
ft/day = feet per day
cm/sec = centimeters per second

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DTW (ft BTOC)									
Date/Time	**EW-1**	**PT-1**	**PT-2**	**PT-3**	**PT-4**	**MW-1A**	**MW-1B**	**MW-18**	**PZ-105**
3/18/2015 18:55	--	24.47	24.59	24.40	24.40	--	--	--	--
Start Pumping at 3/18/2015 19:00:25									
3/18/2015 19:05	--	24.93	24.93	24.51	24.51	--	--	--	--
3/18/2015 19:10	--	24.97	24.96	24.52	24.53	--	--	--	--
3/18/2015 19:15	--	25.01	24.99	24.53	24.53	--	--	--	--
3/18/2015 19:30	--	25.01	24.97	24.53	24.53	--	--	--	--
3/18/2015 19:45	--	25.03	25.01	24.55	24.54	--	--	--	--
3/18/2015 20:00	--	25.05	25.02	24.56	24.55	10.03	10.12	10.60	--
3/18/2015 20:30	--	25.06	25.05	24.58	24.58	--	--	--	--
3/18/2015 21:08	--	25.09	25.08	24.60	24.60	--	--	--	--
3/18/2015 21:30	--	25.11	25.10	24.60	24.60	--	--	--	--
3/18/2015 22:00	--	25.12	25.11	24.60	24.60	10.08	10.12	10.61	--
3/18/2015 23:00	--	25.14	25.13	24.61	24.61	--	--	--	--
3/19/2015 0:00	--	25.15	25.13	24.64	24.63	10.07	10.13	10.61	--
3/19/2015 1:00	--	25.17	25.16	24.64	24.64	--	--	--	--
3/19/2015 2:00	--	25.18	25.18	24.65	24.65	10.08	10.14	10.62	--
3/19/2015 3:00	--	25.20	25.18	24.66	24.67	--	--	--	--
3/19/2015 4:00	--	25.22	25.19	24.67	24.68	10.09	10.15	10.63	--
3/19/2015 5:00	--	25.22	25.21	24.67	24.69	--	--	--	--
3/19/2015 6:00	--	25.24	25.22	24.69	24.70	10.09	10.16	10.63	--
3/19/2015 7:00	--	25.25	25.24	24.69	24.70	--	--	--	--
3/19/2015 8:00	--	25.26	25.23	24.72	24.71	10.10	10.16	10.63	--
3/19/2015 9:00	--	25.27	25.25	24.72	24.72	--	--	--	--
3/19/2015 10:00	--	25.28	25.27	24.73	24.72	10.10	10.17	10.63	--
3/19/2015 11:00	--	25.29	25.25	24.75	24.73	--	--	--	--
3/19/2015 12:00	--	25.29	25.26	24.73	24.73	--	--	--	--
3/19/2015 13:00	--	25.30	25.28	24.75	24.74	10.10	10.19	10.65	--
3/19/2015 14:00	--	25.30	25.28	24.75	24.76	10.12	10.18	10.64	--
3/19/2015 15:00	--	25.31	25.28	24.76	24.75	--	--	--	--
3/19/2015 16:00	--	25.31	25.29	24.76	24.75	10.12	10.19	10.65	--
3/19/2015 17:00	--	25.32	25.30	24.77	24.77	--	--	--	--
3/19/2015 18:00	--	25.32	25.31	24.78	24.78	10.12	10.19	10.65	--
3/19/2015 19:00	--	25.33	25.31	24.78	24.78	--	--	--	--
3/19/2015 20:00	--	25.34	25.32	24.78	24.78	10.18	10.20	10.65	--
3/19/2015 21:00	30.98	25.34	25.32	24.77	24.78	--	--	--	--
3/19/2015 22:00	34.00	25.35	25.32	24.78	24.80	10.18	10.27	10.74	18.33
3/19/2015 23:00	33.12	25.35	25.33	24.78	24.81	--	--	--	--
3/20/2015 0:00	31.90	25.35	25.33	24.79	24.81	10.08	10.17	10.63	18.18
3/20/2015 1:00	32.90	25.35	25.33	24.80	24.80	--	--	--	--
3/20/2015 2:00	32.80	25.37	25.34	24.81	24.81	10.08	10.17	10.63	18.19
3/20/2015 3:00	29.60	25.36	25.32	24.79	24.80	--	--	--	--
3/20/2015 4:00	32.20	25.38	25.37	24.81	24.82	10.09	10.17	10.63	18.20
3/20/2015 5:00	32.85	25.37	25.35	24.82	24.82	--	--	--	--
3/20/2015 6:00	33.50	25.38	25.35	24.81	24.82	10.08	10.17	10.63	18.19

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DTW (ft BTOC)									
Date/Time	**EW-1**	**PT-1**	**PT-2**	**PT-3**	**PT-4**	**MW-1A**	**MW-1B**	**MW-18**	**PZ-105**
3/20/2015 7:00	33.65	25.38	25.37	24.82	24.82	--	--	--	--
3/20/2015 8:00	33.95	25.38	25.36	24.84	24.82	10.09	10.17	10.63	18.20
3/20/2015 9:00	33.62	25.40	25.36	24.86	24.84	--	--	--	--
3/20/2015 10:00	33.61	25.39	25.37	24.85	24.83	--	--	--	--
3/20/2015 11:00	33.10	25.40	25.38	24.85	24.84	10.10	10.18	10.64	18.19
3/20/2015 12:00	33.15	25.40	25.38	24.85	24.83	--	--	--	--
3/20/2015 13:00	34.20	25.40	25.38	24.85	24.83	10.11	10.18	10.64	18.19
3/20/2015 14:00	33.75	25.40	25.38	24.85	24.85	--	--	--	--
3/20/2015 15:00	33.65	25.41	25.39	24.85	24.85	10.11	10.20	10.64	18.19
3/20/2015 16:00	34.30	25.41	25.39	24.84	24.83	--	--	--	--
Stop Pumping at 3/20/2015 16:34:06									

Note(s):
DTW = depth to water
ft = feet
BTOC = below top of casing

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Date/time	pH	Conductivity (µs/cm)	ORP (mV)	DO (mg/L)	Temperature (°C)
3/18/2015 20:00	7.13	875	-347.0	2.14	21.5
3/18/2015 21:08	7.13	864	-338.0	2.47	21.3
3/18/2015 22:00	7.16	871	-205.7	3.06	21.2
3/18/2015 23:00	7.13	863	-212.3	3.30	21.3
3/19/2015 0:00	7.15	863	-197.0	3.20	21.2
3/19/2015 1:00	7.15	868	-188.0	3.30	21.4
3/19/2015 2:00	7.13	870	-183.0	3.50	21.6
3/19/2015 3:00	7.14	859	-187.9	2.76	21.4
3/19/2015 4:00	7.14	864	-184.0	3.10	21.3
3/19/2015 5:00	7.15	867	-183.1	3.18	21.3
3/19/2015 6:00	7.16	863	-184.0	2.58	20.9
3/19/2015 7:00	7.17	867	-180.8	3.08	21.1
3/19/2015 8:00	7.14	868	-183.0	2.96	21.6
3/19/2015 9:00	7.14	868	-174.0	2.41	21.2
3/19/2015 10:00	7.13	866	-168.0	2.70	21.5
3/19/2015 11:00	7.36	869	-185.0	3.73	21.5
3/19/2015 12:00	7.19	861	-140.0	3.16	21.8
3/19/2015 13:00	7.16	866	-131.0	2.67	21.8
3/19/2015 14:00	7.21	868	-124.0	2.96	21.4
3/19/2015 15:00	7.20	868	-119.0	3.00	21.5
3/19/2015 16:00	7.12	865	-121.0	3.28	21.6
3/19/2015 17:00	7.14	860	-128.0	3.44	21.6
3/19/2015 18:00	7.19	865	-115.0	3.13	21.3
3/19/2015 19:00	7.15	859	-111.0	3.25	21.1
3/19/2015 20:00	7.10	866	-114.0	2.83	21.3
3/19/2015 21:00	7.18	861	-114.6	3.08	20.6
3/19/2015 22:00	7.14	862	-130.1	2.61	20.1
3/19/2015 23:00	7.19	858	-139.5	3.90	20.2
3/20/2015 0:00	7.17	860	-141.1	3.22	20.9
3/20/2015 1:00	7.17	859	-147.4	2.75	21.1
3/20/2015 2:00	7.17	857	-153.5	3.58	21.1
3/20/2015 3:00	7.19	851	-162.2	3.34	21.1
3/20/2015 4:00	7.16	856	-145.0	3.61	21.4
3/20/2015 5:00	7.18	854	-183.8	3.42	21.3
3/20/2015 6:00	7.17	852	-153.7	3.25	21.4
3/20/2015 7:00	7.18	795	-158.0	3.36	21.6
3/20/2015 8:00	--	--	--	--	--
3/20/2015 9:00	7.19	851	-109.0	5.10	20.4
3/20/2015 10:00	7.22	981	-115.0	2.80	21.4
3/20/2015 11:00	--	--	--	--	--
3/20/2015 12:00	7.29	987	-134.0	3.28	21.5
3/20/2015 13:00	7.32	942	-131.0	3.10	21.9
3/20/2015 14:00	7.36	981	-160.0	3.14	22.0
3/20/2015 15:00	7.30	967	-182.0	2.70	22.2
3/20/2015 16:00	7.42	980	-189.0	3.29	22.3

Note(s):
µs/cm = microsiemens per centimeter
ORP = oxidation-reduction potential
mV = millivolts
DO = dissolved oxygen
mg/L = milligrams per liter

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		MW-1B			PT-1				PT-2					PT-3			PT-4			
Well Information	Well Diameter (in)	2			2				2					2			2			
	Screen interval (ft bgs)	22-27			25.8-40.8				25.3-40.3					59.7-69.7			59.5-69.5			
	Well Depth (ft bgs)	27.0			41.0				40.3					69.7			69.5			
	Screen Length (ft) [AQTESOLV "L"]	5			15				15					10			10			
	Confined or Unconfined Aquifer	unconfined			unconfined				unconfined					unconfined			unconfined			
	Ground Surface Elevation (ft)	NA			NA				NA					NA			NA			
	TOC Elevation (ft NGVD 29)	GS + 1 ft			GS + 3.02 ft				GS + 3.12 ft					GS + 2.96 ft			GS + 2.98 ft			
Input Parameters	Slug Test Trial #	1	2	3	1	2	3	4	1	2	3	4	5	1	2	3	1	2	3	4
	Test Date	3/25/2015			3/25/2015				3/25/2015					3/25/2015			3/25/2015			
	Pre-test Depth-to-groundwater (ft)	10.25	10.25	10.25	24.73	24.73	24.73	24.73	24.81	24.81	24.81	24.81	24.81	24.65	24.65	24.65	24.67	24.67	24.67	24.67
	Pre-test water column height (ft) [AQTESOLV H]	17.75	17.75	17.75	19.29	19.29	19.29	19.29	18.61	18.61	18.61	18.61	18.61	48.01	48.01	48.01	47.81	47.81	47.81	47.81
	Initial displacement (ft) [AQTESOLV H(0)]	5.751	5.446	5.287	2.16	3.85	3.74	2.93	3.67	4.95	5.03	4.62	5.60	5.84	6.43	4.83	6.34	6.04	6.47	5.83
	Water level above top of well screen [AQTESOLV d]	12.75	12.75	12.75	4.09	4.09	4.09	4.09	3.61	3.61	3.61	3.61	3.61	38.01	38.01	38.01	37.81	37.81	37.81	37.81
	Inside Radius of Well Casing (ft) [AQTESOLV r(c)]	0.083			0.083				0.083					0.083			0.083			
	Radius of Well (ft) [AQTESOLV r(w)]	0.083			0.167				0.167					0.250			0.250			
	Well Skin Radius (ft) [AQTESOLV r(sk)]	0.083			0.167				0.167					0.250			0.250			
	Formation Saturated Thickness (ft) [AQTESOLV b]	61.75	61.75	61.75	46.32	46.32	46.32	46.32	46.30	46.30	46.30	46.30	46.30	46.35	46.35	46.35	46.36	46.36	46.36	46.36
	Vertical-to-Horizontal hydraulic conductivity anisotropy ratio [AQTESOLV Kv/Kh]	0.1			0.1				0.1					0.1			0.1			
Analysis Results	Hvorslev (1951)	185.1	177.9	189.6	142.8	68.3	85.9	116.8	41.0	30.9	35.7	36.2	32.8	65.1	64.3	78.5	77.9	88.0	87.3	88.1
	Bouwer-Rice (1976)	149.8	188.0	153.4	104.3	49.8	62.7	85.3	29.8	22.5	26.0	26.3	23.9	55.4	54.8	66.8	66.4	74.9	74.3	75.0

	(ft/day)	(cm/sec)
Geomean of all analysis	67.9	2.40E-02

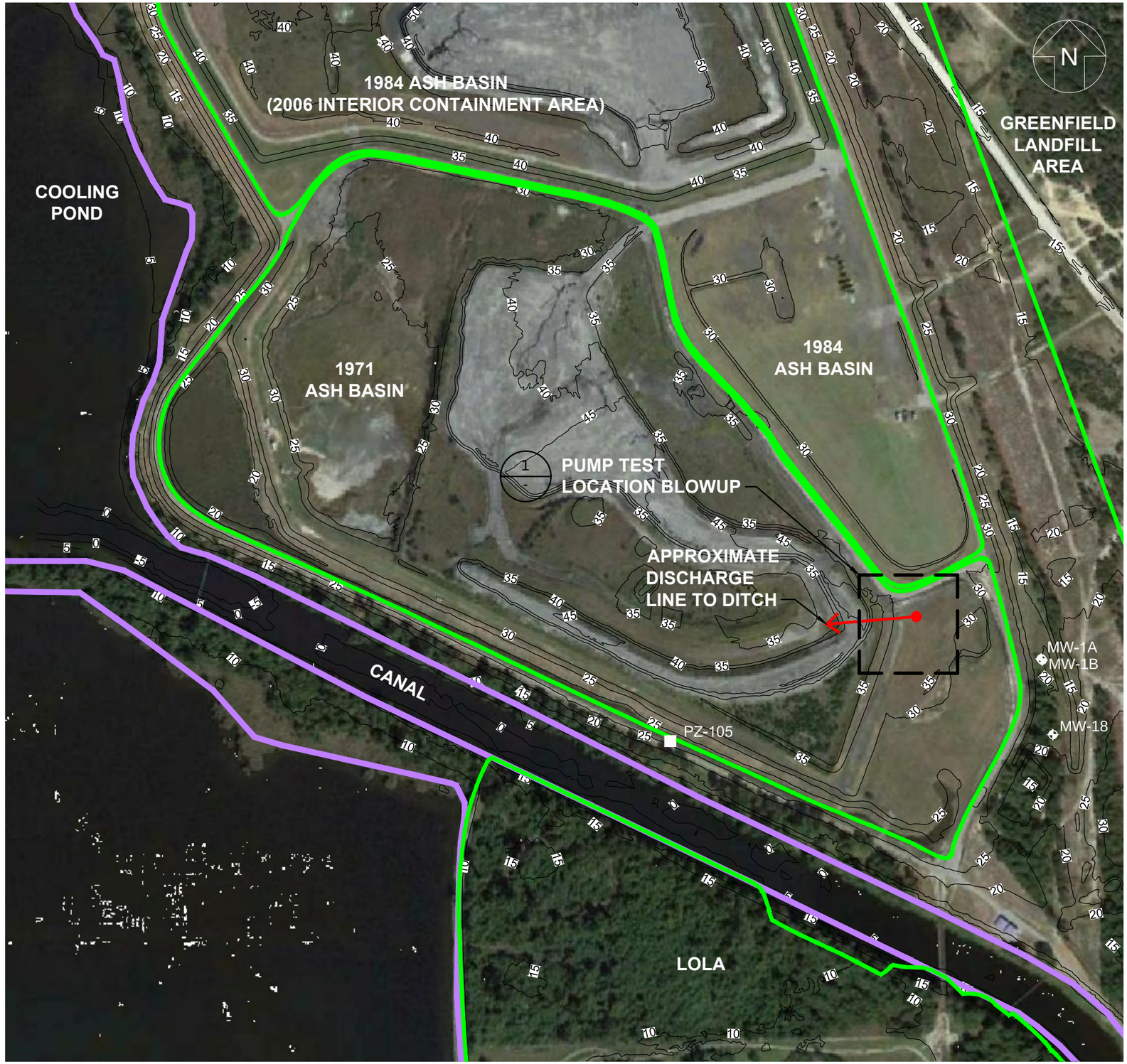
Note(s):
in = inches
ft = feet
BGS = below ground surface
TOC = top of casing
NGVD = National Geodetic Vertical Datum
GS = ground surface
ft/day = feet per day
cm/sec = centimeters per second

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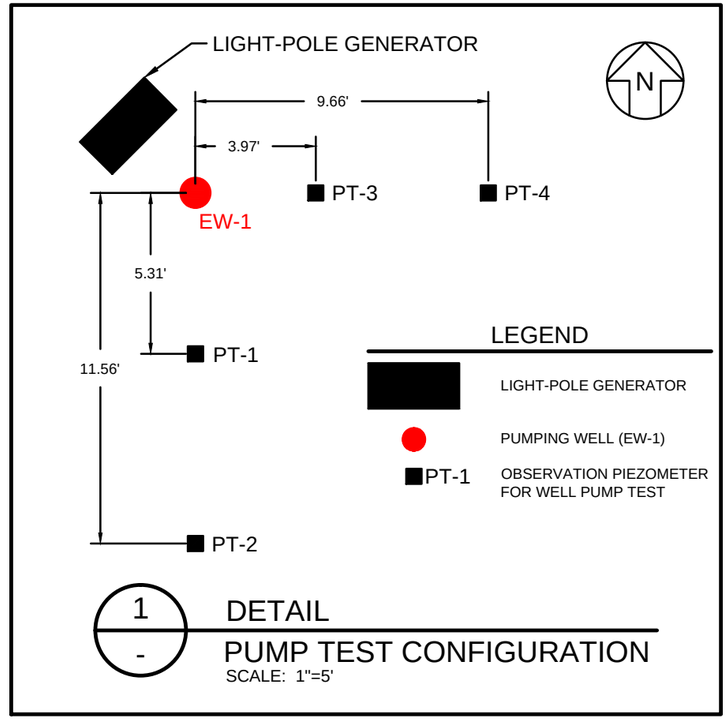
FIGURES

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LEGEND

- APPROXIMATE BASIN AND LANDFILL OUTLINE
- APPROXIMATE COOLING POND OUTLINE
- APPROXIMATE LAY OF LAND AREA (LOLA) OUTLINE
- 5 — EXISTING MAJOR GROUND ELEVATION CONTOUR
- GEOSYNTEC PUMP TEST LOCATION
- PZ-105 EXISTING GEOSYNTEC PIEZOMETER
- MW-1A HISTORICAL MONITORING WELL



NOTES:

1. PT-1 AND PT-2 ARE LOCATED IN UPPER INTERVAL OF SAND UNIT.
2. PT-3 AND PT-4 ARE LOCATED IN LOWER INTERVAL OF SAND UNIT.
3. PZ-105 , MW-1A, MW-1B AND MW-18 ARE BACKGROUND MONITORING LOCATIONS.

0 300'
SCALE IN FEET

L.V. SUTTON
PUMP TEST WITHIN 1971 BASIN

Geosyntec consultants

PROJECT NO:

MAY 2015

FIGURE
1

M:\D\DUKE ENERGY\DUKE-SUTTON\DUKE-SUTTON CLOSURE-GC5592\FIGURES\5592F091 INVESTIGATION FIGURE

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APPENDIX A

Well Construction and Lithology Logs

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WELL CONSTRUCTION RECORD

This form can be used for single or multiple wells

For Internal Use ONLY:

1. Well Contractor Information:

Malcolm Coogan
Well Contractor Name

2540
NC Well Contractor Certification Number

Mid-Atlantic Drilling Inc.
Company Name

2. Well Construction Permit #: _____
List all applicable well permits (i.e. County, State, Variance, Injection, etc.)

3. Well Use (check well use):

Water Supply Well:
☐Agricultural ☐Municipal/Public
☐Geothermal (Heating/Cooling Supply) ☐Residential Water Supply (single)
☐Industrial/Commercial ☐Residential Water Supply (shared)
☐Irrigation

Non-Water Supply Well:
☑Monitoring ☐Recovery

Injection Well:
☐Aquifer Recharge ☐Groundwater Remediation
☐Aquifer Storage and Recovery ☐Salinity Barrier
☐Aquifer Test ☐Stormwater Drainage
☐Experimental Technology ☐Subsidence Control
☐Geothermal (Closed Loop) ☐Tracer
☐Geothermal (Heating/Cooling Return) ☐Other (explain under #21 Remarks)

4. Date Well(s) Completed: 03/12/2015 **Well ID#** PT-1

5a. Well Location:

Duke Energy Progress
Facility/Owner Name

Facility ID# (if applicable)

801 Sutton Steam Plant Road, Wilmington, 28401
Physical Address, City, and Zip

New Hanover
County

Parcel Identification No. (PIN)

5b. Latitude and Longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)

34.29092 N 77.98623 W

6. Is (are) the well(s): ☐**Permanent** or ☑**Temporary**

7. Is this a repair to an existing well: ☐**Yes** or ☑**No**
If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. Number of wells constructed: 1
*For multiple injection or non-water supply wells **ONLY** with the **same construction**, you can submit one form.*

9. Total well depth below land surface: 40.8 **(ft.)**
For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: 24.69 **(ft.)**
If water level is above casing, use "+"

11. Borehole diameter: 4 **(in.)**

12. Well construction method: Mud Rotary
(i.e. auger, rotary, cable, direct push, etc.)

FOR WATER SUPPLY WELLS ONLY:

13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
-3.1 ft.	25.8 ft.	2 in.	SCH40	PVC
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
25.8 ft.	40.8 ft.	2 in.	0.01	SCH40	PVC
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
0 ft.	18 ft.	CEM-Bentonit	Slurry through Tremie pipes
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

FROM	TO	MATERIAL	EMPLACEMENT METHOD
22 ft.	40.8 ft.	#2 Sand	Pour
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
0 ft.	14 ft.	Ash
14 ft.	40.8 ft.	Tan/Gray Fine to Medium SAND
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

Bentonite seal from 18 to 22 feet

22. Certification:

Malcolm Coogan
Signature of Certified Well Contractor

3/30/2015
Date

By signing this form, I hereby certify that the well(s) was (were) constructed in accordance with 15A NCAC 02C .0100 or 15A NCAC 02C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

23. Site diagram or additional well details:
You may use the back of this page to provide additional well site details or well construction details. You may also attach additional pages if necessary.

SUBMITTAL INSTUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617**

24b. For Injection Wells ONLY: In addition to sending the form to the address in 24a above, also submit a copy of this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636**

24c. For Water Supply & Injection Wells:
Also submit one copy of this form within 30 days of completion of well construction to the county health department of the county where constructed.

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

This form can be used for single or multiple wells

For Internal Use ONLY:

1. Well Contractor Information:

William M. Wiggins
Well Contractor Name

3470-A
NC Well Contractor Certification Number

Mid-Atlantic Drilling Inc.
Company Name

2. Well Construction Permit #: _____
List all applicable well permits (i.e. County, State, Variance, Injection, etc.)

3. Well Use (check well use):

Water Supply Well:
☐Agricultural ☐Municipal/Public
☐Geothermal (Heating/Cooling Supply) ☐Residential Water Supply (single)
☐Industrial/Commercial ☐Residential Water Supply (shared)
☐Irrigation

Non-Water Supply Well:
☑Monitoring ☐Recovery

Injection Well:
☐Aquifer Recharge ☐Groundwater Remediation
☐Aquifer Storage and Recovery ☐Salinity Barrier
☐Aquifer Test ☐Stormwater Drainage
☐Experimental Technology ☐Subsidence Control
☐Geothermal (Closed Loop) ☐Tracer
☐Geothermal (Heating/Cooling Return) ☐Other (explain under #21 Remarks)

4. Date Well(s) Completed: 03/11/2015 **Well ID#** PT-2

5a. Well Location:

Duke Energy Progress
Facility/Owner Name

Facility ID# (if applicable)

801 Sutton Steam Plant Road, Wilmington, 28401
Physical Address, City, and Zip

New Hanover
County

Parcel Identification No. (PIN)

5b. Latitude and Longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)

34.29090 N 77.98624 W

6. Is (are) the well(s): ☐**Permanent** or ☑**Temporary**

7. Is this a repair to an existing well: ☐**Yes** or ☑**No**
If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. Number of wells constructed: 1
*For multiple injection or non-water supply wells **ONLY** with the **same construction**, you can submit one form.*

9. Total well depth below land surface: 40.3 **(ft.)**
For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: 24.79 **(ft.)**
If water level is above casing, use "+"

11. Borehole diameter: 4 **(in.)**

12. Well construction method: Mud Rotary
(i.e. auger, rotary, cable, direct push, etc.)

FOR WATER SUPPLY WELLS ONLY:

13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
-3.1 ft.	25.3 ft.	2 in.	SCH40	PVC
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
25.3 ft.	40.3 ft.	2 in.	0.01	SCH40	PVC
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
0 ft.	15 ft.	CEM-Bentonit	Slurry through Tremie pipes
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

FROM	TO	MATERIAL	EMPLACEMENT METHOD
22 ft.	40.3 ft.	#2 Sand	Pour
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
0 ft.	14 ft.	Ash
14 ft.	40.3 ft.	Tan/Gray Fine to Medium SAND
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

Bentonite seal from 15 to 22 feet

22. Certification:

William M Wiggins
Signature of Certified Well Contractor

3/30/2015
Date

By signing this form, I hereby certify that the well(s) was (were) constructed in accordance with 15A NCAC 02C .0100 or 15A NCAC 02C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

23. Site diagram or additional well details:
You may use the back of this page to provide additional well site details or well construction details. You may also attach additional pages if necessary.

SUBMITTAL INSTUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617**

24b. For Injection Wells ONLY: In addition to sending the form to the address in 24a above, also submit a copy of this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636**

24c. For Water Supply & Injection Wells:
Also submit one copy of this form within 30 days of completion of well construction to the county health department of the county where constructed.

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

This form can be used for single or multiple wells

For Internal Use ONLY:

1. Well Contractor Information:

William M. Wiggins
Well Contractor Name

3470-A
NC Well Contractor Certification Number

Mid-Atlantic Drilling Inc.
Company Name

2. Well Construction Permit #: _____
List all applicable well permits (i.e. County, State, Variance, Injection, etc.)

3. Well Use (check well use):

Water Supply Well:
☐Agricultural ☐Municipal/Public
☐Geothermal (Heating/Cooling Supply) ☐Residential Water Supply (single)
☐Industrial/Commercial ☐Residential Water Supply (shared)
☐Irrigation

Non-Water Supply Well:
☑Monitoring ☐Recovery

Injection Well:
☐Aquifer Recharge ☐Groundwater Remediation
☐Aquifer Storage and Recovery ☐Salinity Barrier
☐Aquifer Test ☐Stormwater Drainage
☐Experimental Technology ☐Subsidence Control
☐Geothermal (Closed Loop) ☐Tracer
☐Geothermal (Heating/Cooling Return) ☐Other (explain under #21 Remarks)

4. Date Well(s) Completed: 03/9/2015 **Well ID#** PT-3

5a. Well Location:

Duke Energy Progress
Facility/Owner Name

Facility ID# (if applicable)

801 Sutton Steam Plant Road, Wilmington, 28401
Physical Address, City, and Zip

New Hanover
County

Parcel Identification No. (PIN)

5b. Latitude and Longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)

34.29092 N 77.98621 W

6. Is (are) the well(s): ☐**Permanent** or ☑**Temporary**

7. Is this a repair to an existing well: ☐**Yes** or ☑**No**
If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. Number of wells constructed: 1
*For multiple injection or non-water supply wells **ONLY** with the **same construction**, you can submit one form.*

9. Total well depth below land surface: 69.7 **(ft.)**
For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: 24.60 **(ft.)**
If water level is above casing, use "+"

11. Borehole diameter: 6 **(in.)**

12. Well construction method: Mud Rotary
(i.e. auger, rotary, cable, direct push, etc.)

FOR WATER SUPPLY WELLS ONLY:

13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
-3 ft.	59.7 ft.	2 in.	SCH40	PVC
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
59.7 ft.	69.7 ft.	2 in.	0.01	SCH40	PVC
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
0 ft.	53 ft.	CEM-Bentonit	Slurry through Tremie pipes
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

FROM	TO	MATERIAL	EMPLACEMENT METHOD
58 ft.	69.7 ft.	#2 Sand	Pour
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
0 ft.	13.7 ft.	Ash
13.7 ft.	69.7 ft.	Tan/Gray Fine to Medium SAND
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

Bentonite seal from 53 to 58 feet

22. Certification:

William M Wiggins
Signature of Certified Well Contractor

3/30/2015
Date

By signing this form, I hereby certify that the well(s) was (were) constructed in accordance with 15A NCAC 02C .0100 or 15A NCAC 02C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

23. Site diagram or additional well details:
You may use the back of this page to provide additional well site details or well construction details. You may also attach additional pages if necessary.

SUBMITTAL INSTUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617**

24b. For Injection Wells ONLY: In addition to sending the form to the address in 24a above, also submit a copy of this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636**

24c. For Water Supply & Injection Wells:
Also submit one copy of this form within 30 days of completion of well construction to the county health department of the county where constructed.

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

This form can be used for single or multiple wells

For Internal Use ONLY:

1. Well Contractor Information:

William M. Wiggins
Well Contractor Name

3470-A
NC Well Contractor Certification Number

Mid-Atlantic Drilling Inc.
Company Name

2. Well Construction Permit #: _____
List all applicable well permits (i.e. County, State, Variance, Injection, etc.)

3. Well Use (check well use):

Water Supply Well:
☐Agricultural ☐Municipal/Public
☐Geothermal (Heating/Cooling Supply) ☐Residential Water Supply (single)
☐Industrial/Commercial ☐Residential Water Supply (shared)
☐Irrigation

Non-Water Supply Well:
☑Monitoring ☐Recovery

Injection Well:
☐Aquifer Recharge ☐Groundwater Remediation
☐Aquifer Storage and Recovery ☐Salinity Barrier
☐Aquifer Test ☐Stormwater Drainage
☐Experimental Technology ☐Subsidence Control
☐Geothermal (Closed Loop) ☐Tracer
☐Geothermal (Heating/Cooling Return) ☐Other (explain under #21 Remarks)

4. Date Well(s) Completed: 03/11/2015 **Well ID#** PT-4

5a. Well Location:

Duke Energy Progress
Facility/Owner Name

Facility ID# (if applicable)

801 Sutton Steam Plant Road, Wilmington, 28401
Physical Address, City, and Zip

New Hanover
County

Parcel Identification No. (PIN)

5b. Latitude and Longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)

34.29092 N 77.98620 W

6. Is (are) the well(s): ☐**Permanent** or ☑**Temporary**

7. Is this a repair to an existing well: ☐**Yes** or ☑**No**
If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. Number of wells constructed: 1
*For multiple injection or non-water supply wells **ONLY** with the **same construction**, you can submit one form.*

9. Total well depth below land surface: 69.5 **(ft.)**
For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: 24.62 **(ft.)**
If water level is above casing, use "+"

11. Borehole diameter: 6 **(in.)**

12. Well construction method: Mud Rotary
(i.e. auger, rotary, cable, direct push, etc.)

FOR WATER SUPPLY WELLS ONLY:

13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
-3 ft.	59.5 ft.	2 in.	SCH40	PVC
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
59.5 ft.	69.5 ft.	2 in.	0.01	SCH40	PVC
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
0 ft.	52 ft.	CEM-Bentonit	Slurry through Tremie pipes
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

FROM	TO	MATERIAL	EMPLACEMENT METHOD
57 ft.	69.5 ft.	#2 Sand	Pour
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
0 ft.	13.7 ft.	Ash
13.7 ft.	69.5 ft.	Tan/Gray Fine to Medium SAND
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

Bentonite seal from 52 to 57 feet

22. Certification:

William M Wiggins
Signature of Certified Well Contractor

3/30/2015
Date

By signing this form, I hereby certify that the well(s) was (were) constructed in accordance with 15A NCAC 02C .0100 or 15A NCAC 02C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

23. Site diagram or additional well details:
You may use the back of this page to provide additional well site details or well construction details. You may also attach additional pages if necessary.

SUBMITTAL INSTUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617**

24b. For Injection Wells ONLY: In addition to sending the form to the address in 24a above, also submit a copy of this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636**

24c. For Water Supply & Injection Wells:
Also submit one copy of this form within 30 days of completion of well construction to the county health department of the county where constructed.

OFFICIAL COPY
Oct 30 2019

WELL CONSTRUCTION RECORD

This form can be used for single or multiple wells

For Internal Use ONLY:

1. Well Contractor Information:

Malcolm Coogan
Well Contractor Name

2540
NC Well Contractor Certification Number

Mid-Atlantic Drilling Inc.
Company Name

2. Well Construction Permit #: _____
List all applicable well permits (i.e. County, State, Variance, Injection, etc.)

3. Well Use (check well use):

Water Supply Well:
☐Agricultural ☐Municipal/Public
☐Geothermal (Heating/Cooling Supply) ☐Residential Water Supply (single)
☐Industrial/Commercial ☐Residential Water Supply (shared)
☐Irrigation

Non-Water Supply Well:
☑Monitoring ☐Recovery

Injection Well:
☐Aquifer Recharge ☐Groundwater Remediation
☐Aquifer Storage and Recovery ☐Salinity Barrier
☐Aquifer Test ☐Stormwater Drainage
☐Experimental Technology ☐Subsidence Control
☐Geothermal (Closed Loop) ☐Tracer
☐Geothermal (Heating/Cooling Return) ☐Other (explain under #21 Remarks)

4. Date Well(s) Completed: 03/13/2015 **Well ID#** EW-1

5a. Well Location:

Duke Energy Progress
Facility/Owner Name

Facility ID# (if applicable)

801 Sutton Steam Plant Road, Wilmington, 28401
Physical Address, City, and Zip

New Hanover
County

Parcel Identification No. (PIN)

5b. Latitude and Longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)

34.29093 N 77.98624 W

6. Is (are) the well(s): ☐**Permanent** or ☑**Temporary**

7. Is this a repair to an existing well: ☐**Yes** or ☑**No**
If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. Number of wells constructed: 1
*For multiple injection or non-water supply wells **ONLY** with the **same construction**, you can submit one form.*

9. Total well depth below land surface: 48.7 **(ft.)**
For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: 24.8 **(ft.)**
If water level is above casing, use "+"

11. Borehole diameter: 8 **(in.)**

12. Well construction method: Mud Rotary
(i.e. auger, rotary, cable, direct push, etc.)

FOR WATER SUPPLY WELLS ONLY:

13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
-3.2 ft.	23.7 ft.	4 in.	SCH40	PVC
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
23.7 ft.	48.7 ft.	4 in.	0.01	SCH40	PVC
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
0 ft.	15 ft.	CEM-Bentonit	Slurry through Tremie pipes
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

FROM	TO	MATERIAL	EMPLACEMENT METHOD
18.8 ft.	48.7 ft.	#2 Sand	Pour
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
0 ft.	14 ft.	Ash
14 ft.	48.7 ft.	Tan/Gray Fine to Medium SAND
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

Bentonite seal from 15 to 18.8 feet

22. Certification:

Signature of Certified Well Contractor — 3/30/2015 Date

By signing this form, I hereby certify that the well(s) was (were) constructed in accordance with 15A NCAC 02C .0100 or 15A NCAC 02C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

23. Site diagram or additional well details:
You may use the back of this page to provide additional well site details or well construction details. You may also attach additional pages if necessary.

SUBMITTAL INSTUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617**

24b. For Injection Wells ONLY: In addition to sending the form to the address in 24a above, also submit a copy of this form within 30 days of completion of well construction to the following:

**Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636**

24c. For Water Supply & Injection Wells:
Also submit one copy of this form within 30 days of completion of well construction to the county health department of the county where constructed.

OFFICIAL COPY
Oct 30 2019

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT – GROUNDWATER SECTION
P.O. BOX 27687 – RALEIGH, N.C. 27611, PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad. No. _____ Serial No. _____
Lat. _____ Long. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR Ezra Mar Assoc Inc.
DRILLER REGISTRATION NUMBER 446
STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: WILMINGTON
L.V. SUTTON PLANT
(Road, Community, or Subdivision and Lot No.)
County: NEW HANOVER
2. OWNER CAROLINA POWER & LIGHT
ADDRESS _____ (Street or Route No.)
City or Town State Zip Code
3. DATE DRILLED 12-12-84 USE OF WELL _____
4. TOTAL DEPTH 27' CUTTINGS COLLECTED ☐ Yes ☐ No
5. DOES WELL REPLACE EXISTING WELL? ☐ Yes ☒ No
6. STATIC WATER LEVEL: 10' FT. ☐ above ☒ below TOP OF CASING.
TOP OF CASING IS 1' FT. ABOVE LAND SURFACE.
7. YIELD (gpm): N/A METHOD OF TEST _____
8. WATER ZONES (depth): 9'
9. CHLORINATION: Type _____ Amount None
10. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From	0	To 22' Ft.	2"	SCH 40	PVC
From		To Ft.			
From		To Ft.			

11. GROUT:

	Depth		Material	Method
From	0	To 15' Ft.	CEMENT/LIME	
From		To Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From	22'	To 27' Ft.	2"	in. .010 in.	SCH 40
From		To Ft.	in.	in.	
From		To Ft.	in.	in.	

13. GRAVEL PACK:*

	Depth		Size	Material
From		To Ft.		
From		To Ft.		

14. REMARKS: * NATIVE SAND ALLOWED TO COLLAPSE AROUND THE SCREEN

Depth From	To	DRILLING LOG Formation Description
0	12"	TOP SOIL
12"	27'	MED TO COURSE SAND

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points)

Well 1B

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT DATE

Submit original to Division of Environmental Management

PT-1 and EW-1 are located in the vicinity of PT-2.

OFFICIAL COPY
Oct 30 2019

Geosyntec consultants
Geosyntec Consultants
1300 South Mint Street #410
Charlotte, NC 28203

BORING LOG

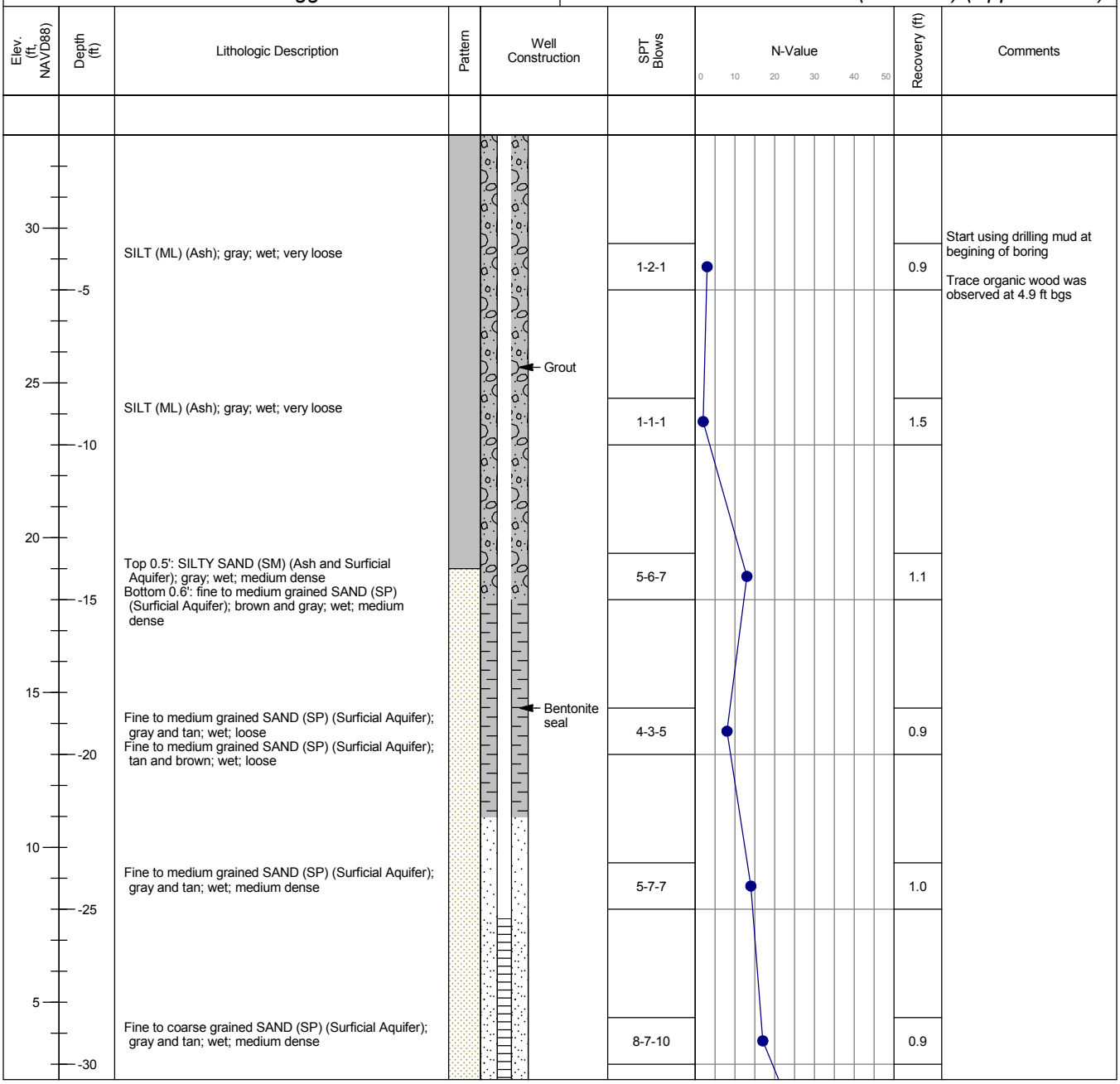
BOREHOLE ID: *PT-2 (within the 1971 Basin)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Final Closure Plan
PROJECT NO: *GC5770*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *3/11/2015*
GEOSYNTEC REPRESENTATIVE: *Mustafa Erten*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Mud Rotary*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *4"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198428 (Hand-held GPS)*
EASTING: *2306217 (Hand-held GPS)*
GROUND ELEVATION: *33 ft (NAVD88) (Approximate)*



(Continued Next Page)

All depths referenced to ground surface.

Total Depth: 40.3 ft bgs

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Geosyntec consultants
Geosyntec Consultants
1300 South Mint Street #410
Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *PT-2 (within the 1971 Basin)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Final Closure Plan
PROJECT NO: *GC5770*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *3/11/2015*
GEOSYNTEC REPRESENTATIVE: *Mustafa Erten*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Mud Rotary*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *4"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198428 (Hand-held GPS)*
EASTING: *2306217 (Hand-held GPS)*
GROUND ELEVATION: *33 ft (NAVD88) (Approximate)*

Elev. (ft. NAVD88)	Depth (ft)	Lithologic Description	Pattern	Well Construction	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery (ft)	Comments
0	0	Fine to coarse grained SAND (SP) (Surficial Aquifer); gray and tan; wet; dense		Filter Pack (Sand)	10-15-18		1.1	
-35	35			Screen				
-5	38.5	Fine to coarse grained SAND (SP) (Surficial Aquifer); gray and tan; wet; medium dense			6-6-7		0.8	gravel was observed at 38.5 ft bgs
-40	40.3	End of Boring at 40.3 feet bgs.						

All depths referenced to ground surface.

Total Depth: 40.3 ft bgs

engineers | scientists | innovators

PT-4 is located in the vicinity of PT-3.

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Oct 30 2019

Geosyntec consultants
Geosyntec Consultants
1300 South Mint Street #410
Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *PT-3 (within the 1971 Basin)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Final Closure Plan
PROJECT NO: *GC5770*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *3/9/2015*
GEOSYNTEC REPRESENTATIVE: *Michael Martin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Mud Rotary*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *6"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198435 (Hand-held GPS)*
EASTING: *2306226 (Hand-held GPS)*
GROUND ELEVATION: *33 ft (NAVD88) (Approximate)*

Elev. (ft, NAVD88)	Depth (ft)	Lithologic Description	Pattern	Well Construction	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery (ft)	Comments
30	-5	SILT (ML) (Ash); some gravel; black; wet; very loose			2-1-2		1.0	Started using drilling mud
25	-10	SILT (ML) (Ash); black to gray; wet; very loose			2-1-1		1.5	
20	-15	Top 0.2': SILT (ML) (Ash); gray; wet; medium dense Bottom 0.8': fine to medium grained SAND (SP) (Surficial Aquifer); black to tan; wet; medium dense			4-6-6		1.0	
15	-20	Fine to medium grained SAND (SP) (Surficial Aquifer); tan; wet; loose			3-3-5		1.0	
10	-25	Fine to medium grained SAND (SP) (Surficial Aquifer); tan; wet; medium dense			7-8-8		1.1	
5	-30	Fine to medium grained SAND (SP) (Surficial Aquifer); tan; wet; medium dense		Grout	10-9-9		1.1	

(Continued Next Page)

All depths referenced to ground surface.

Total Depth: 70 ft bgs

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Oct 30 2019

Geosyntec consultants
Geosyntec Consultants
1300 South Mint Street #410
Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *PT-3 (within the 1971 Basin)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Final Closure Plan
PROJECT NO: *GC5770*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *3/9/2015*
GEOSYNTEC REPRESENTATIVE: *Michael Martin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Mud Rotary*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *6"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198435 (Hand-held GPS)*
EASTING: *2306226 (Hand-held GPS)*
GROUND ELEVATION: *33 ft (NAVD88) (Approximate)*

Elev. (ft. NAVD88)	Depth (ft)	Lithologic Description	Pattern	Well Construction	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery (ft)	Comments
0		Fine to coarse grained SAND (SP) (Surficial Aquifer); gray tan; wet; dense			10-18-20		1.0	
-5	-35	Fine to coarse grained SAND (SP) (Surficial Aquifer); gray tan; wet; loose			6-5-5		0.7	Grout between 41' and 53' bgs may contain cave-in native soils (predominantly sand)
-10	-40	Fine to coarse grained SAND (SP) (Surficial Aquifer); tan orange; wet; loose			5-4-5		0.8	
-15	-45	Fine to medium grained SAND (SP) (Surficial Aquifer); tan gray; wet; loose			4-3-4		0.5	
-20	-50	Fine to medium grained SAND (SP) (Possible Surficial Aquifer); tan gray; wet; very loose			3-1-2		0.5	
		Fine to medium grained SAND (SP) (Possible Surficial Aquifer); tan gray; wet; very loose			2-1-1		0.4	
	-55	Fine to medium grained SAND (SP) (Possible Surficial Aquifer); tan gray; wet; very loose			1-2-1		0.9	
-25		Fine to medium grained SAND (SP) (Possible Surficial Aquifer); orange brown; wet; loose		Bentonite seal	2-3-5		0.5	
	-60	Fine to medium grained SAND (SP) (Possible Surficial Aquifer); orange; wet; loose			6-5-5		0.9	

(Continued Next Page)

All depths referenced to ground surface.

Total Depth: 70 ft bgs

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Oct 30 2019

Geosyntec consultants
Geosyntec Consultants
1300 South Mint Street #410
Charlotte, NC 28203

BORING LOG

BOREHOLE ID: *PT-3 (within the 1971 Basin)*

GENERAL INFORMATION

PROJECT NAME: L.V. Sutton Final Closure Plan
PROJECT NO: *GC5770*
SITE LOCATION: *Wilmington, North Carolina*
BORING DATE: *3/9/2015*
GEOSYNTEC REPRESENTATIVE: *Michael Martin*
DRILLING CONTRACTOR: *Mid-Atlantic Drilling*
DRILLER NAME: *William Wiggins*

TECHNICAL INFORMATION

DRILLING METHOD: *Mud Rotary*
RIG TYPE: *CME 45C Track Rig (Serial # 273964)*
BOREHOLE DIA: *6"*
SAMPLING METHOD: *SPT with Split Spoon*
NORTHING: *198435 (Hand-held GPS)*
EASTING: *2306226 (Hand-held GPS)*
GROUND ELEVATION: *33 ft (NAVD88) (Approximate)*

Elev. (ft. NAVD88)	Depth (ft)	Lithologic Description	Pattern	Well Construction	SPT Blows	N-Value (0 10 20 30 40 50)	Recovery (ft)	Comments
-30								
	-65	Fine to coarse grained SAND (SP) (Possible Surficial Aquifer); orange gray; wet; medium dense		Filter Pack (Sand) Screen	7-9-10		0.8	
-35		SILTY SAND (SM) (Peedee Aquifer); gray; wet; medium dense			4-6-7		1.0	
-70		End of Boring at 70.0 feet bgs.						

All depths referenced to ground surface.

Total Depth: 70 ft bgs

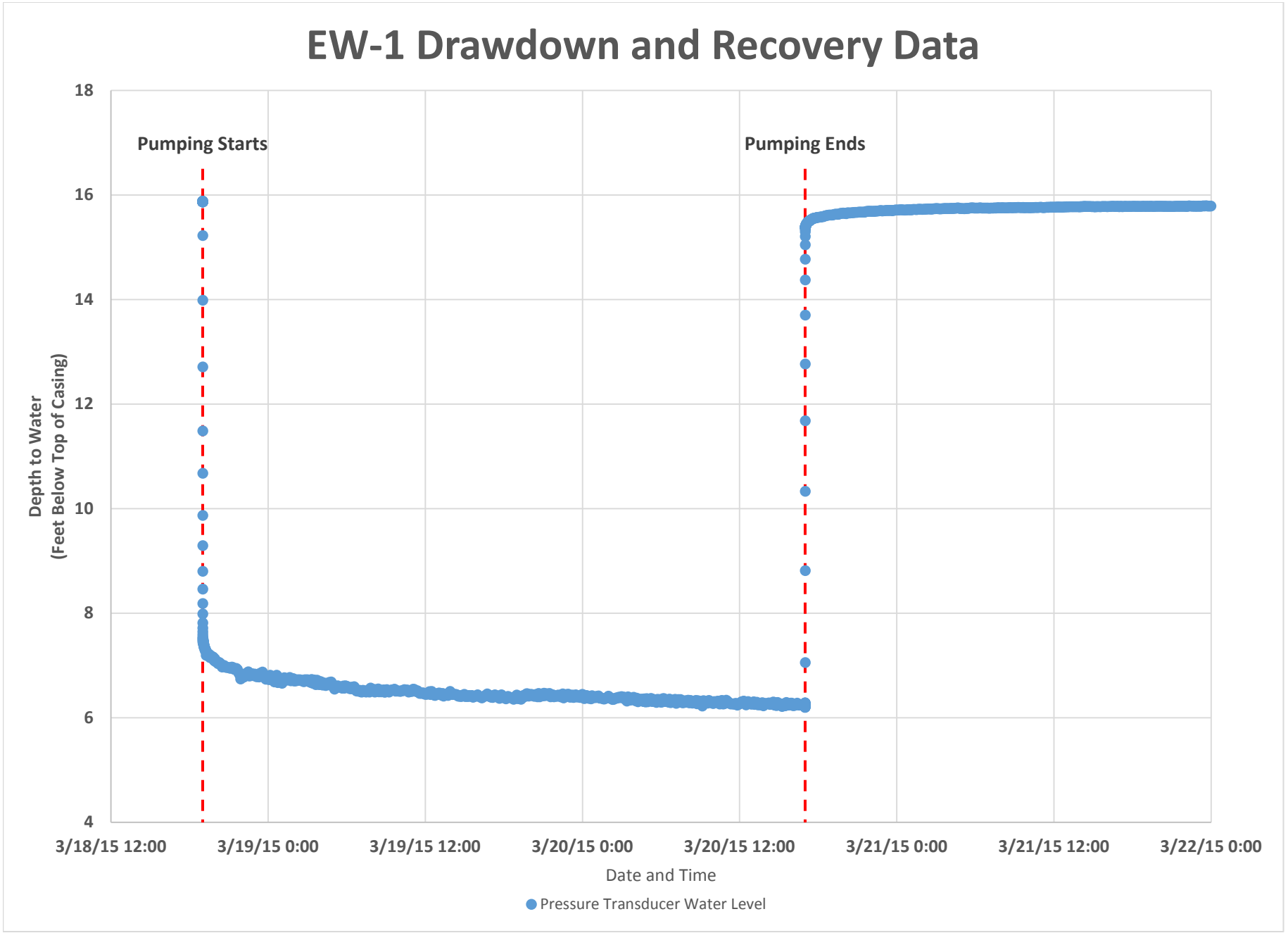
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Oct 30 2019

APPENDIX B

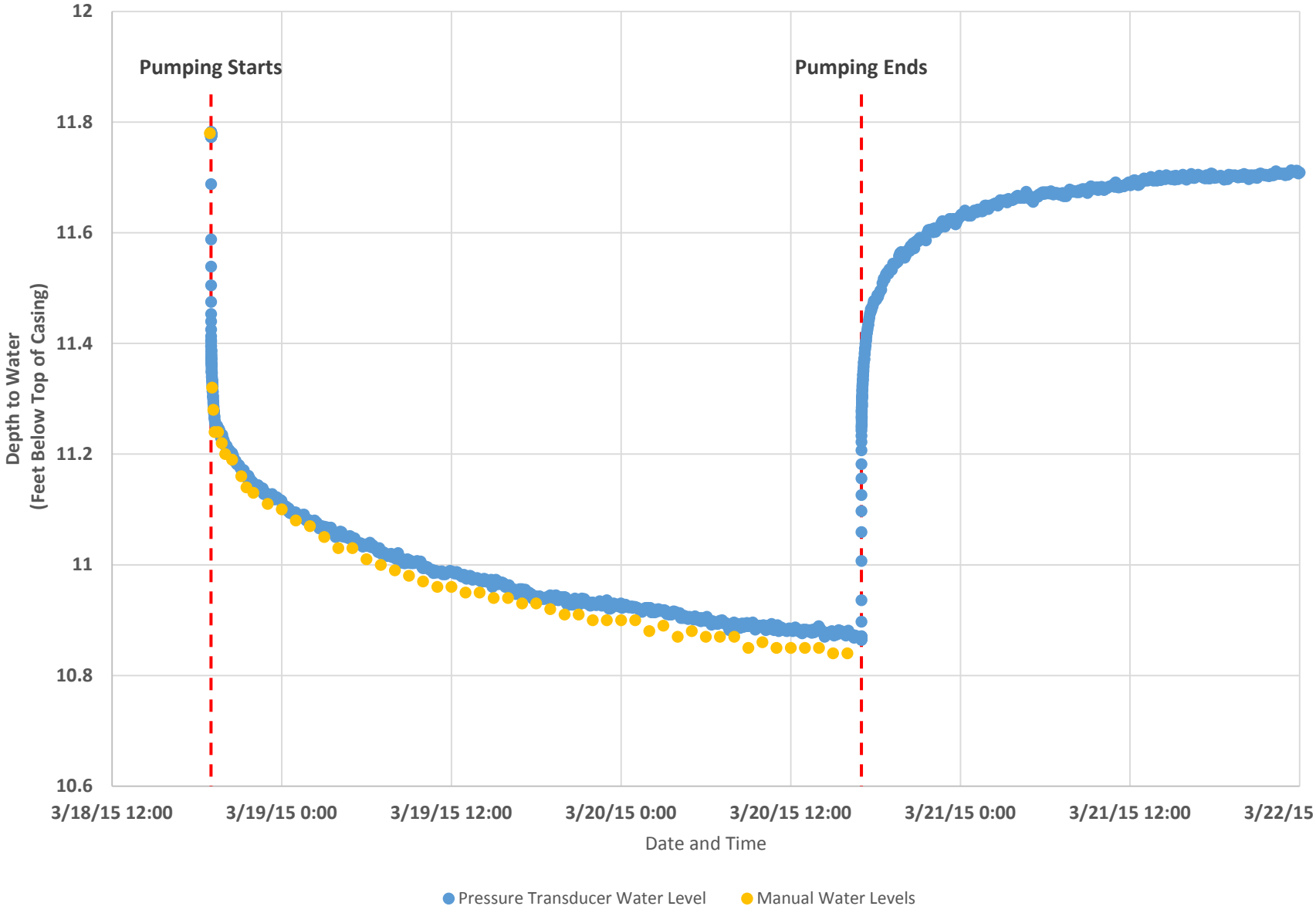
Pumping and Recovery Phase Plots

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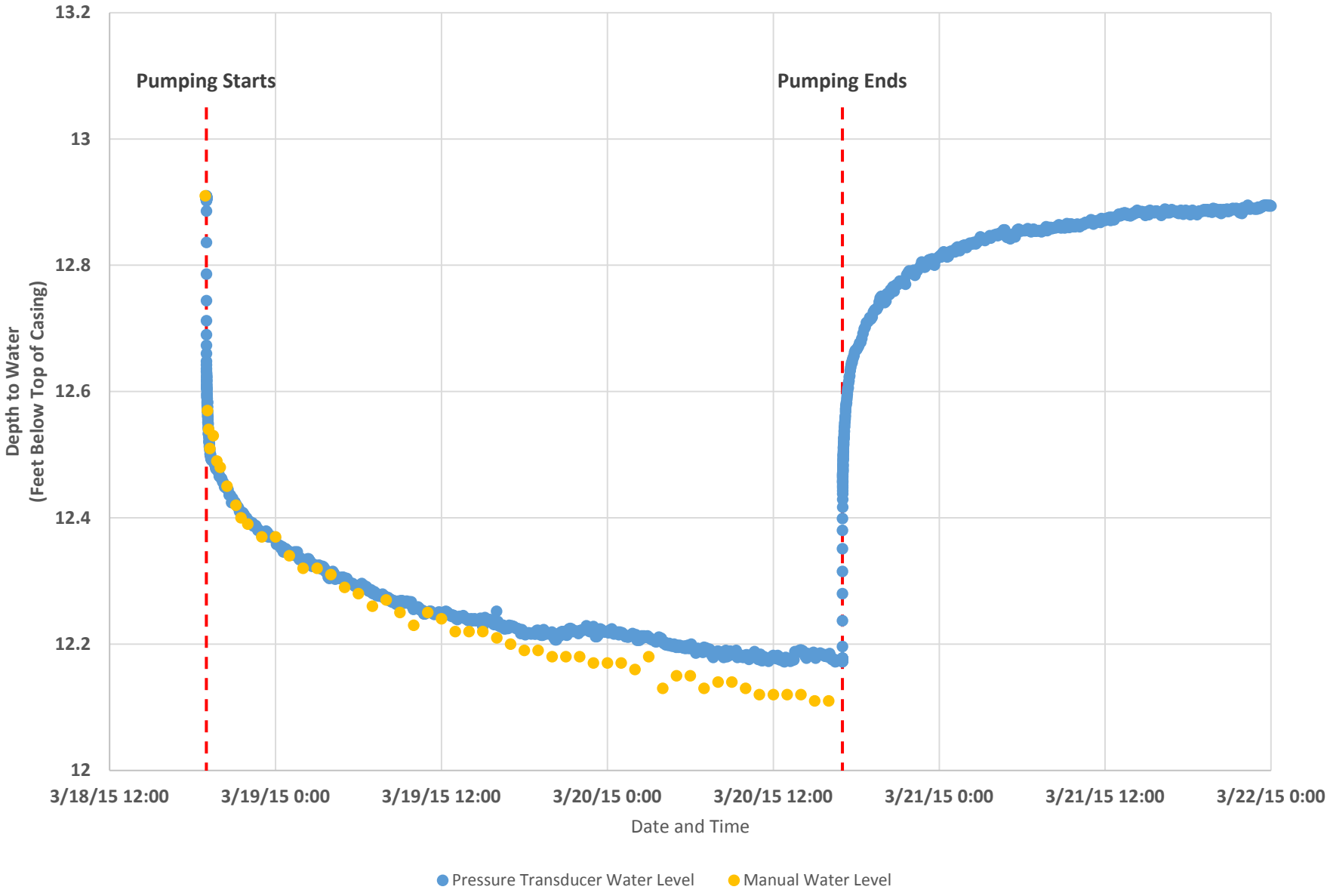
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PT-1 Drawdown and Recovery Data



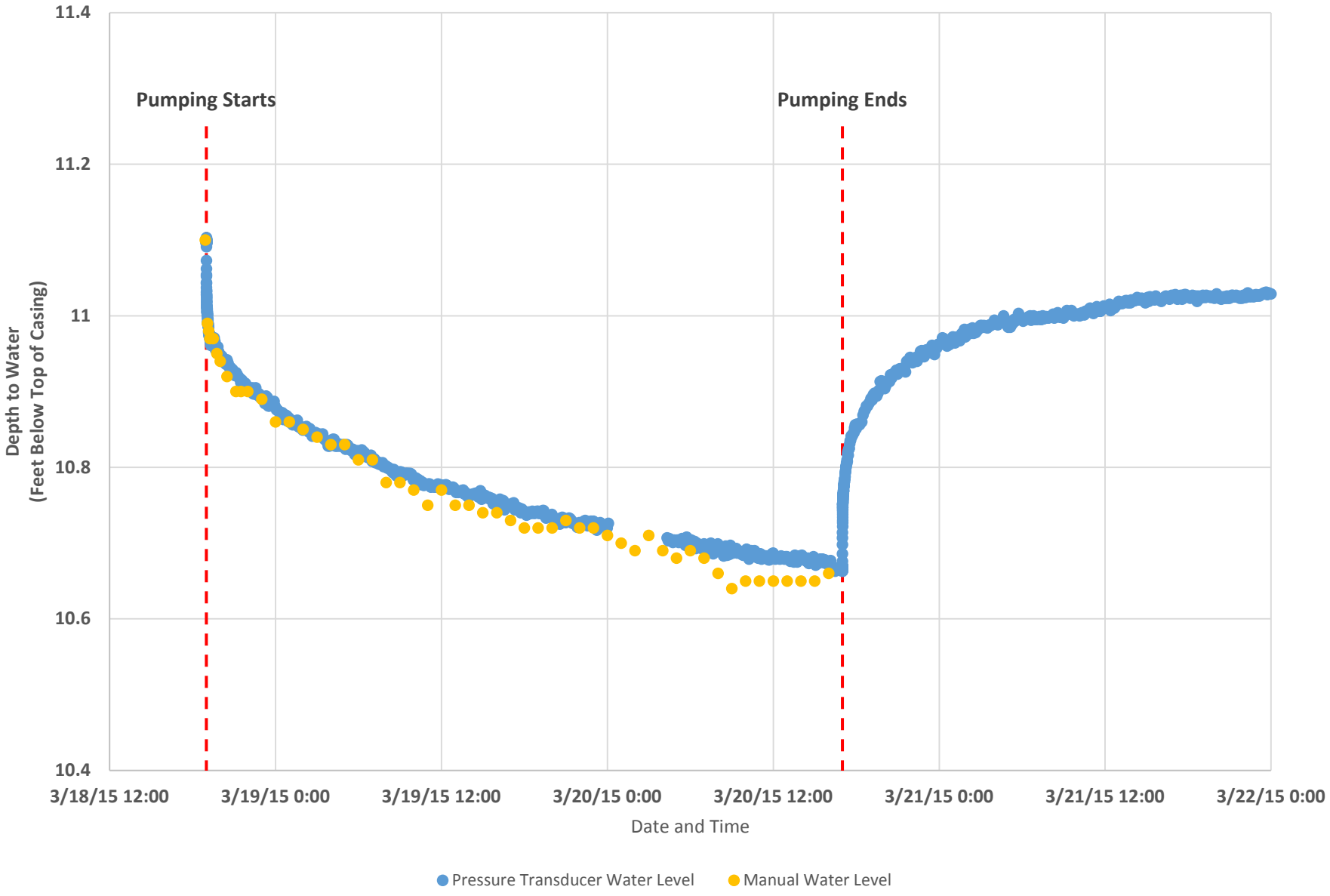
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Oct 30 2019

PT-2 Drawdown and Recovery Data



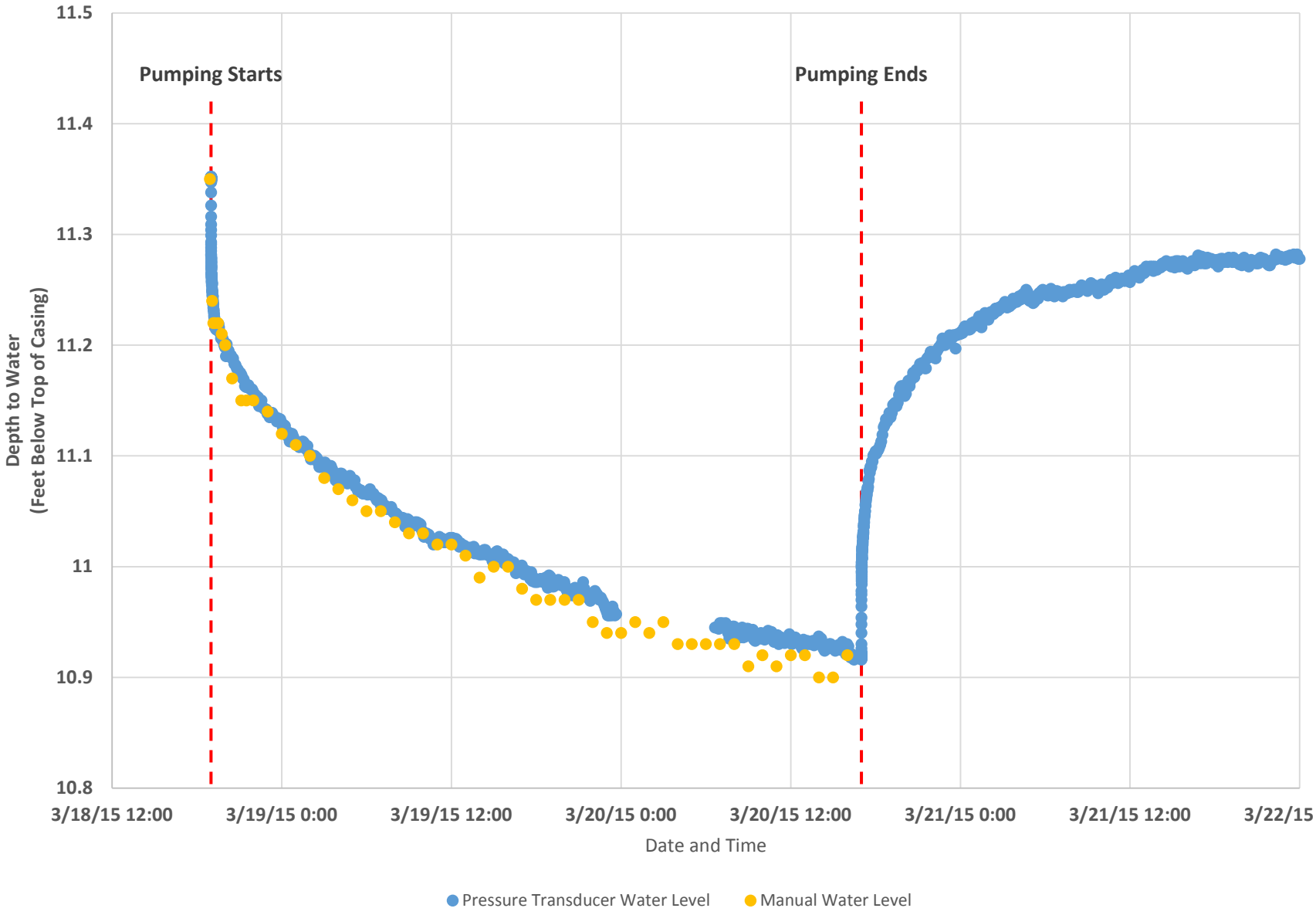
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PT-3 Drawdown and Recovery Data



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PT-4 Drawdown and Recovery Data



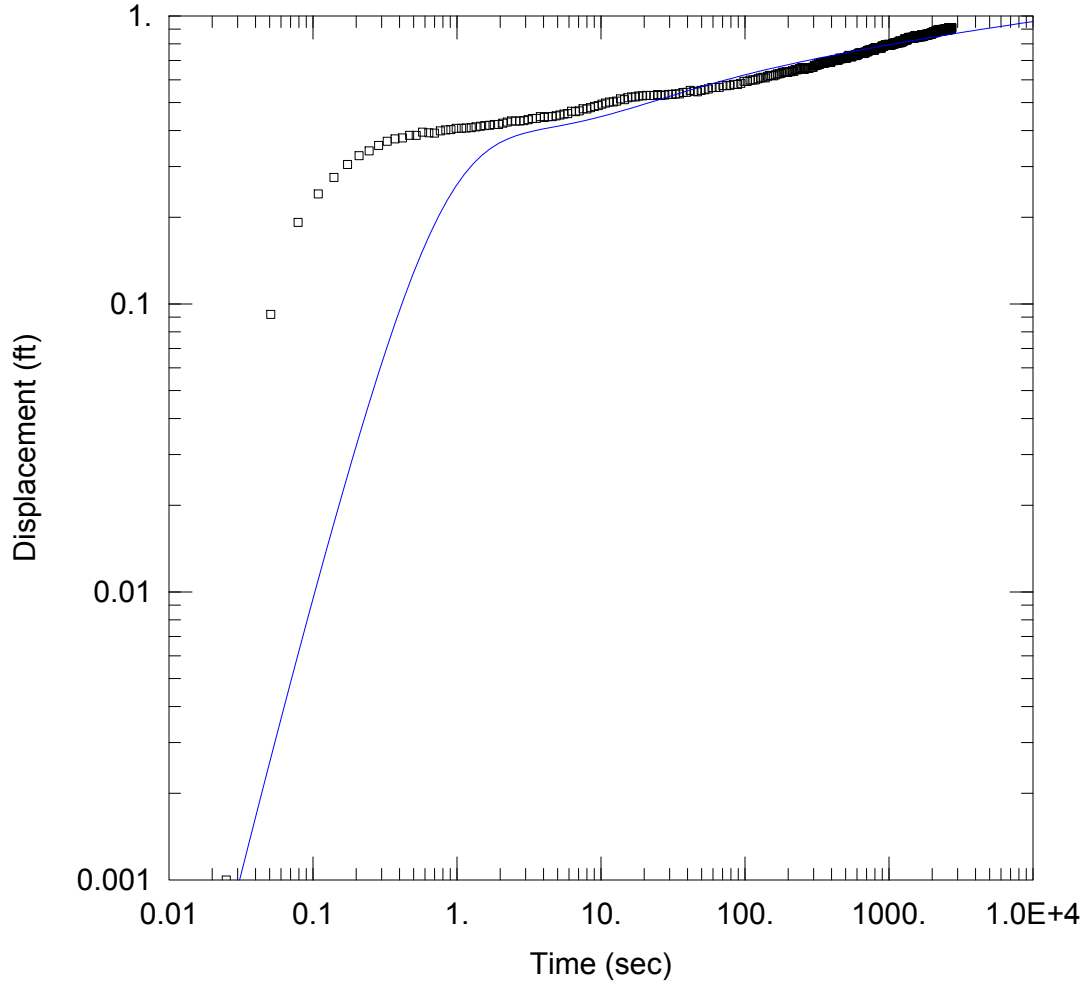
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APPENDIX C

Pumping Test Solver Files

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-1_Moench.aqt
Date: 05/14/15 Time: 08:13:39

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.362

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ PT-1	0	-5.31

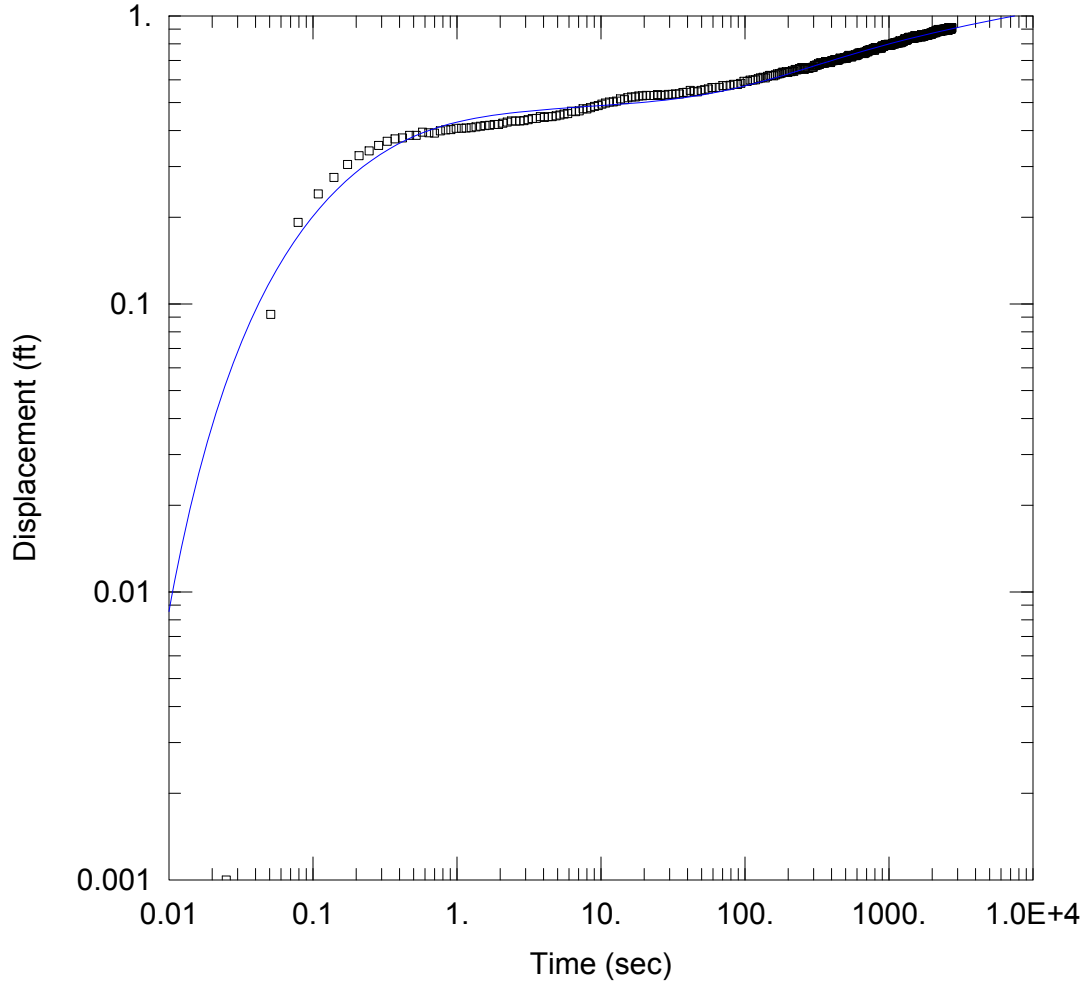
SOLUTION

Aquifer Model: Unconfined Solution Method: Moench

T = 1.581E+4 ft^2/day
Sy = 0.001981
Sw = 0.
r(c) = 0.167 ft

S = 9.755E-7
ß = 0.004757
r(w) = 0.333 ft
alpha = 1.0E+13 sec^{-1}

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WELL TEST ANALYSIS

Data Set: C:\Users\mcallahan\Desktop\PT-1_Neuman.aqt
Date: 05/13/15 Time: 16:45:22

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

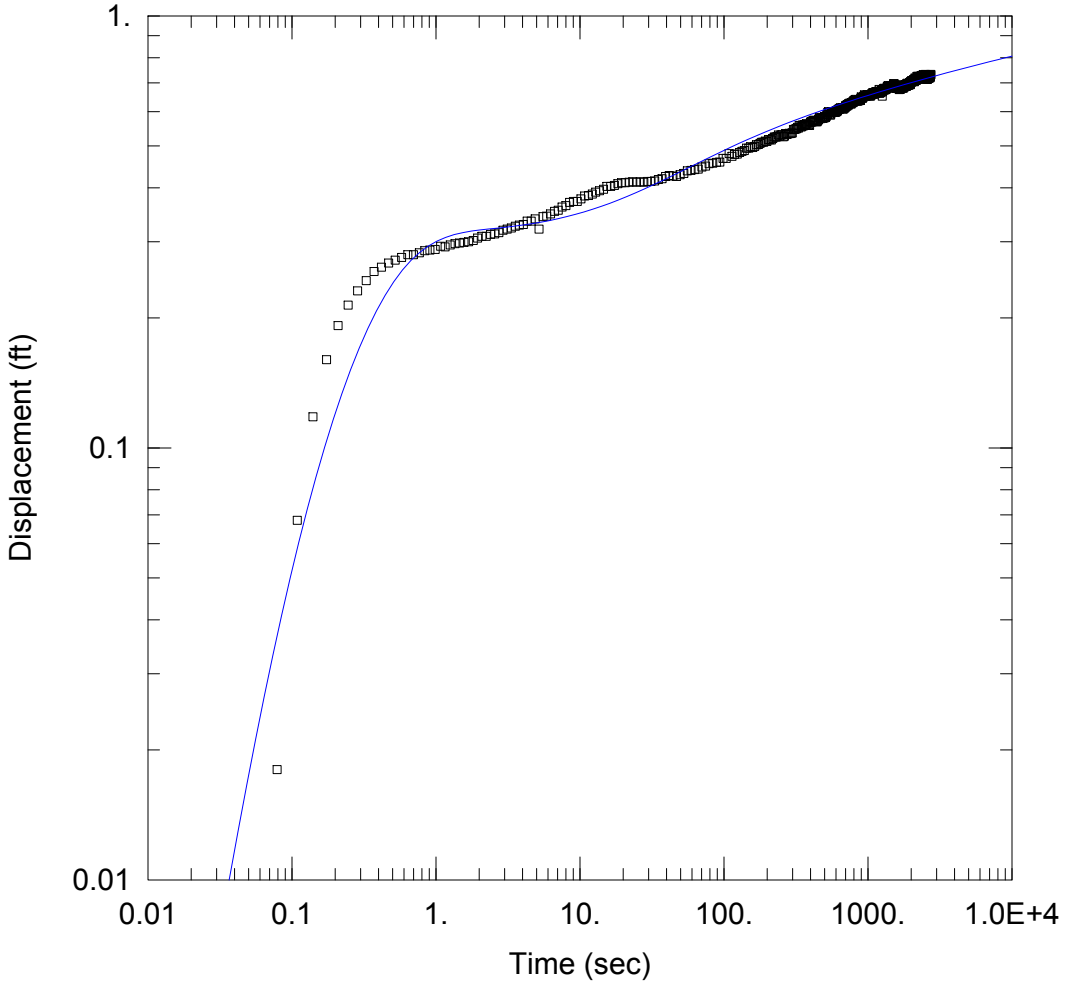
Well Name	X (ft)	Y (ft)
▫ PT-1	0	-5.31

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 1.172E+4 ft^2/day
Sy = 0.01971
S = 0.0003849
ß = 0.005726

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WELL TEST ANALYSIS

Data Set: C:\Users\mcallahan\Desktop\PT-2_Moench.aqt
Date: 05/13/15 Time: 16:41:41

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft Anisotropy Ratio (Kz/Kr): 0.1062

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ PT-2	0	-11.56

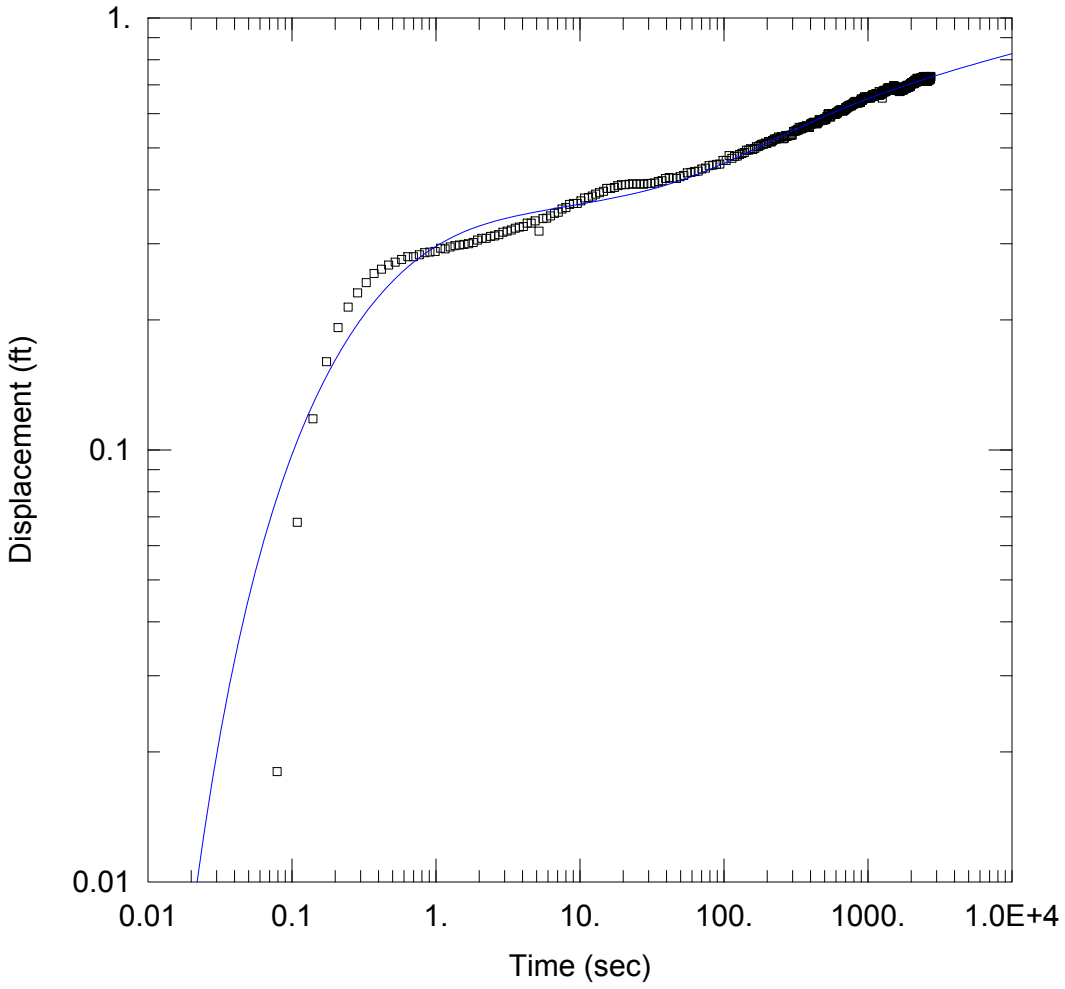
SOLUTION

Aquifer Model: Unconfined Solution Method: Moench

T = 1.685E+4 ft^2/day
Sy = 0.001364
Sw = 0.
r(c) = 0.04195 ft

S = 2.526E-6
ß = 0.006607
r(w) = 0.333 ft
alpha = 1.0E+13 sec^{-1}

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WELL TEST ANALYSIS

Data Set: C:\Users\mcallahan\Desktop\PT-2_Neuman.aqt
Date: 05/13/15 Time: 16:44:52

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

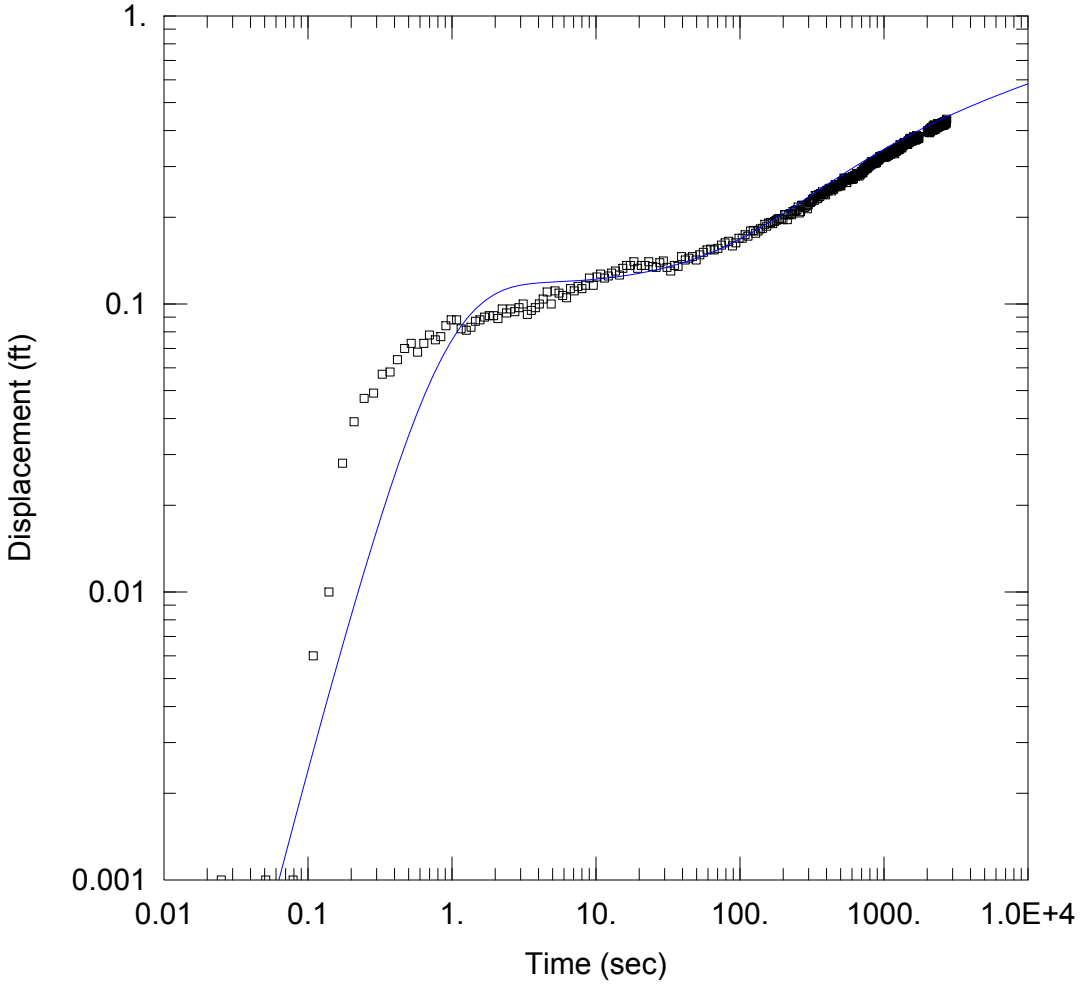
Well Name	X (ft)	Y (ft)
▫ PT-2	0	-11.56

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 1.498E+4 ft^2/day
Sy = 0.003761
S = 0.000195
ß = 0.005899

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-3_Moench.aqt
Date: 05/14/15 Time: 08:17:21

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 48.01 ft Anisotropy Ratio (Kz/Kr): 14.13

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

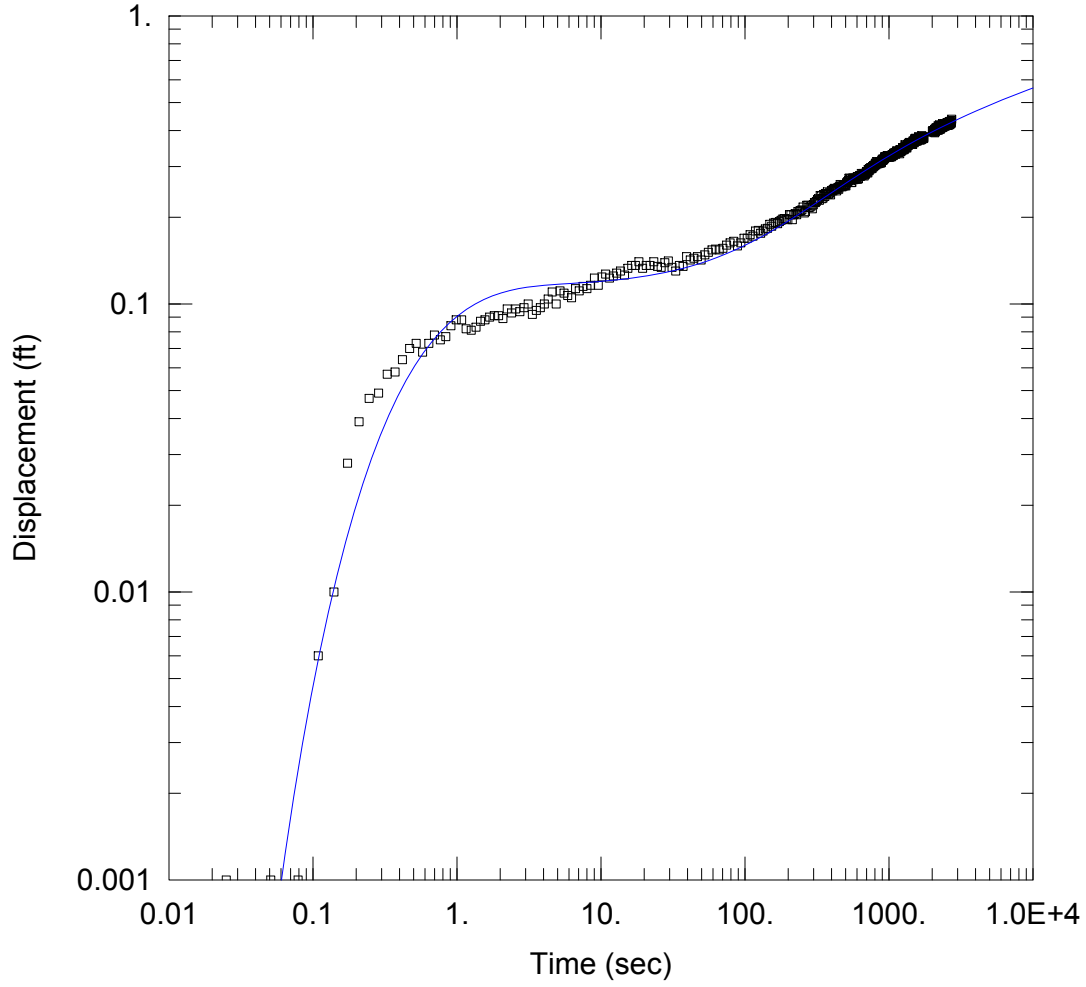
Well Name	X (ft)	Y (ft)
▫ PT-3	3.97	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Moench

T = 1.057E+4 ft^2/day
Sy = 0.2712
Sw = 0.
r(c) = 0.167 ft
S = 9.755E-7
ß = 0.09659
r(w) = 0.333 ft
alpha = 1.0E+13 sec^{-1}

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WELL TEST ANALYSIS

Data Set: C:\Users\mcallahan\Desktop\PT-3_Neuman.aqt
Date: 05/13/15 Time: 16:44:22

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 48.01 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

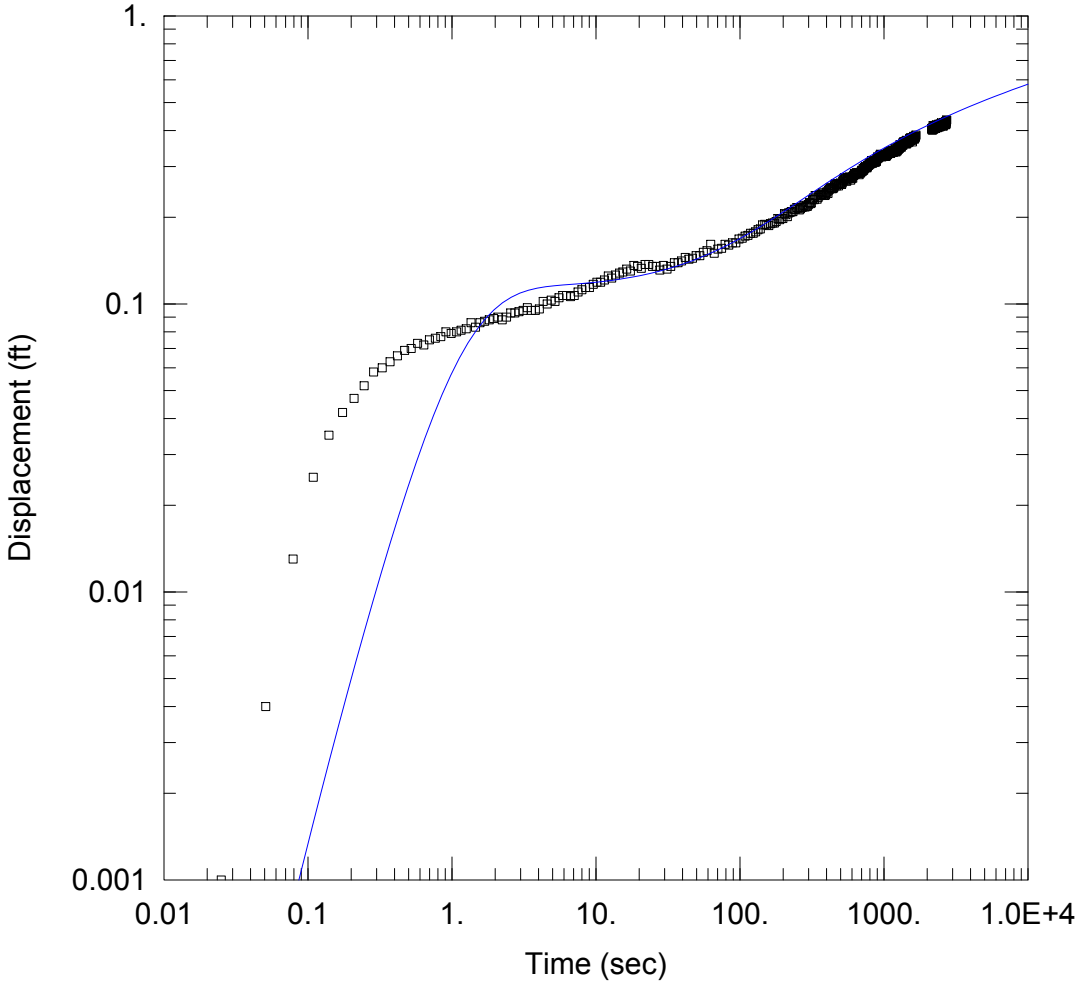
Well Name	X (ft)	Y (ft)
▫ PT-3	3.97	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 1.056E+4 ft^2/day
S = 0.002338
Sy = 0.3414
ß = 0.1034

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-4_Moench.aqt
Date: 05/14/15 Time: 08:19:26

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 47.81 ft Anisotropy Ratio (Kz/Kr): 2.532

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ PT-4	9.66	0

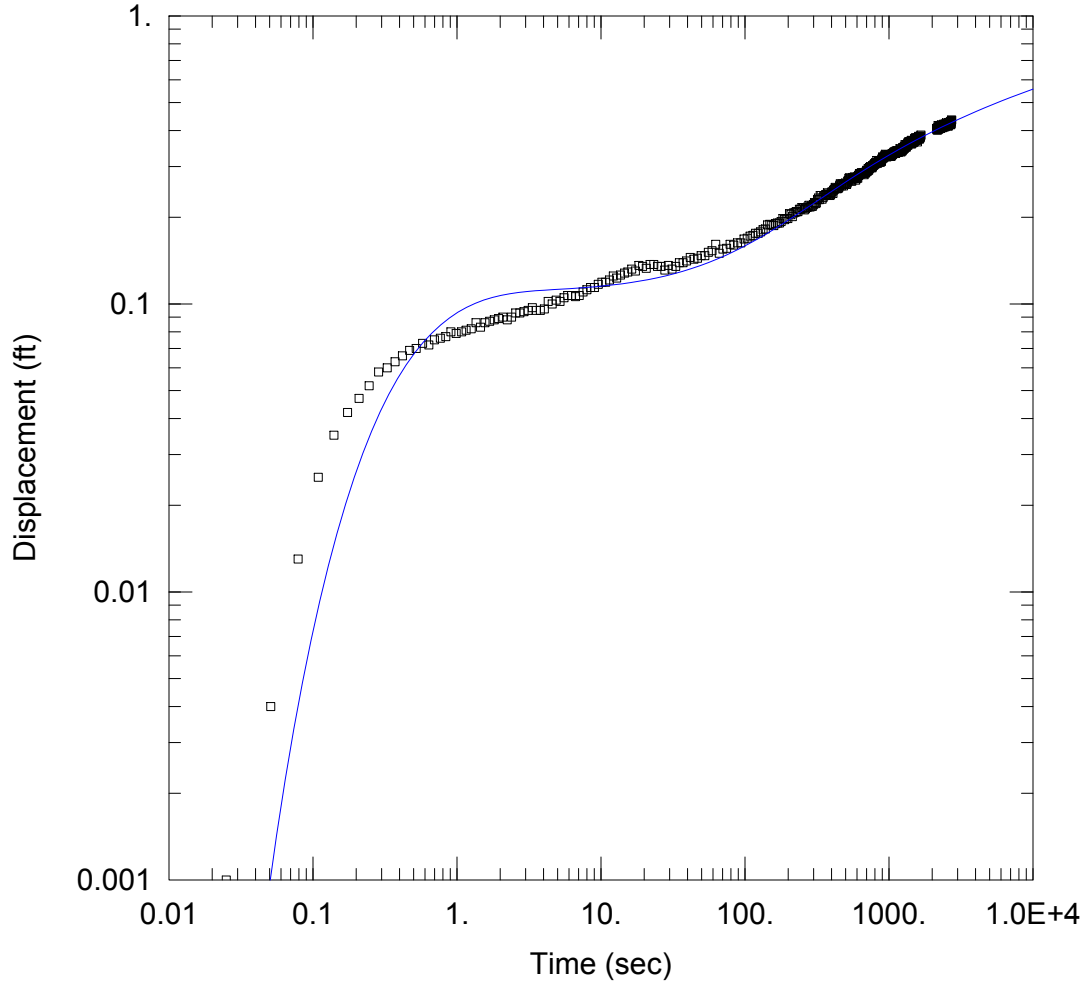
SOLUTION

Aquifer Model: Unconfined Solution Method: Moench

T = 1.081E+4 ft^2/day
Sy = 0.04415
Sw = 0.
r(c) = 0.167 ft

S = 3.382E-6
ß = 0.1034
r(w) = 0.333 ft
alpha = 1.0E+13 sec^{-1}

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WELL TEST ANALYSIS

Data Set: C:\Users\mcallahan\Desktop\PT-4_Neuman.aqt
Date: 05/13/15 Time: 16:43:54

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 47.81 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

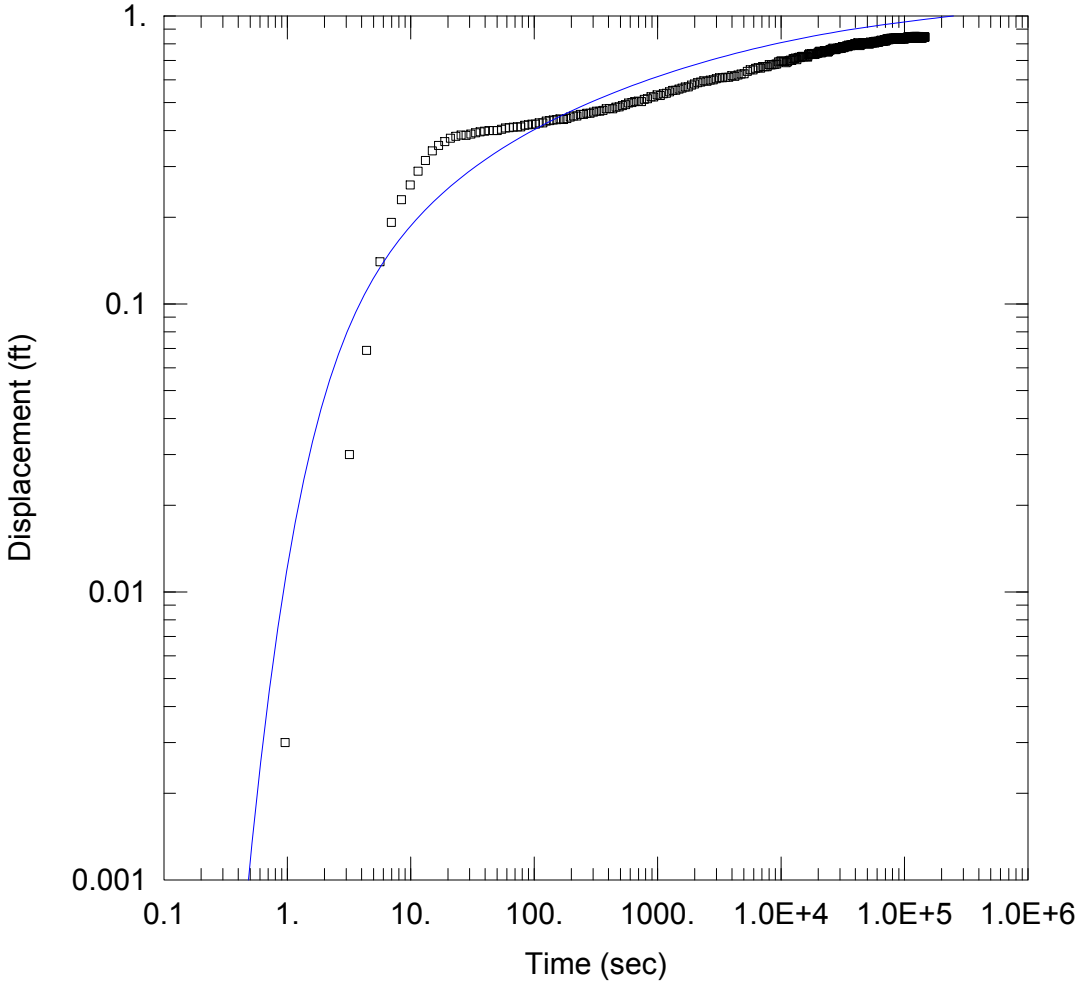
Well Name	X (ft)	Y (ft)
PT-4	9.66	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 1.091E+4 ft^2/day
S = 0.0003545
Sy = 0.05504
ß = 0.1117

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-1_Moench_Recovery.aqt
Date: 05/19/15 Time: 08:32:37

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.0007609

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

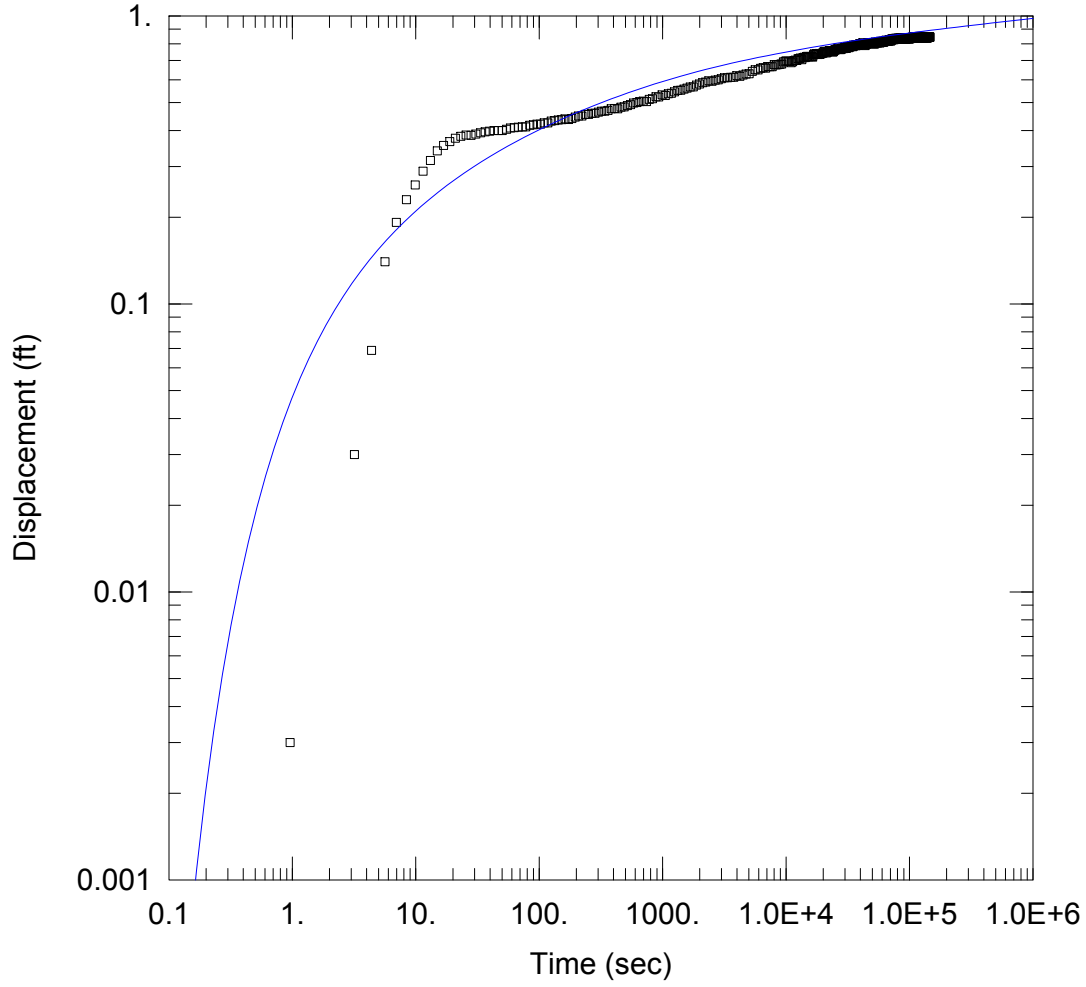
Well Name	X (ft)	Y (ft)
▫ PT-1	0	-5.31

SOLUTION

Aquifer Model: Unconfined
Solution Method: Moench

T = 2.178E+4 ft^2/day
Sy = 0.0004314
Sw = 0.
r(c) = 0.167 ft
S = 0.02734
ß = 1.0E-5
r(w) = 0.333 ft
alpha = 1.0E+13 sec^{-1}

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-1_Neuman_Recovery.aqt
Date: 05/19/15 Time: 08:35:09

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

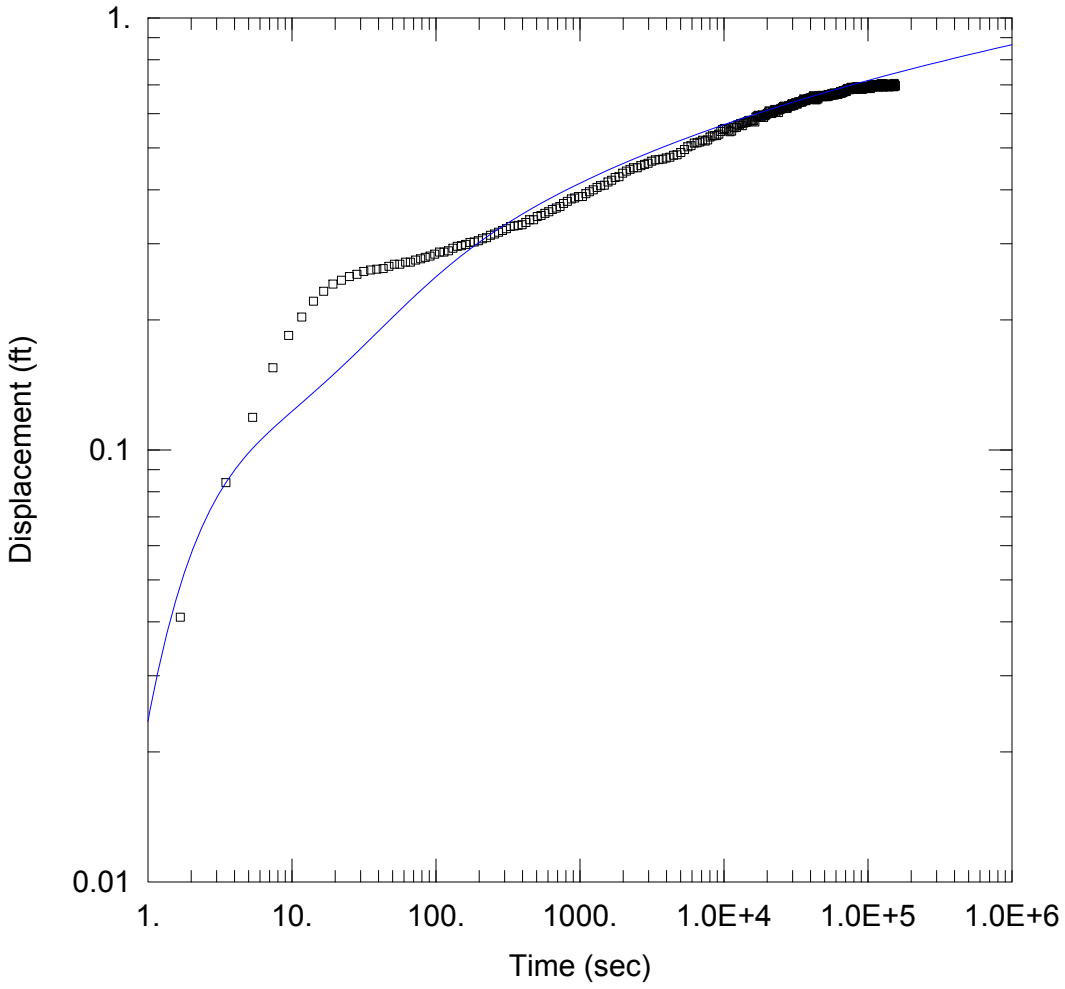
Well Name	X (ft)	Y (ft)
▫ PT-1	0	-5.31

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 2.396E+4 ft^2/day
Sy = 0.002104
S = 0.01975
ß = 1.246E-5

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-2_Moench_Recovery.aqt
Date: 05/19/15 Time: 08:34:51

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft Anisotropy Ratio (Kz/Kr): 0.8042

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ PT-2	0	-11.56

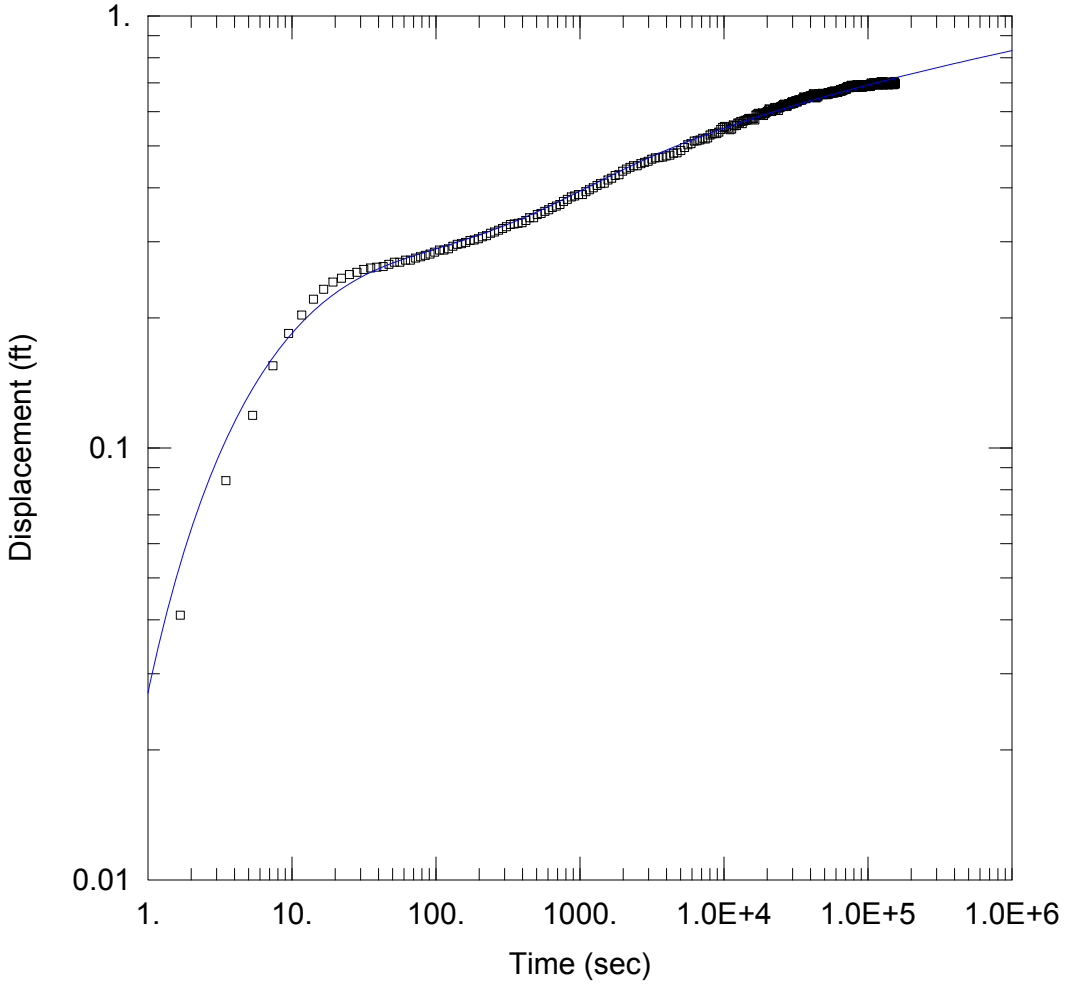
SOLUTION

Aquifer Model: Unconfined
Solution Method: Moench

T = 1.691E+4 ft^2/day
Sy = 0.009895
Sw = 0.
r(c) = 0.04195 ft

S = 0.004212
ß = 0.05002
r(w) = 0.333 ft
alpha = 1.0E+13 sec^{-1}

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-2_Neuman_Recovery.aqt
Date: 05/19/15 Time: 08:34:39

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

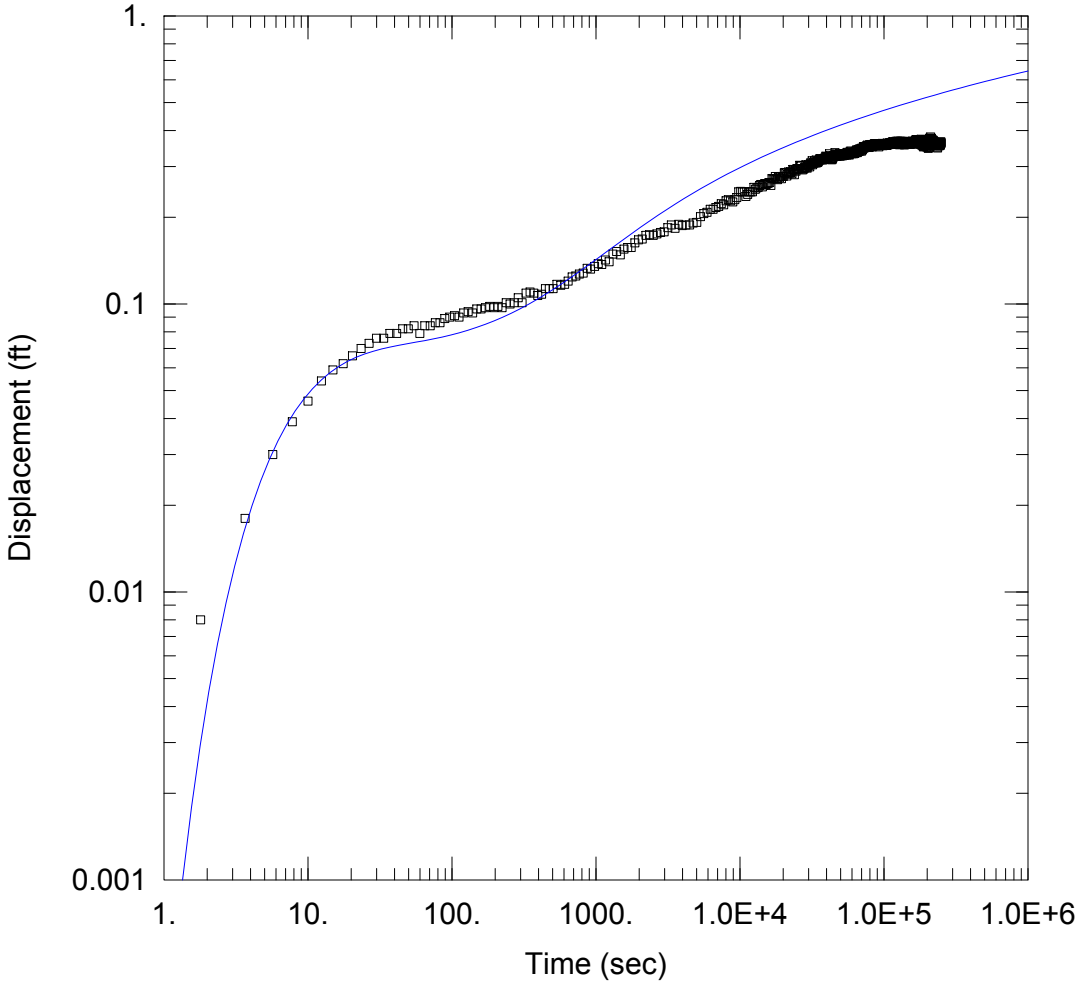
Well Name	X (ft)	Y (ft)
▫ PT-2	0	-11.56

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 1.83E+4 ft^2/day
Sy = 0.02921
S = 0.005901
ß = 0.006396

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-3_Moench_Recovery.aqt
Date: 05/19/15 Time: 08:34:23

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 48.01 ft Anisotropy Ratio (Kz/Kr): 27.82

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ PT-3	3.97	0

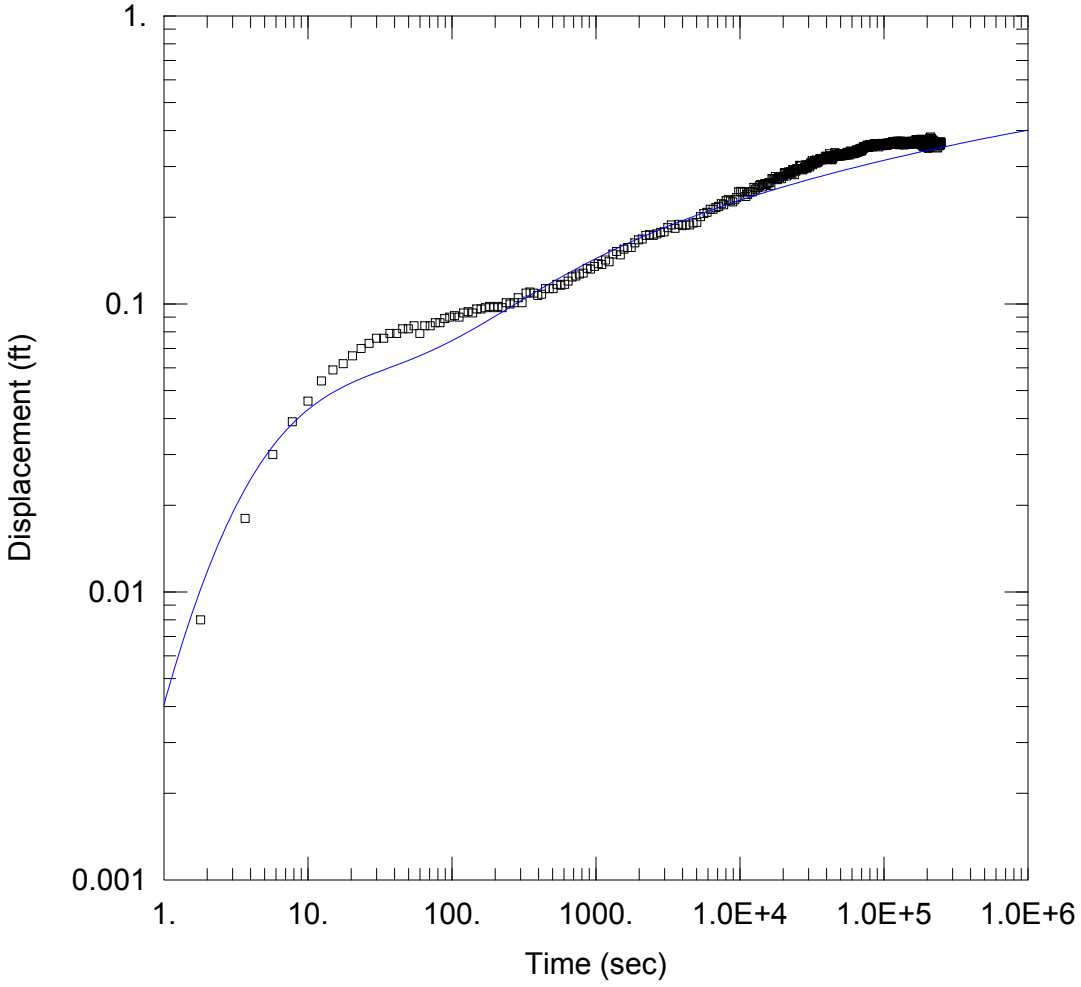
SOLUTION

Aquifer Model: Unconfined
Solution Method: Moench

T = 1.461E+4 ft^2/day
Sy = 2.766
Sw = 0.
r(c) = 0.167 ft

S = 0.06431
ß = 0.1902
r(w) = 0.333 ft
alpha = 1.0E+13 sec^{-1}

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-3_Neuman_Recovery.aqt
Date: 05/19/15 Time: 08:34:02

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 48.01 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

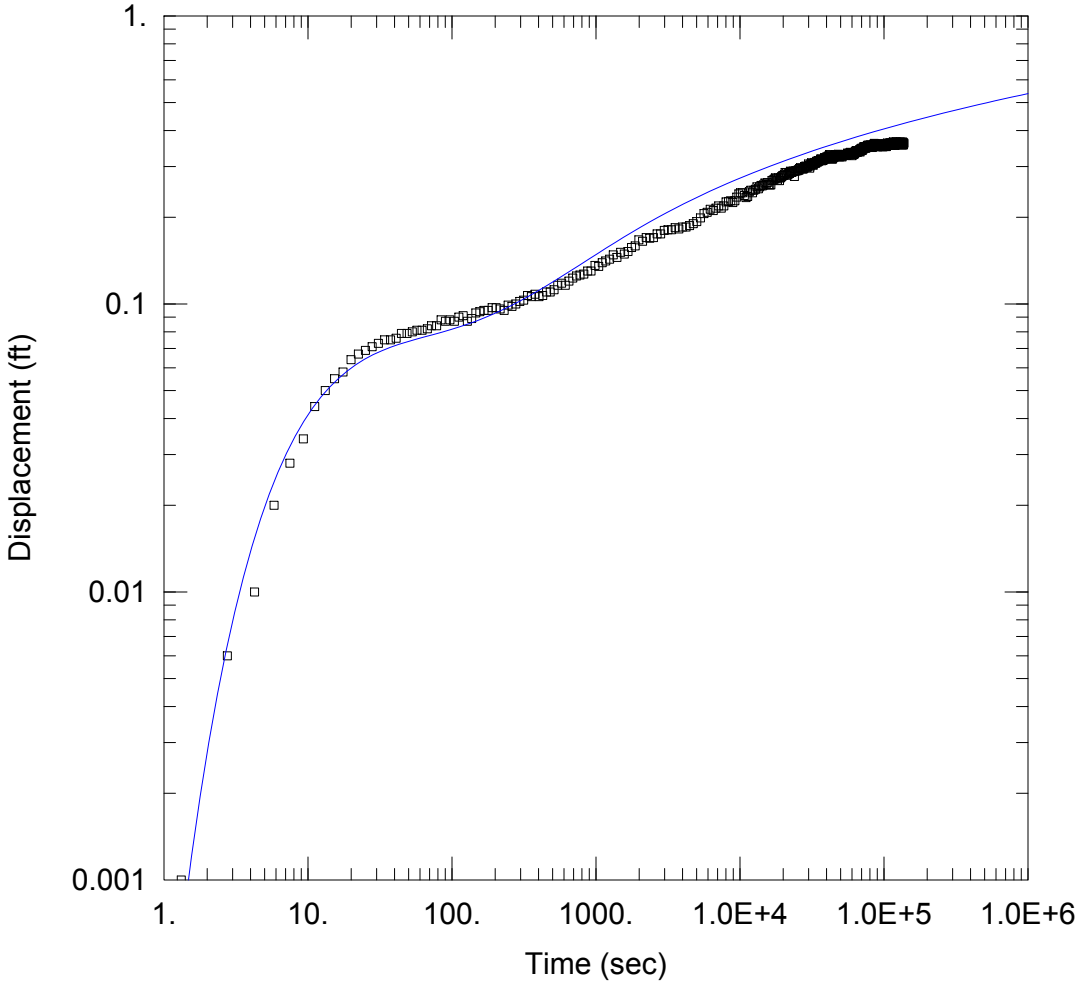
Well Name	X (ft)	Y (ft)
▫ PT-3	3.97	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 2.947E+4 ft^2/day
Sy = 0.001
S = 0.0001201
ß = 0.0001584

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-4_Moench_Recovery.aqt
Date: 05/19/15 Time: 08:33:46

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 47.81 ft Anisotropy Ratio (Kz/Kr): 1.314

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ PT-4	9.66	0

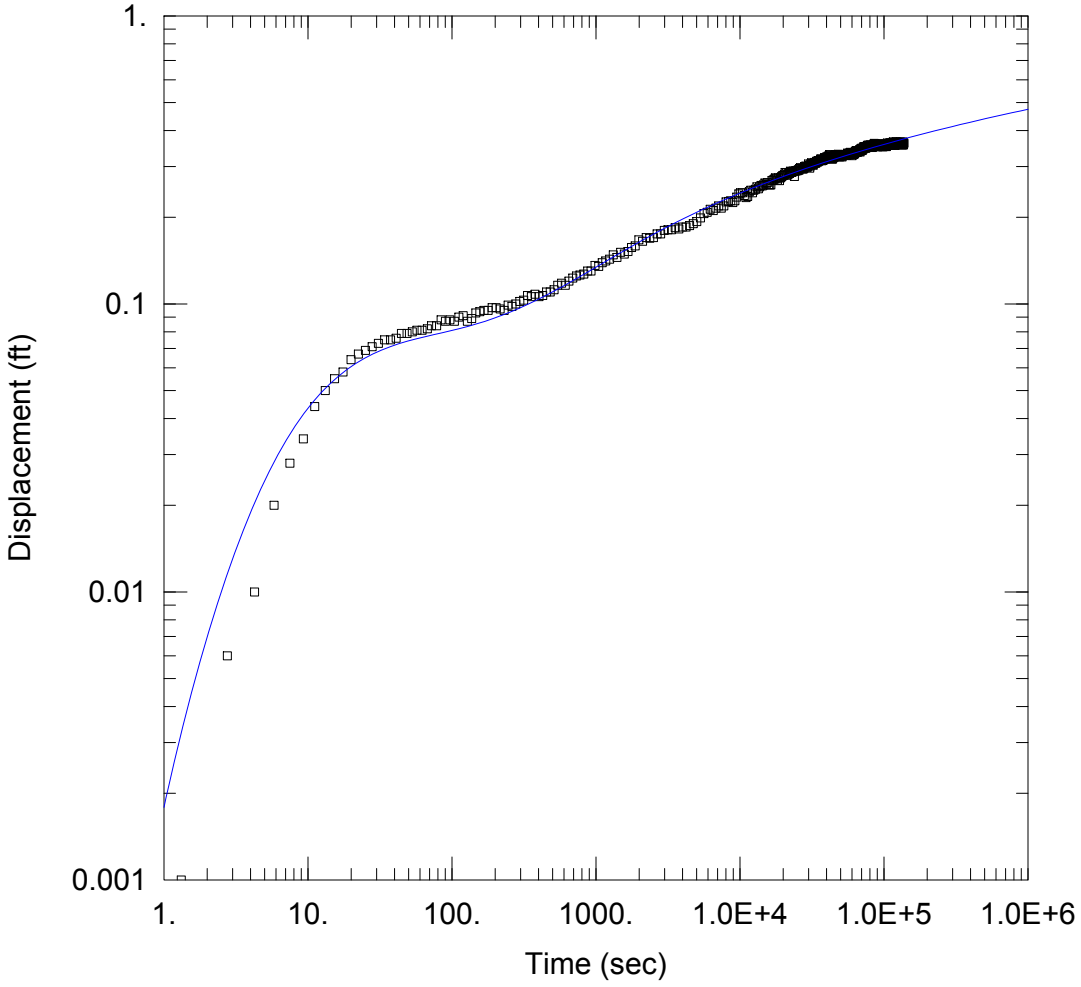
SOLUTION

Aquifer Model: Unconfined
Solution Method: Moench

T = 1.921E+4 ft^2/day
Sy = 0.1183
Sw = 0.
r(c) = 0.167 ft

S = 0.006676
ß = 0.05365
r(w) = 0.333 ft
alpha = 1.0E+13 sec^{-1}

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\APT\PT-4_Neuman_Recovery.aqt
Date: 05/19/15 Time: 08:33:15

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: EW-1
Test Date: 3/18/2015

AQUIFER DATA

Saturated Thickness: 47.81 ft

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
EW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
PT-4	9.66	0

SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 2.189E+4 ft^2/day
S = 5.282E-5
Sy = 0.001
ß = 0.0003159

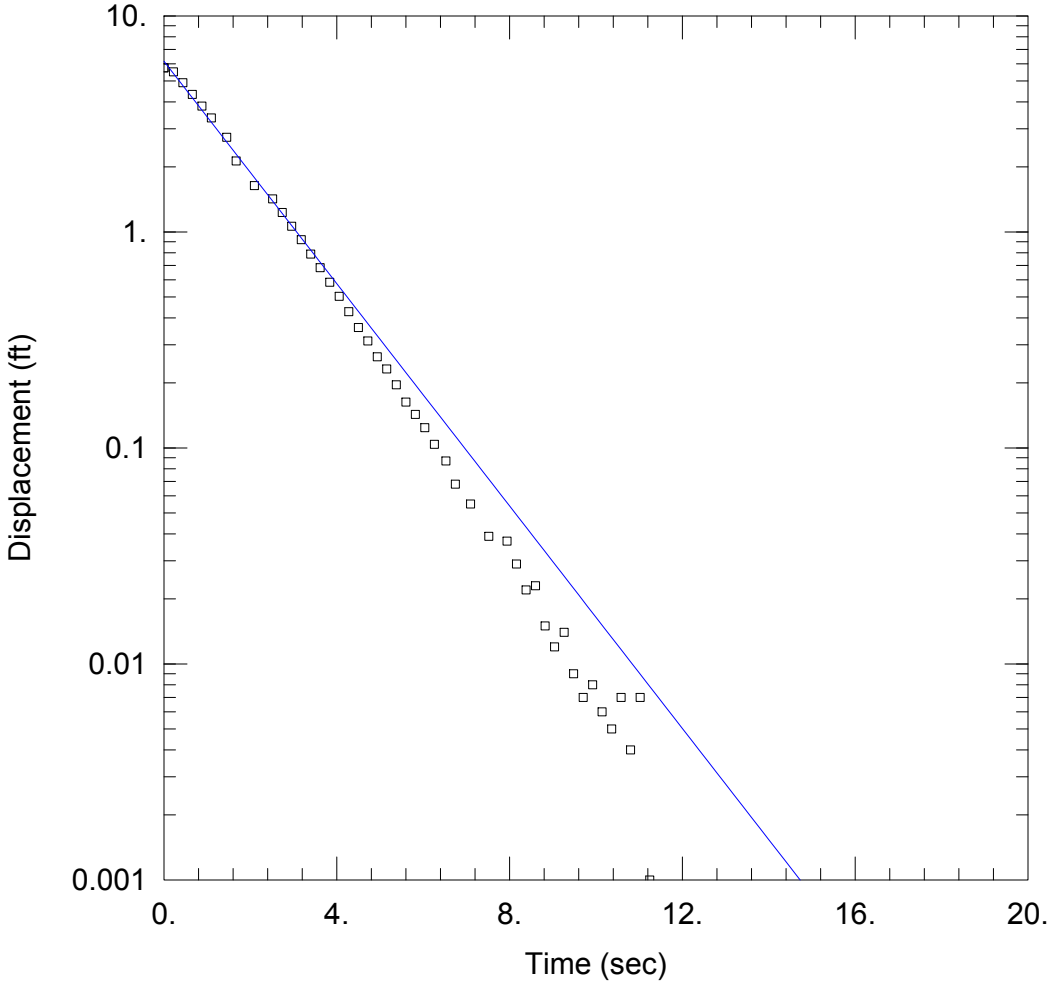
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APPENDIX D

Slug Test Solver Files

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\MW-1B_1_BR.aqt
Date: 05/13/15 Time: 17:12:48

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: MW-1B
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 61.75 ft Anisotropy Ratio (Kz/Kr): 0.1

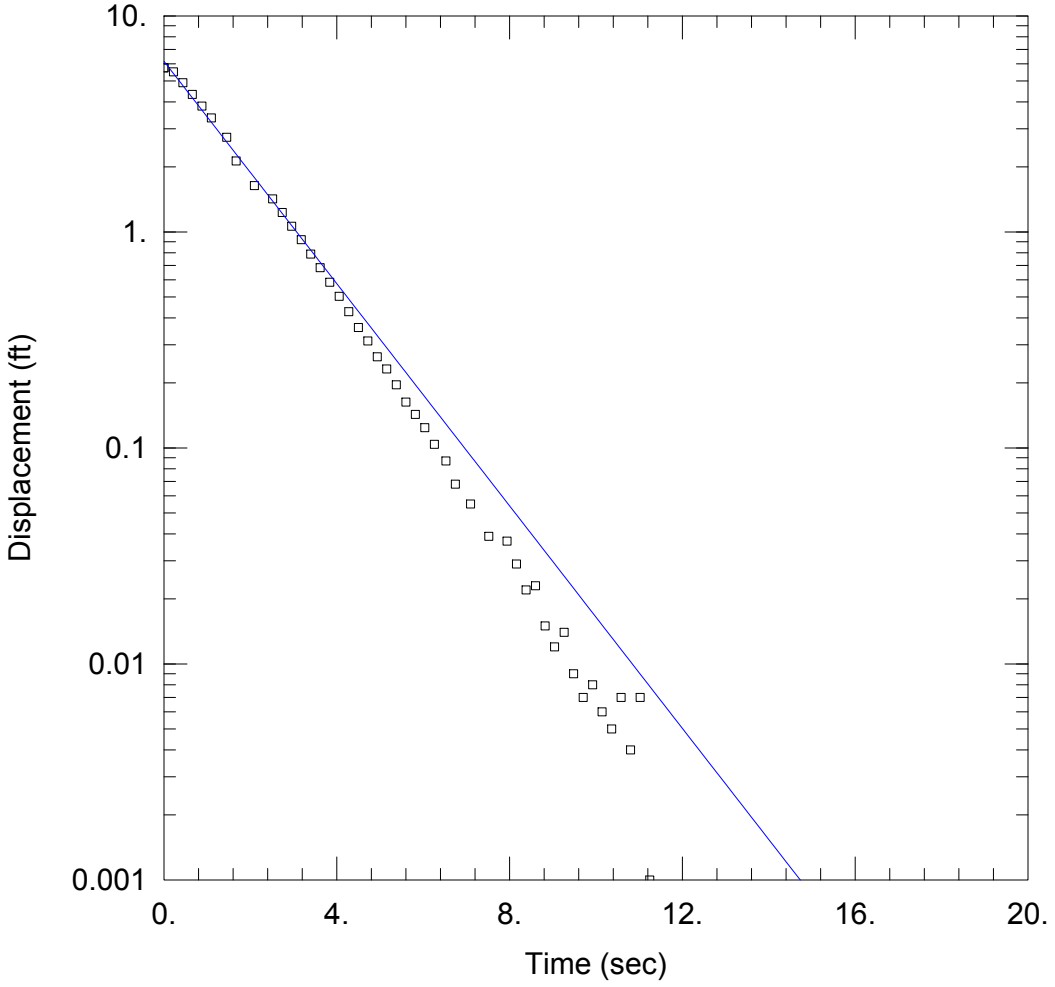
WELL DATA (New Well)

Initial Displacement: 5.751 ft
Total Well Penetration Depth: 17.75 ft
Casing Radius: 0.083 ft
Static Water Column Height: 17.75 ft
Screen Length: 5. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 149.8 ft/day
y0 = 6.163 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\MW-1B_1_H.aqt
Date: 05/13/15 Time: 17:15:33

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: MW-1B
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 61.75 ft Anisotropy Ratio (Kz/Kr): 0.1

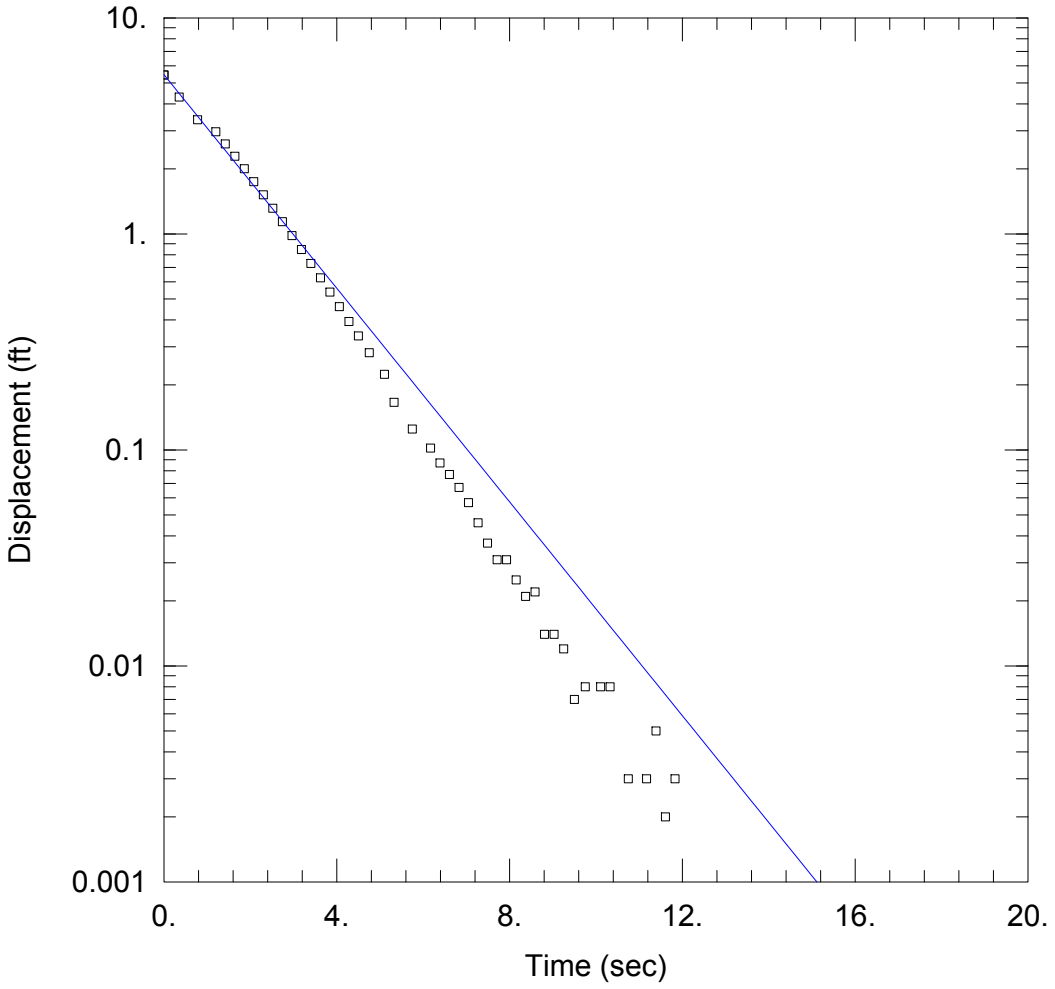
WELL DATA (New Well)

Initial Displacement: 5.751 ft
Total Well Penetration Depth: 17.75 ft
Casing Radius: 0.083 ft
Static Water Column Height: 17.75 ft
Screen Length: 5. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 185.1 ft/day
y0 = 6.162 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\MW-1B_2_BR.aqt
Date: 05/13/15 Time: 17:17:08

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: MW-1B
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 12.75 ft Anisotropy Ratio (Kz/Kr): 0.1

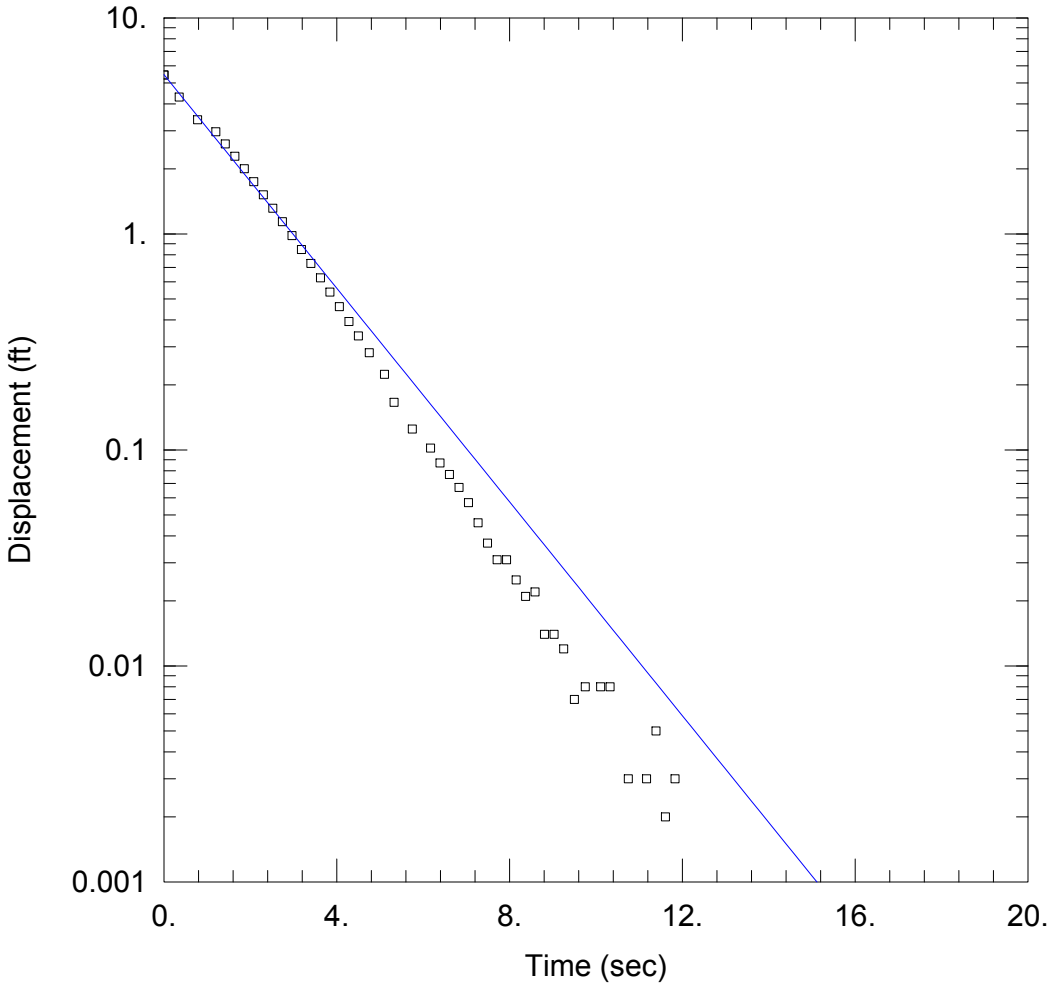
WELL DATA (New Well)

Initial Displacement: 5.446 ft
Total Well Penetration Depth: 51.5 ft
Casing Radius: 0.083 ft
Static Water Column Height: 17.75 ft
Screen Length: 5. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 188. ft/day
y0 = 5.462 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\MW-1B_2_H.aqt
Date: 05/13/15 Time: 17:18:52

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: MW-1B
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 61.75 ft Anisotropy Ratio (Kz/Kr): 0.1

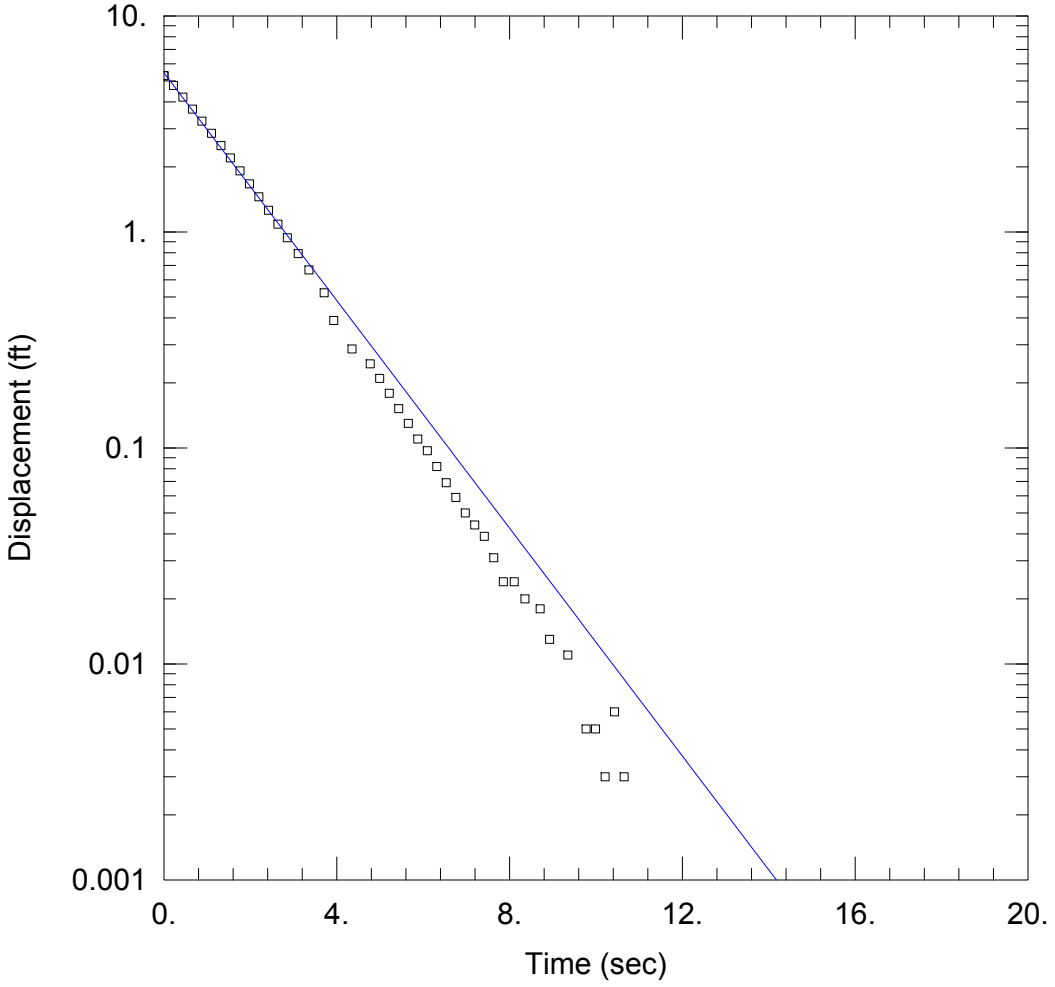
WELL DATA (New Well)

Initial Displacement: 5.446 ft
Total Well Penetration Depth: 17.75 ft
Casing Radius: 0.083 ft
Static Water Column Height: 17.75 ft
Screen Length: 5. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 177.9 ft/day
y0 = 5.462 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\MW-1B_3_BR.aqt
Date: 05/13/15 Time: 17:20:41

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: MW-1B
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 61.75 ft Anisotropy Ratio (Kz/Kr): 0.1

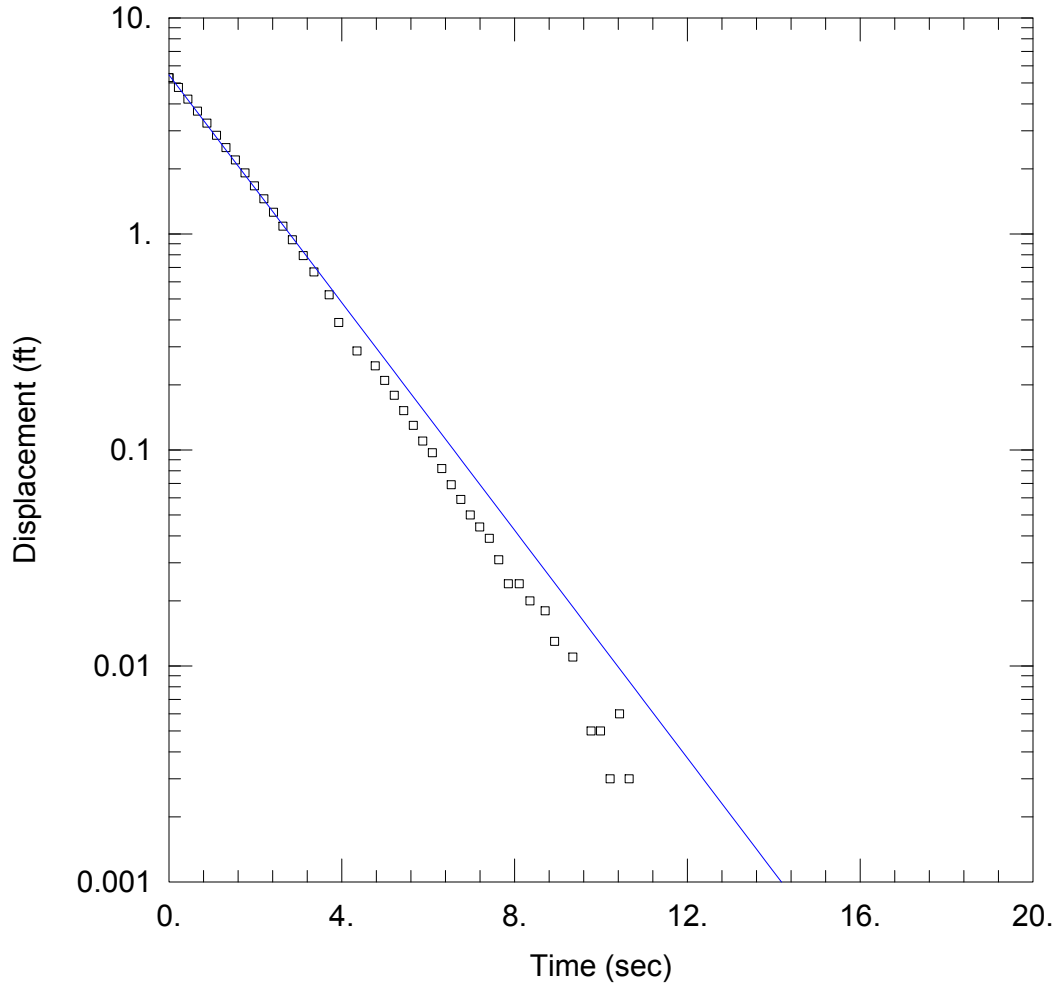
WELL DATA (New Well)

Initial Displacement: 5.287 ft
Total Well Penetration Depth: 17.75 ft
Casing Radius: 0.083 ft
Static Water Column Height: 17.75 ft
Screen Length: 5. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 153.4 ft/day
y0 = 5.447 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\MW-1B_3_H.aqt
Date: 05/13/15 Time: 17:22:30

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: MW-1B
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 61.75 ft Anisotropy Ratio (Kz/Kr): 0.1

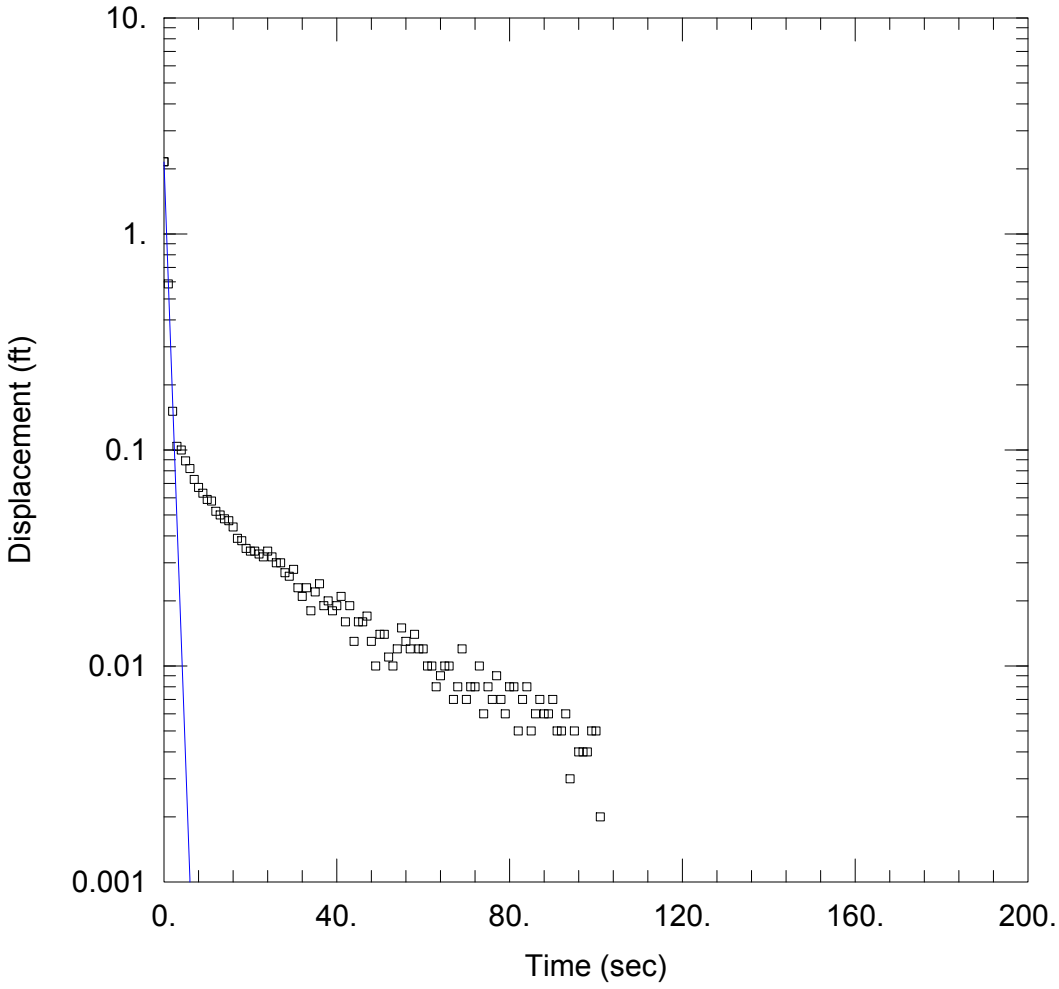
WELL DATA (New Well)

Initial Displacement: 5.287 ft
Total Well Penetration Depth: 17.75 ft
Casing Radius: 0.083 ft
Static Water Column Height: 17.75 ft
Screen Length: 5. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 189.6 ft/day
y0 = 5.446 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-1_1_BR.aqt
Date: 05/13/15 Time: 17:24:02

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-1
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.1

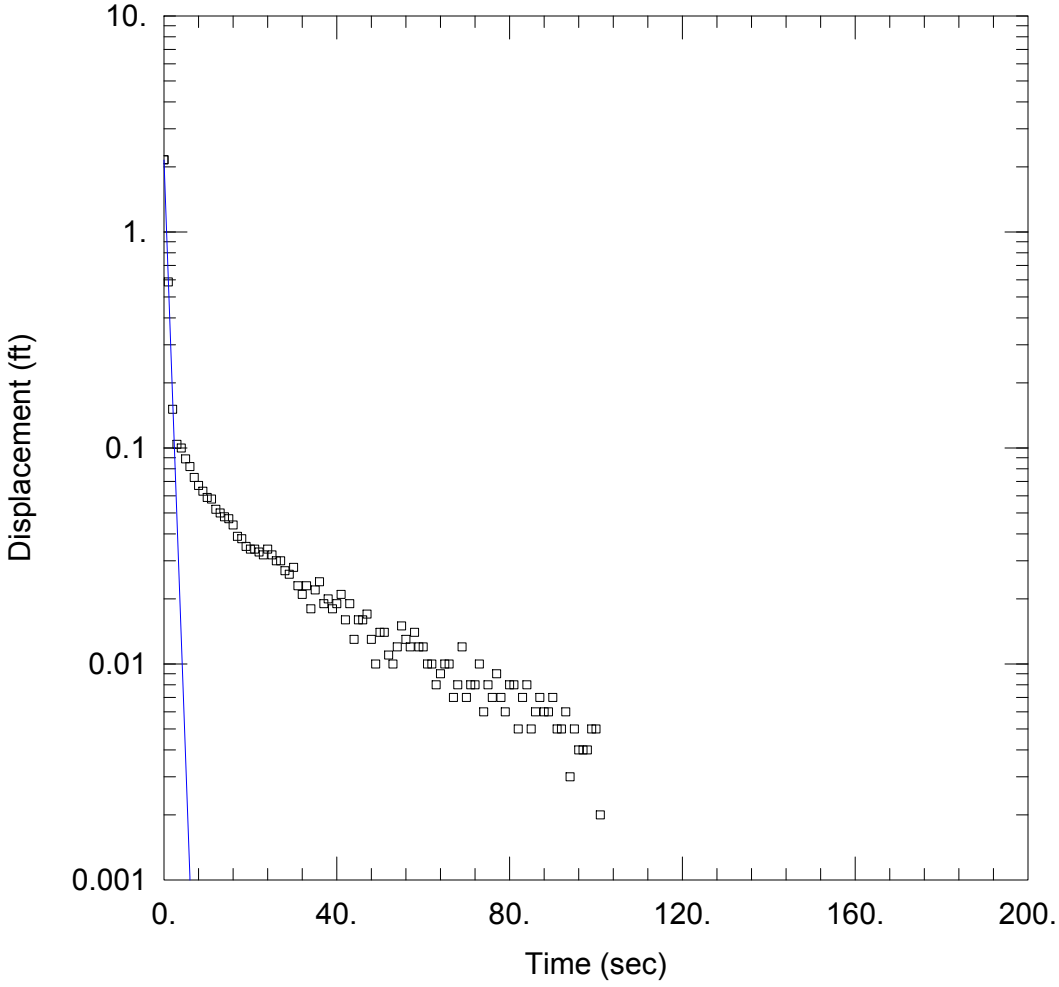
WELL DATA (New Well)

Initial Displacement: 2.16 ft
Total Well Penetration Depth: 19.09 ft
Casing Radius: 0.083 ft
Static Water Column Height: 19.29 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 104.3 ft/day
y0 = 2.152 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-1_1_H.aqt
Date: 05/13/15 Time: 17:25:38

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-1
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.1

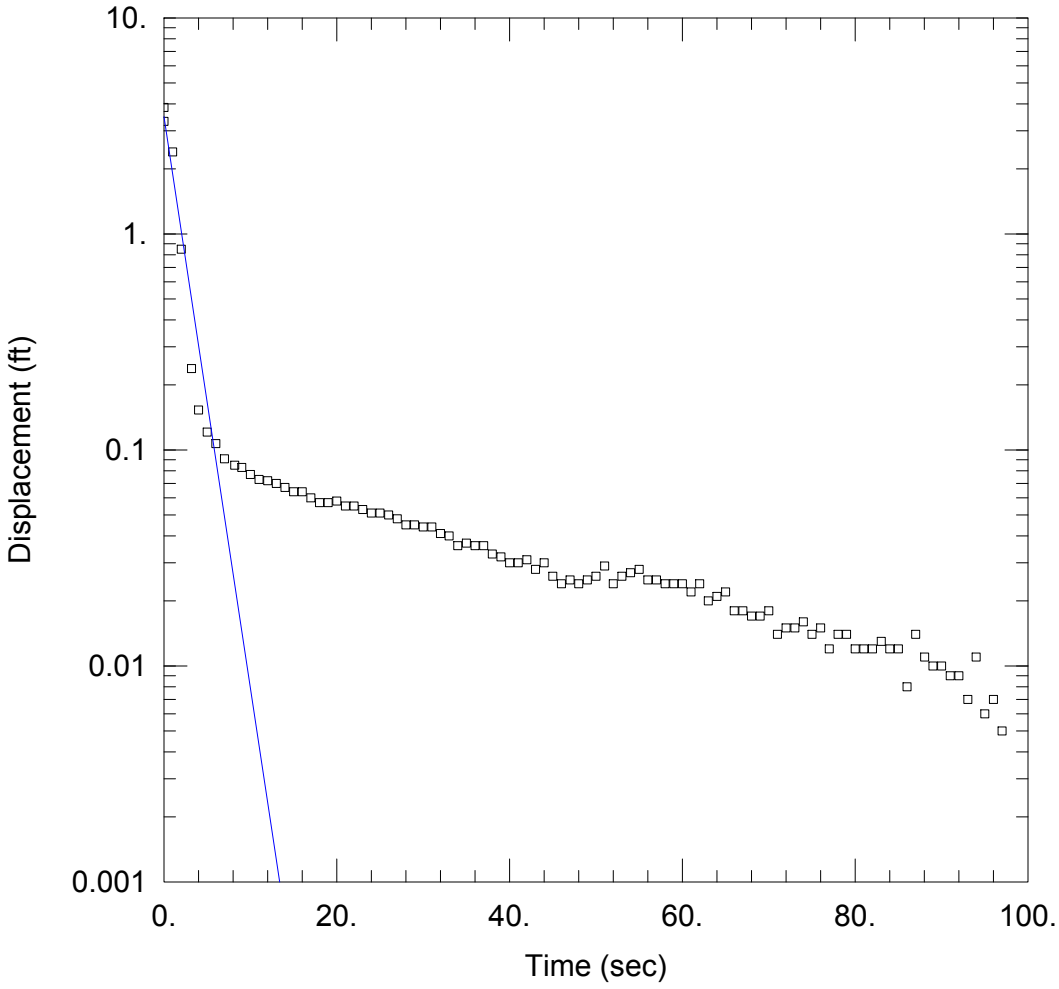
WELL DATA (New Well)

Initial Displacement: 2.16 ft
Total Well Penetration Depth: 19.09 ft
Casing Radius: 0.083 ft
Static Water Column Height: 19.29 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 142.8 ft/day
y0 = 2.151 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-1_2_BR.aqt
Date: 05/13/15 Time: 17:27:24

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-1
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.1

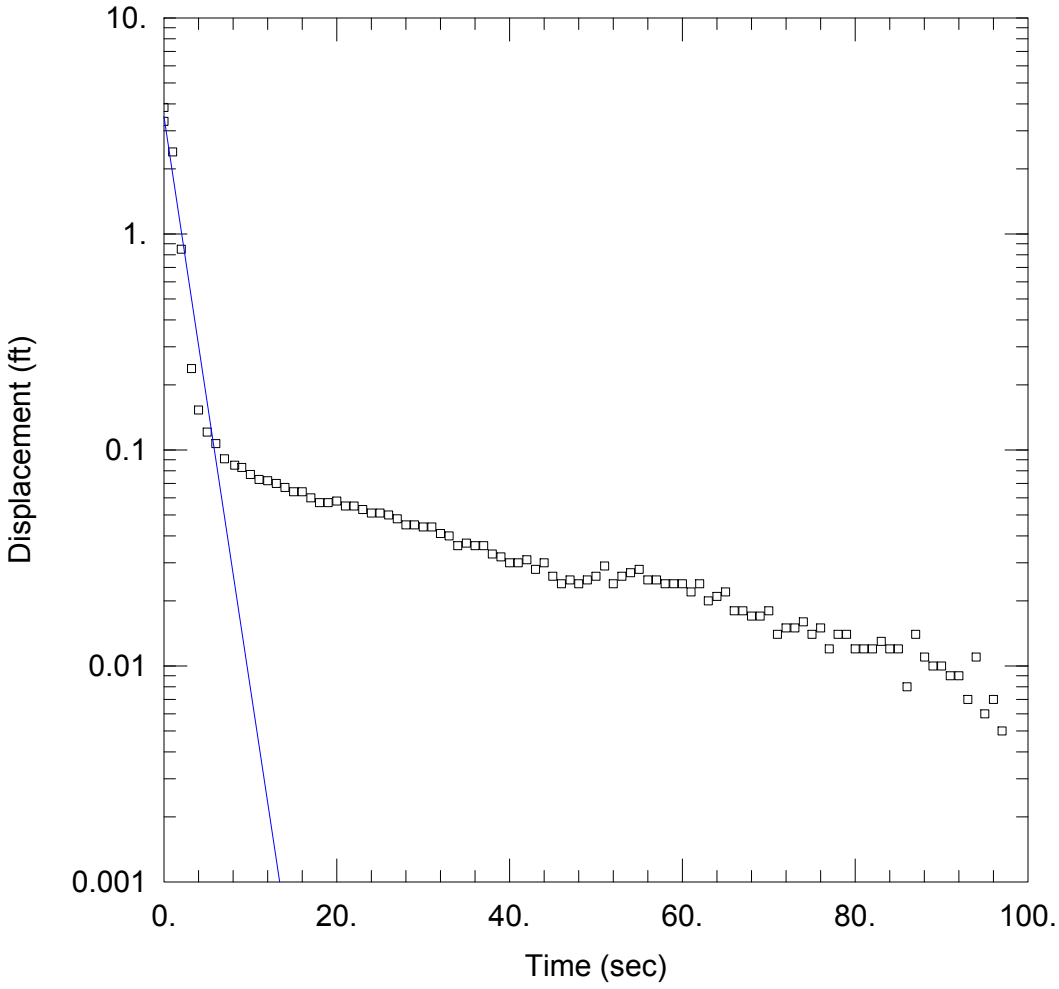
WELL DATA (New Well)

Initial Displacement: 3.85 ft
Total Well Penetration Depth: 19.09 ft
Casing Radius: 0.083 ft
Static Water Column Height: 19.29 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 49.84 ft/day
y0 = 3.486 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-1_2_H.aqt
Date: 05/13/15 Time: 17:28:42

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-1
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.1

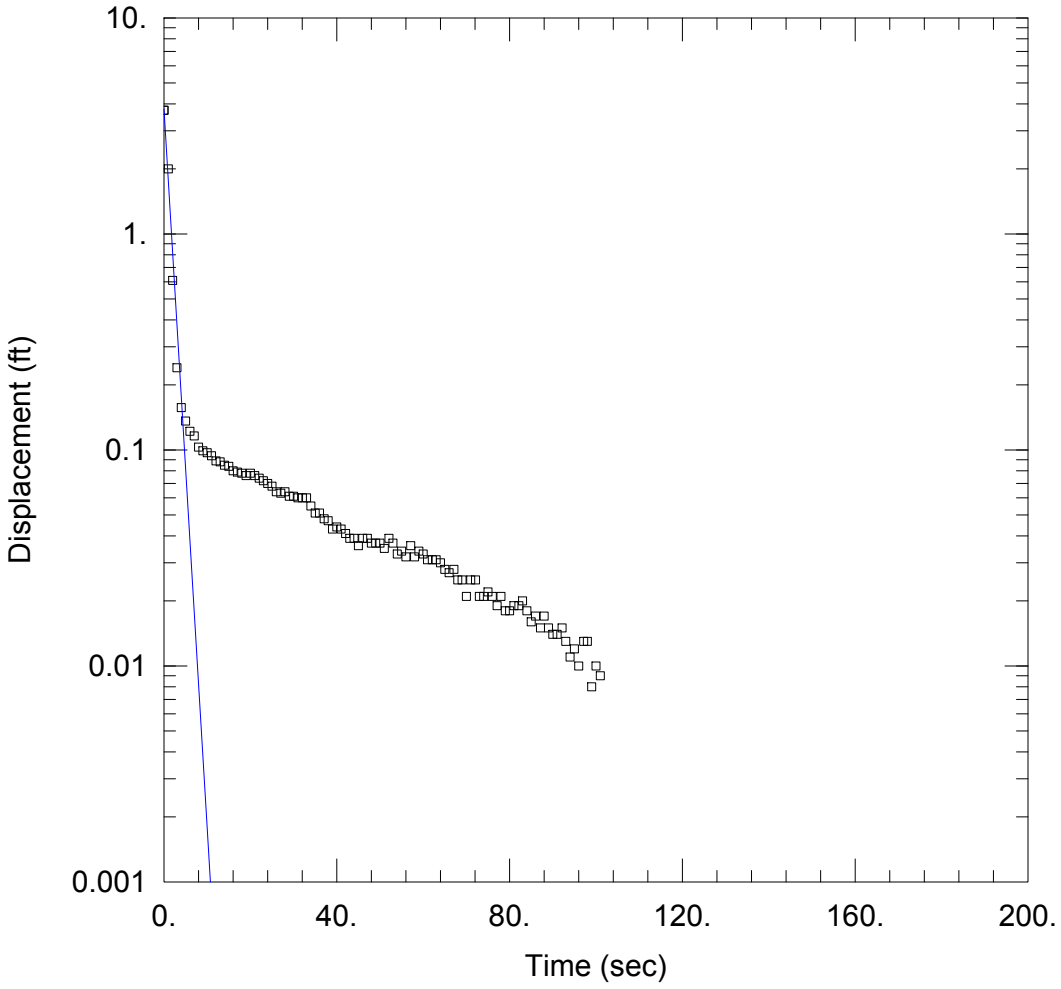
WELL DATA (New Well)

Initial Displacement: 3.85 ft
Total Well Penetration Depth: 19.09 ft
Casing Radius: 0.083 ft
Static Water Column Height: 19.29 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 68.27 ft/day
y0 = 3.486 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-1_3_BR.aqt
Date: 05/13/15 Time: 17:30:06

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-1
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.1

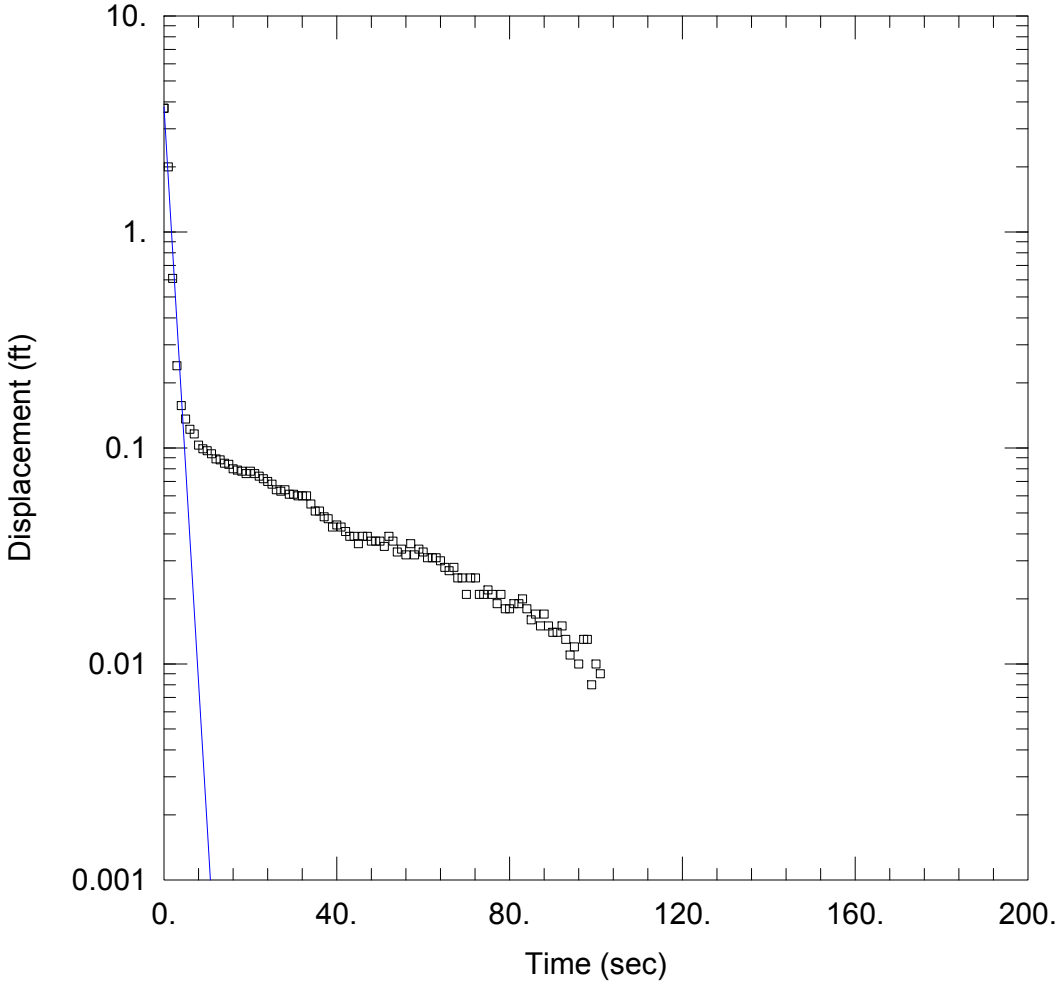
WELL DATA (New Well)

Initial Displacement: 3.74 ft
Total Well Penetration Depth: 19.09 ft
Casing Radius: 0.083 ft
Static Water Column Height: 19.29 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 62.73 ft/day
y0 = 3.794 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-1_3_H.aqt
Date: 05/13/15 Time: 17:31:21

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-1
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.1

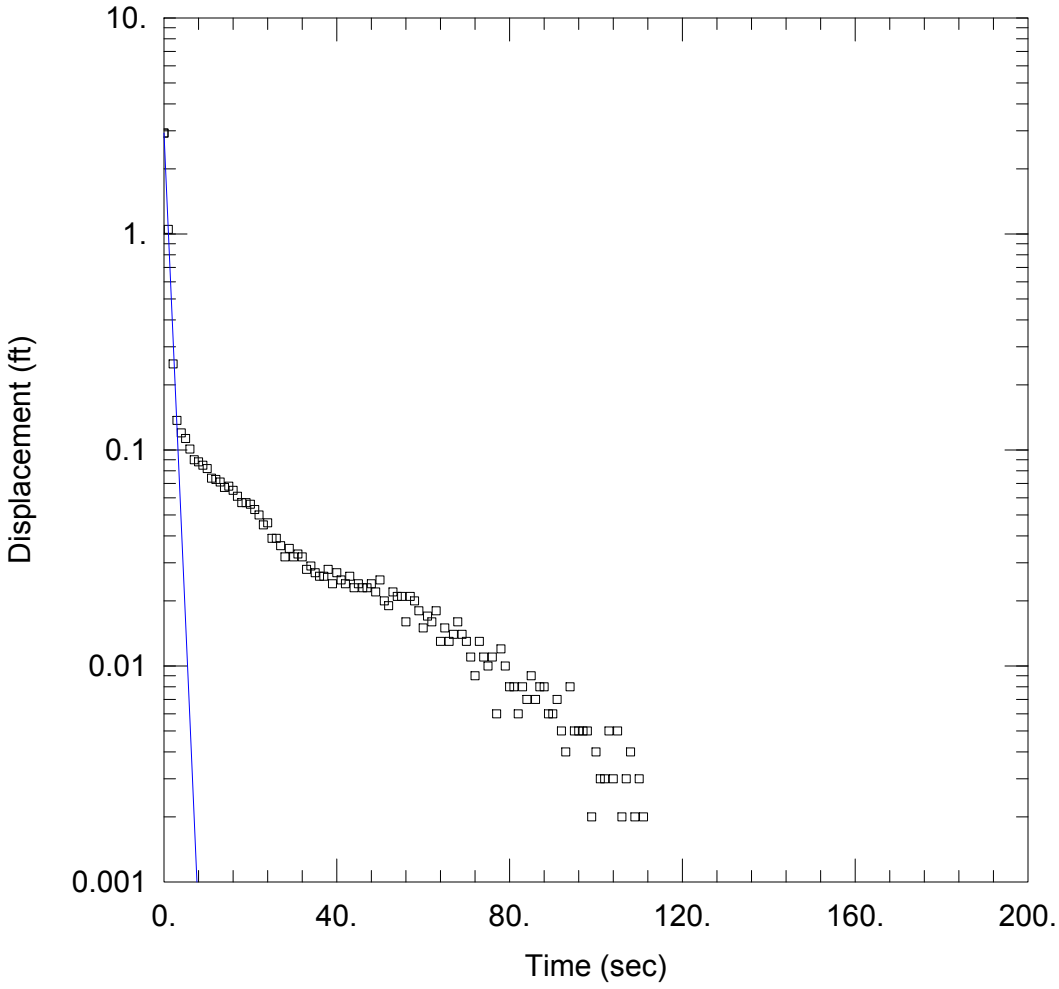
WELL DATA (New Well)

Initial Displacement: 3.74 ft
Total Well Penetration Depth: 19.09 ft
Casing Radius: 0.083 ft
Static Water Column Height: 19.29 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 85.93 ft/day
y0 = 3.794 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-1_4_BR.aqt
Date: 05/13/15 Time: 17:33:07

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-1
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.1

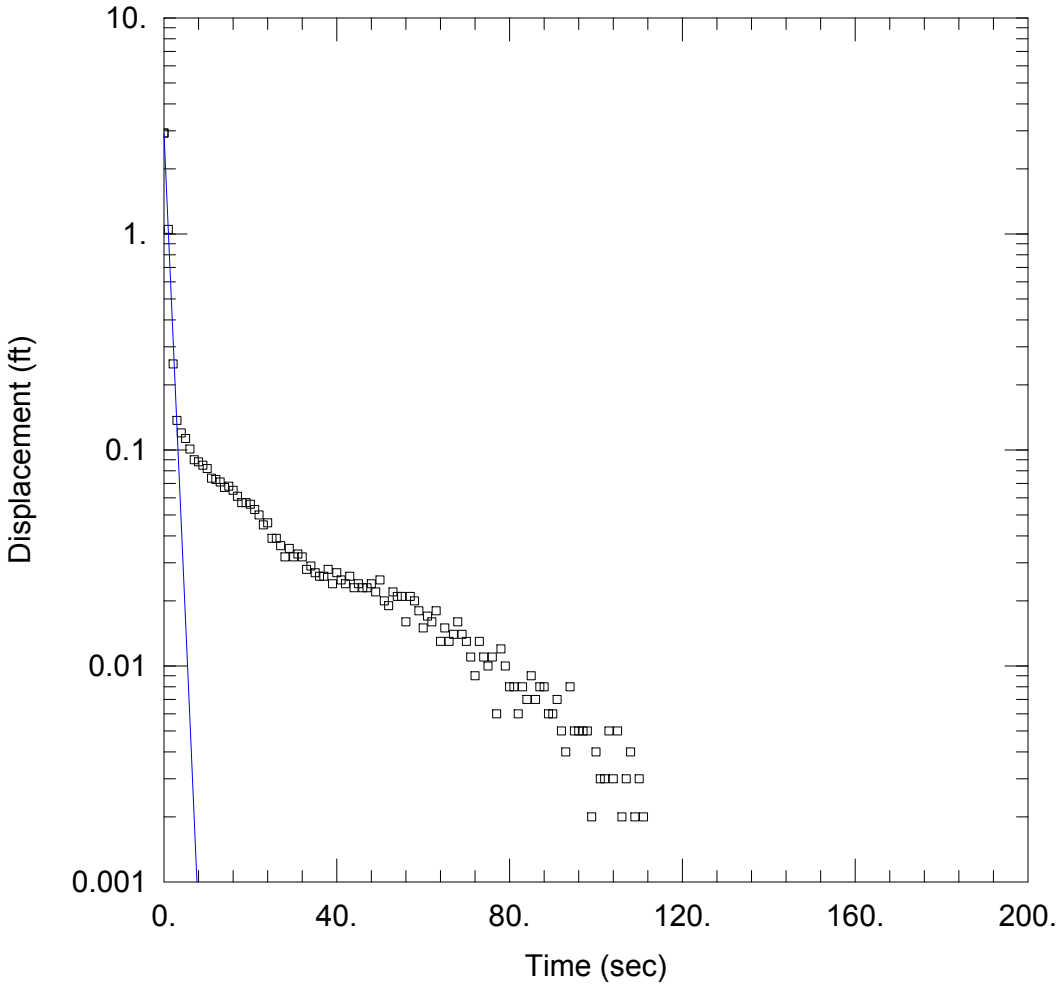
WELL DATA (New Well)

Initial Displacement: 2.93 ft
Total Well Penetration Depth: 19.09 ft
Casing Radius: 0.083 ft
Static Water Column Height: 19.29 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 85.26 ft/day
y0 = 2.93 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-1_4_H.aqt
Date: 05/13/15 Time: 17:34:09

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-1
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.32 ft Anisotropy Ratio (Kz/Kr): 0.1

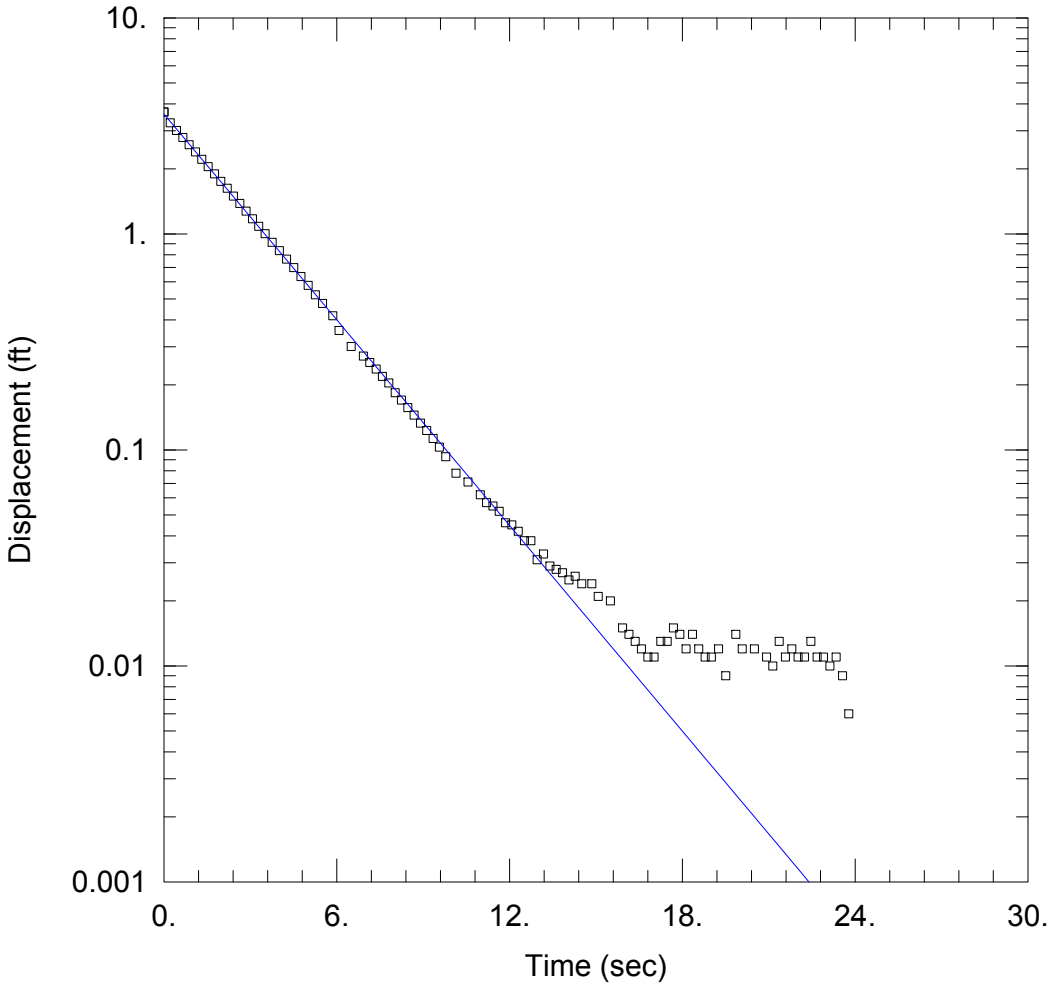
WELL DATA (New Well)

Initial Displacement: 2.93 ft
Total Well Penetration Depth: 19.09 ft
Casing Radius: 0.083 ft
Static Water Column Height: 19.29 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 116.8 ft/day
y0 = 2.929 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_1_BR.aqt
Date: 05/13/15 Time: 17:35:31

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

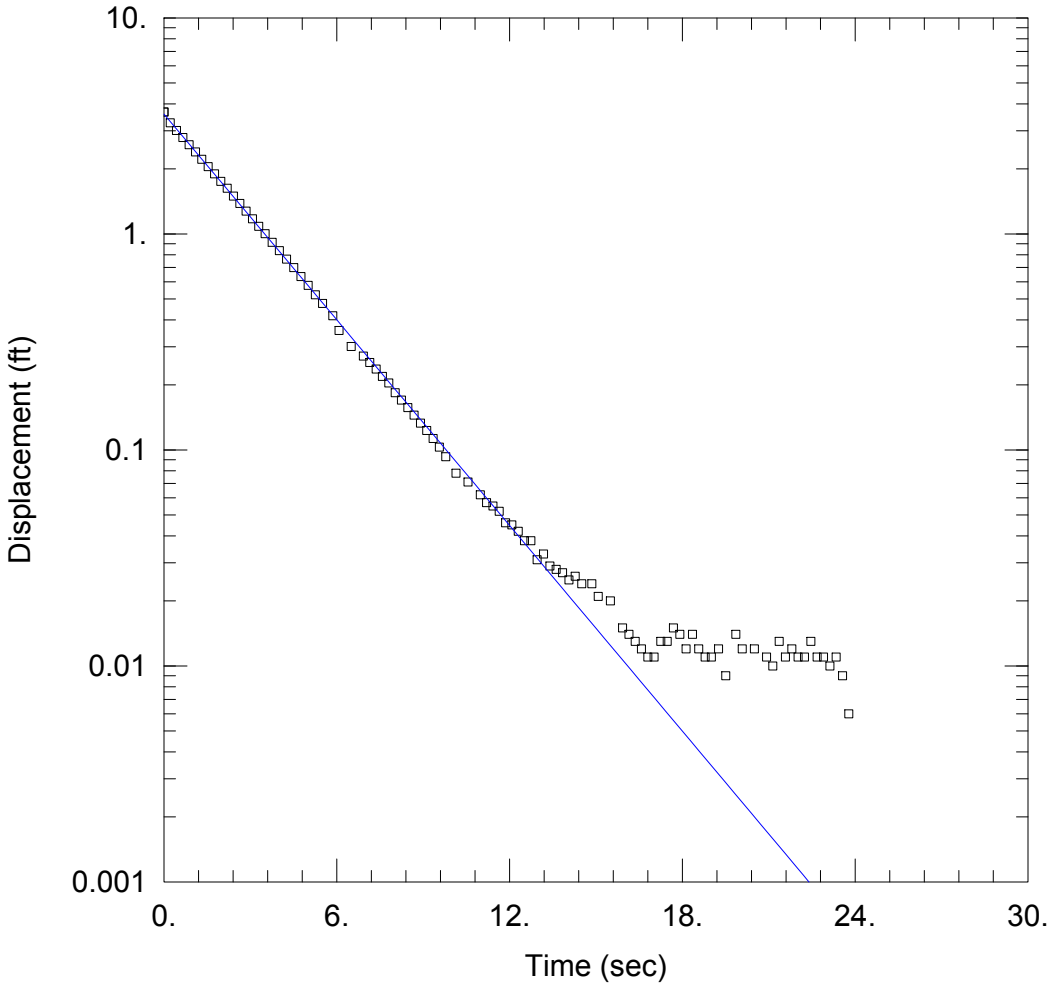
WELL DATA (New Well)

Initial Displacement: 3.67 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 29.81 ft/day
y0 = 3.587 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_1_H.aqt
Date: 05/13/15 Time: 17:36:50

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

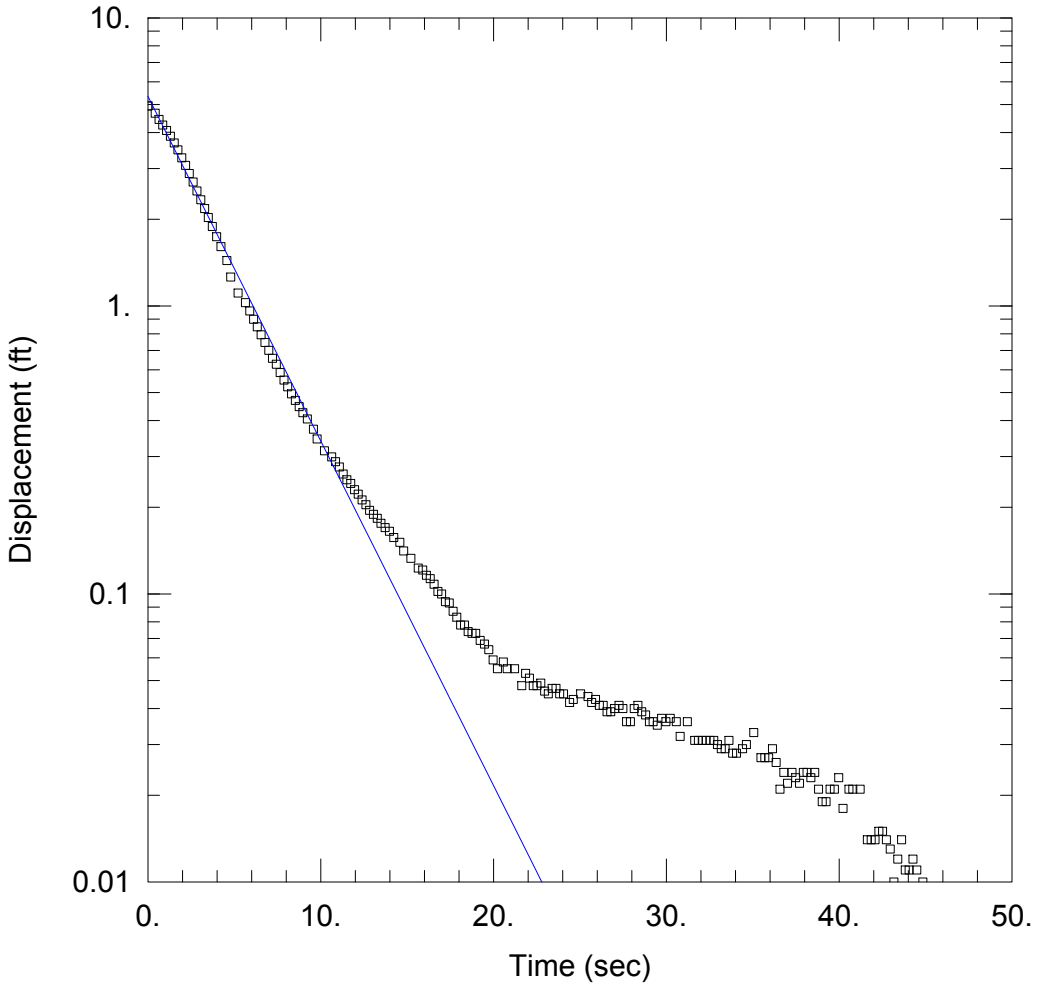
WELL DATA (New Well)

Initial Displacement: 3.67 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 40.96 ft/day
y0 = 3.587 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_2_BR.aqt
Date: 05/13/15 Time: 17:38:07

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

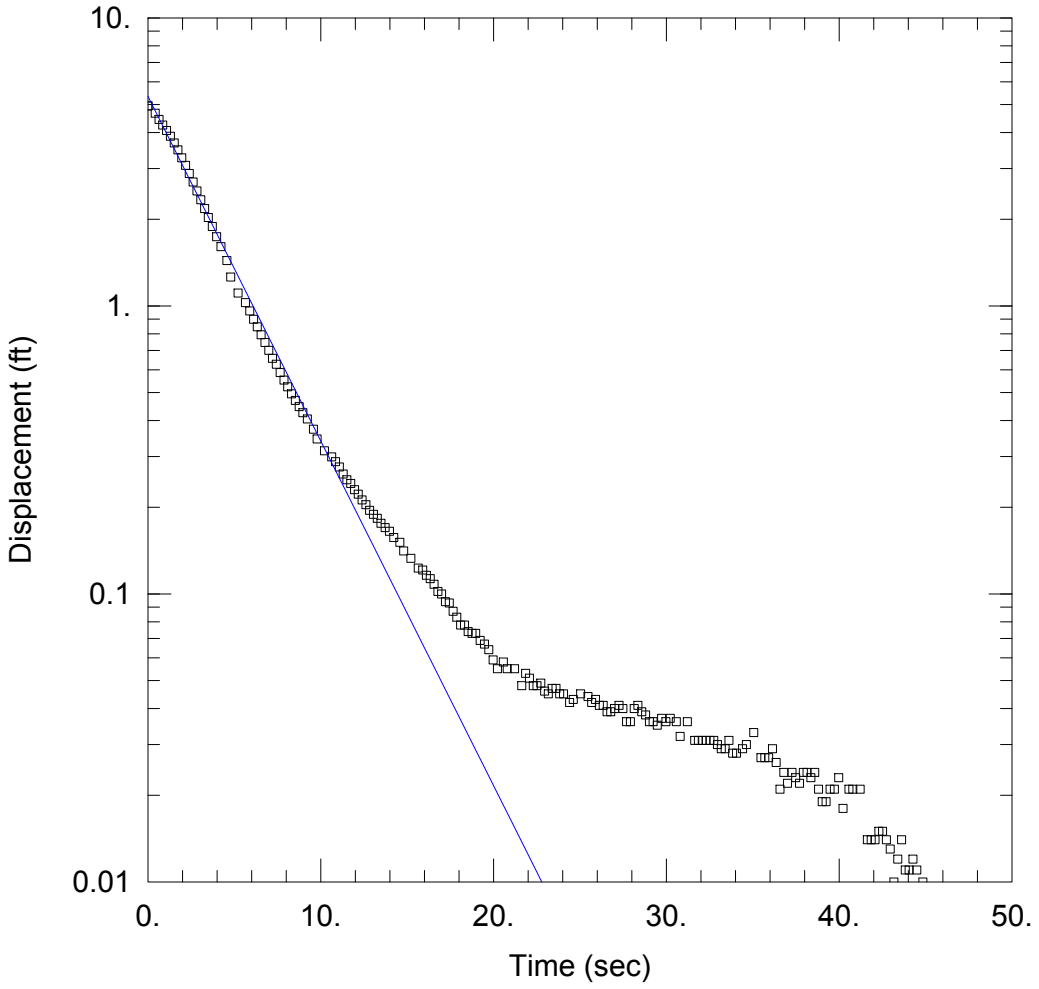
WELL DATA (New Well)

Initial Displacement: 4.95 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 22.47 ft/day
y0 = 5.337 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_2_H.aqt
Date: 05/13/15 Time: 17:40:31

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

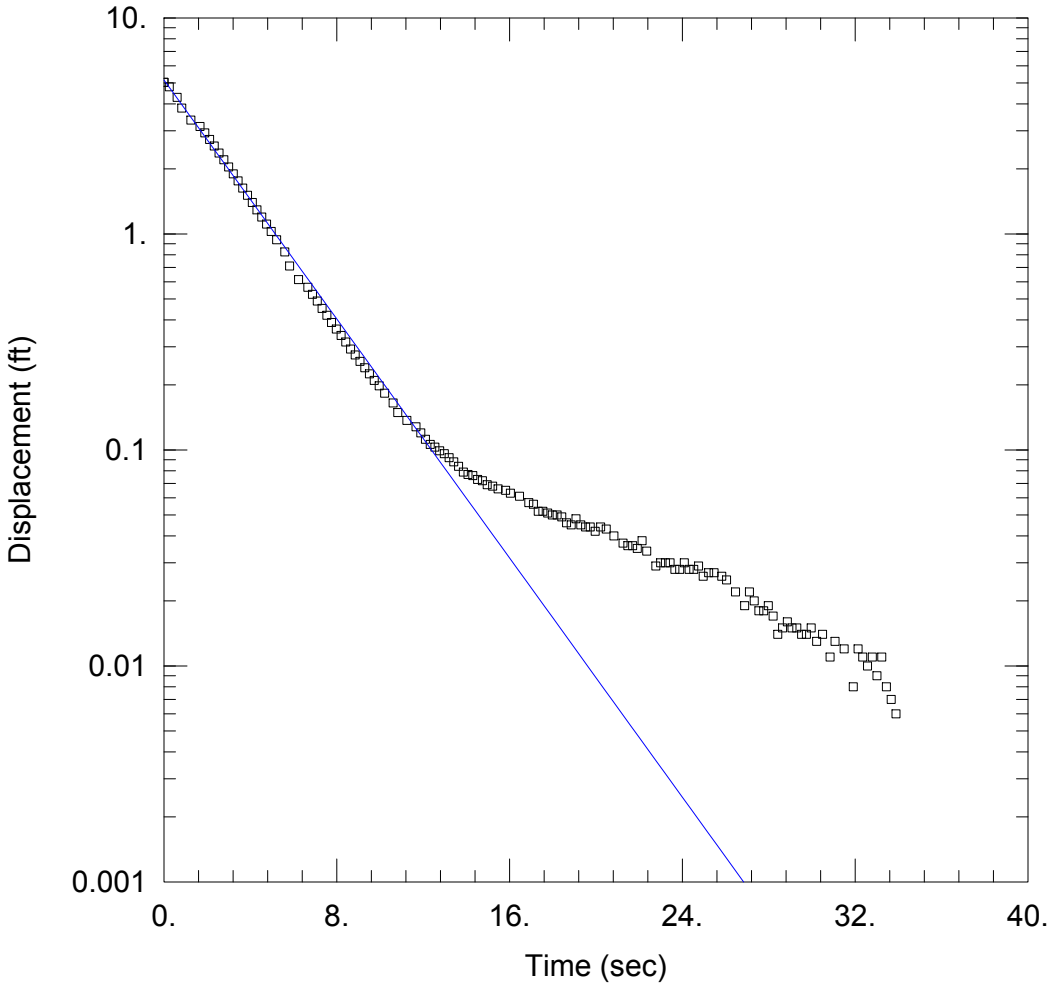
WELL DATA (New Well)

Initial Displacement: 4.95 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 30.88 ft/day
y0 = 5.337 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_3_BR.aqt
Date: 05/13/15 Time: 17:43:33

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

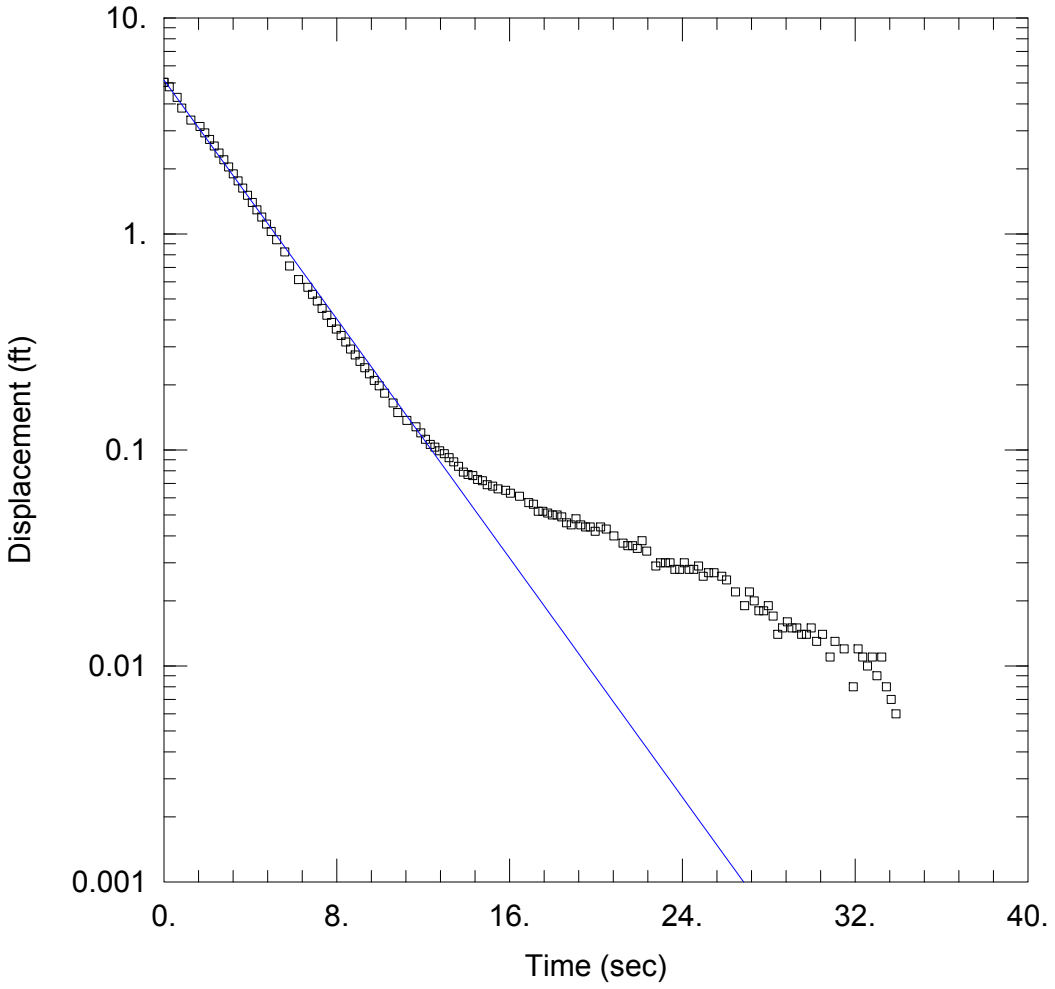
WELL DATA (New Well)

Initial Displacement: 5.03 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 25.97 ft/day
y0 = 5.158 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_3_H.aqt
Date: 05/13/15 Time: 17:45:00

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

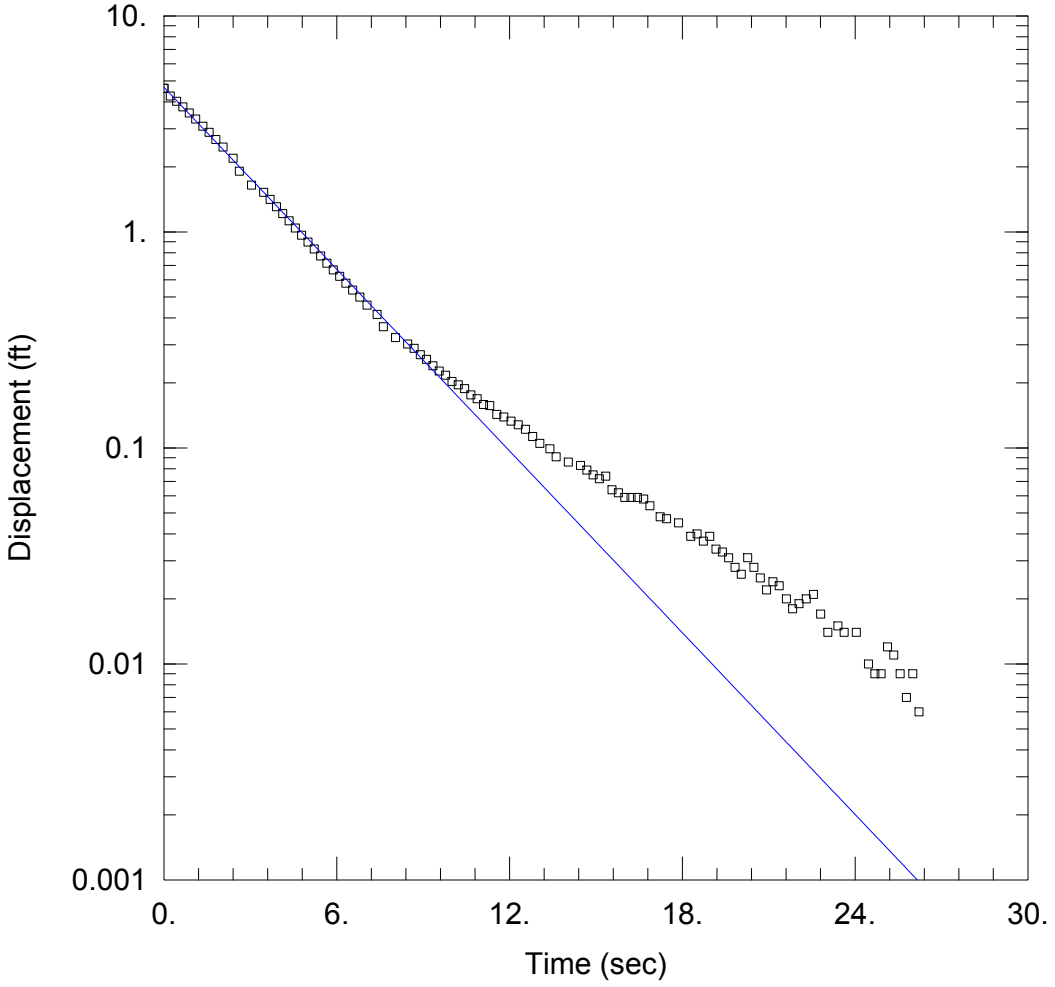
WELL DATA (New Well)

Initial Displacement: 5.03 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 35.7 ft/day
y0 = 5.158 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_4_BR.aqt
Date: 05/14/15 Time: 07:40:10

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

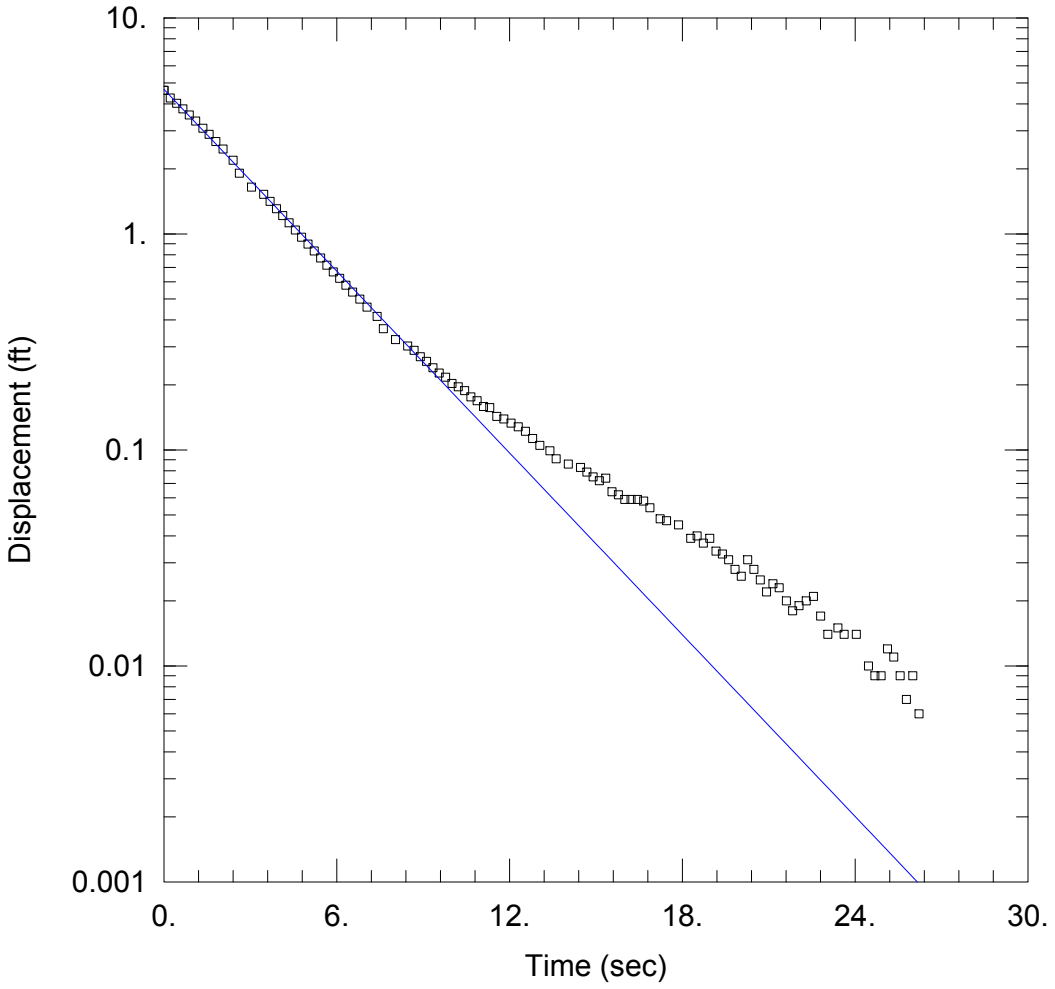
WELL DATA (New Well)

Initial Displacement: 4.62 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 26.34 ft/day
y0 = 4.667 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_4_H.aqt
Date: 05/14/15 Time: 07:41:36

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

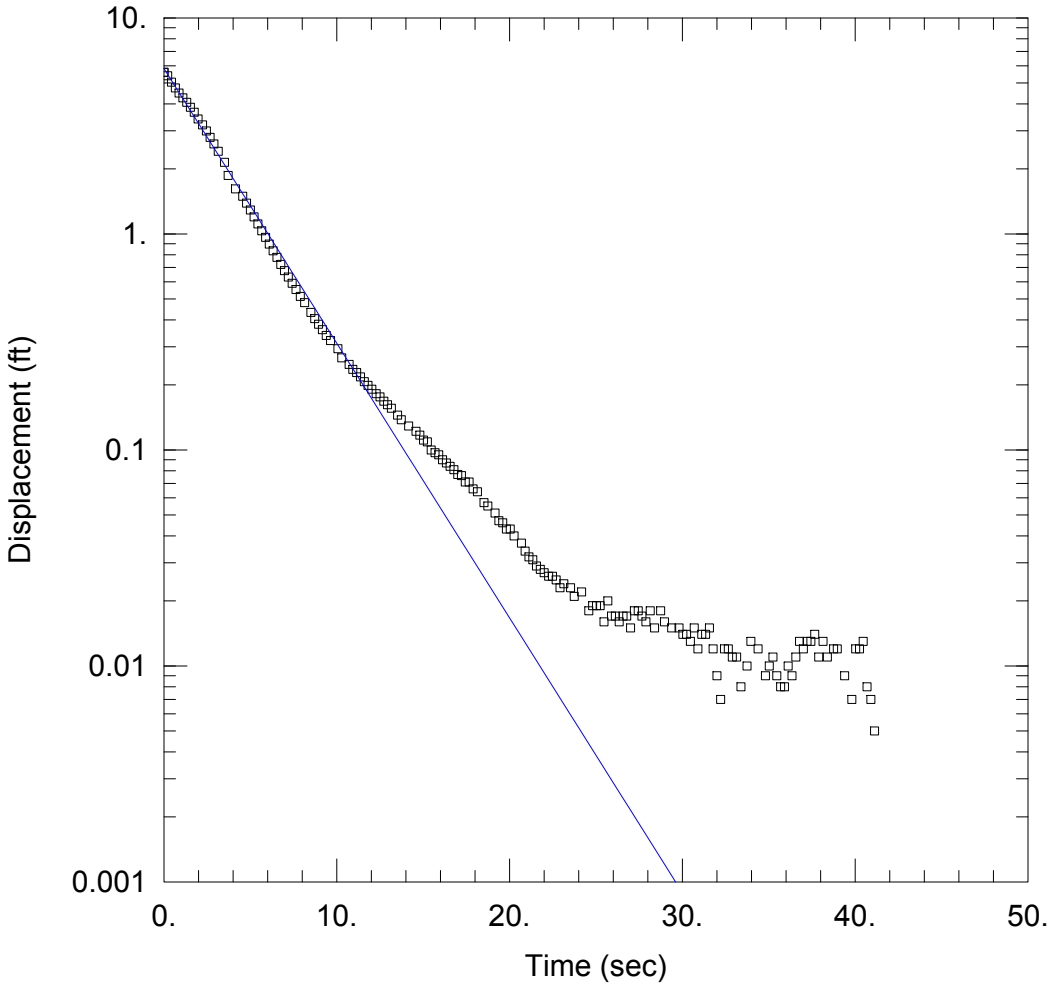
WELL DATA (New Well)

Initial Displacement: 4.62 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 36.2 ft/day
y0 = 4.666 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_5_BR.aqt
Date: 05/14/15 Time: 07:42:54

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

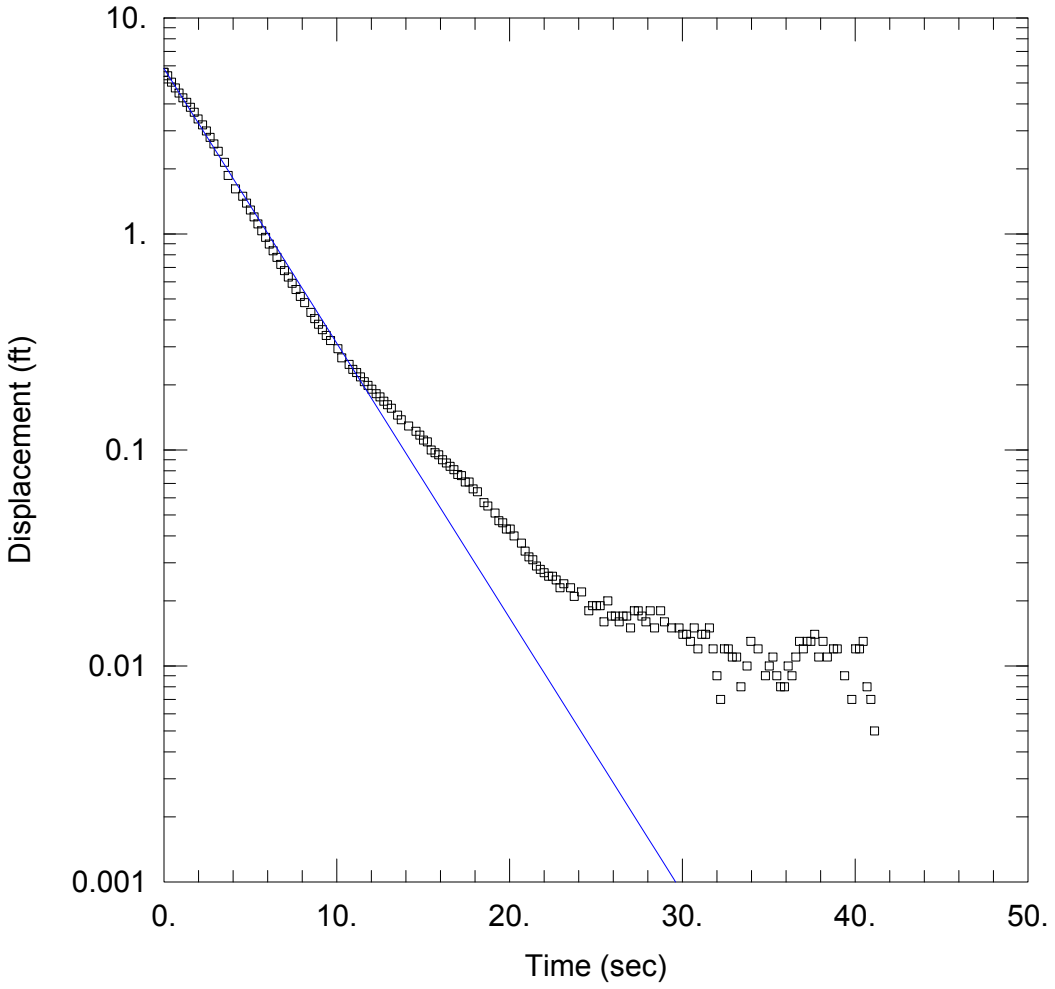
WELL DATA (New Well)

Initial Displacement: 5.6 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 23.88 ft/day
y0 = 5.829 ft

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Oct 30 2019



WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-2_5_H.aqt
Date: 05/14/15 Time: 07:44:00

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-2
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.3 ft Anisotropy Ratio (Kz/Kr): 0.1

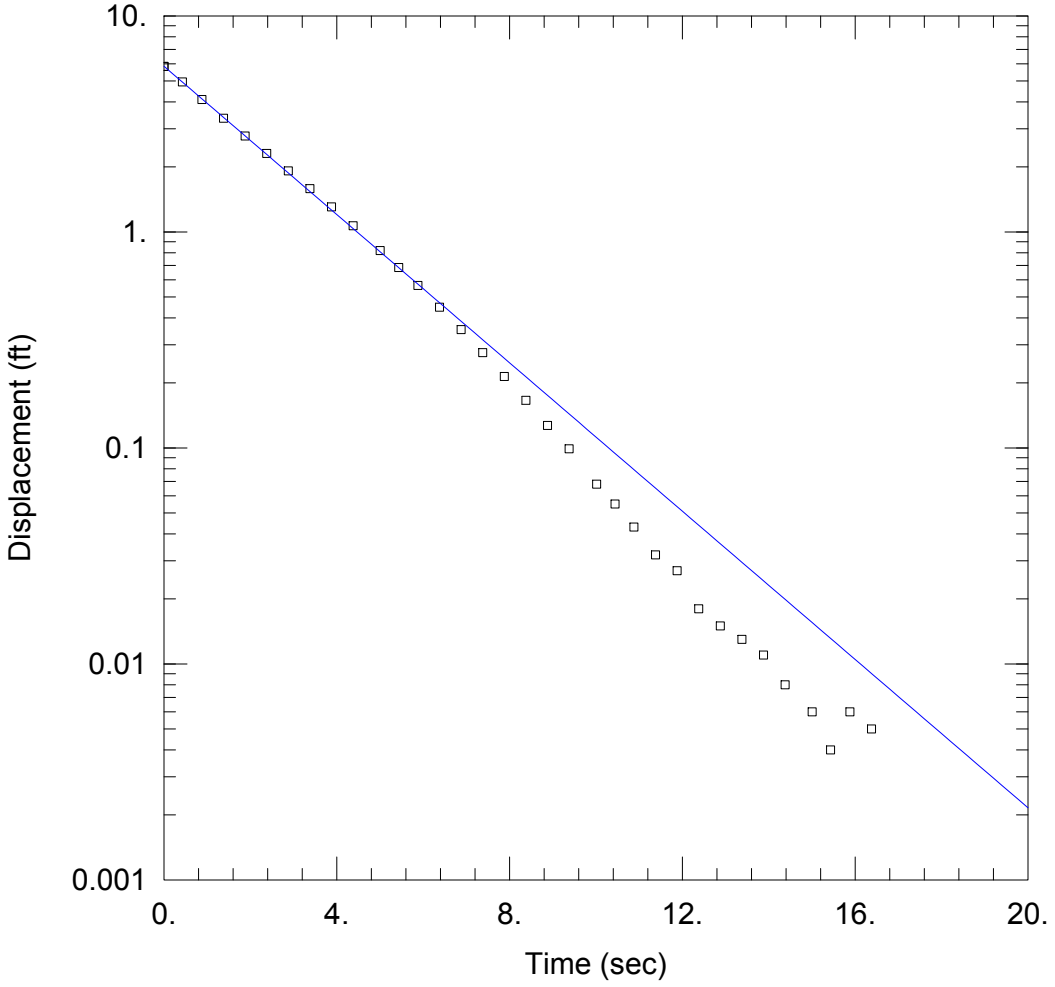
WELL DATA (New Well)

Initial Displacement: 5.6 ft
Total Well Penetration Depth: 18.61 ft
Casing Radius: 0.083 ft
Static Water Column Height: 18.61 ft
Screen Length: 15. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 32.82 ft/day
y0 = 5.829 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-3_1_BR.aqt
Date: 05/14/15 Time: 07:45:16

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-3
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft Anisotropy Ratio (Kz/Kr): 0.1

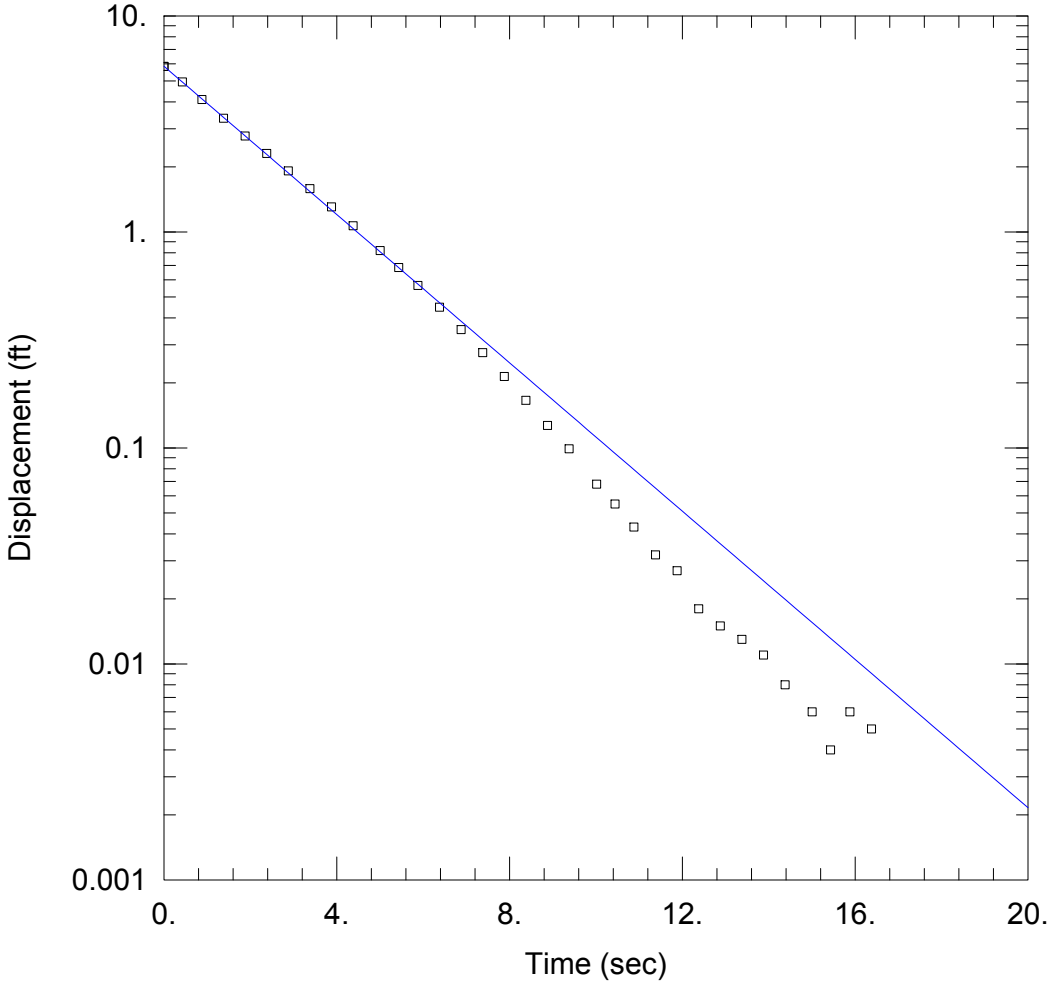
WELL DATA (New Well)

Initial Displacement: 5.84 ft
Total Well Penetration Depth: 48.01 ft
Casing Radius: 0.083 ft
Static Water Column Height: 48.01 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 55.44 ft/day
y0 = 5.846 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-3_1_H.aqt
Date: 05/14/15 Time: 07:46:18

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-3
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft Anisotropy Ratio (Kz/Kr): 0.1

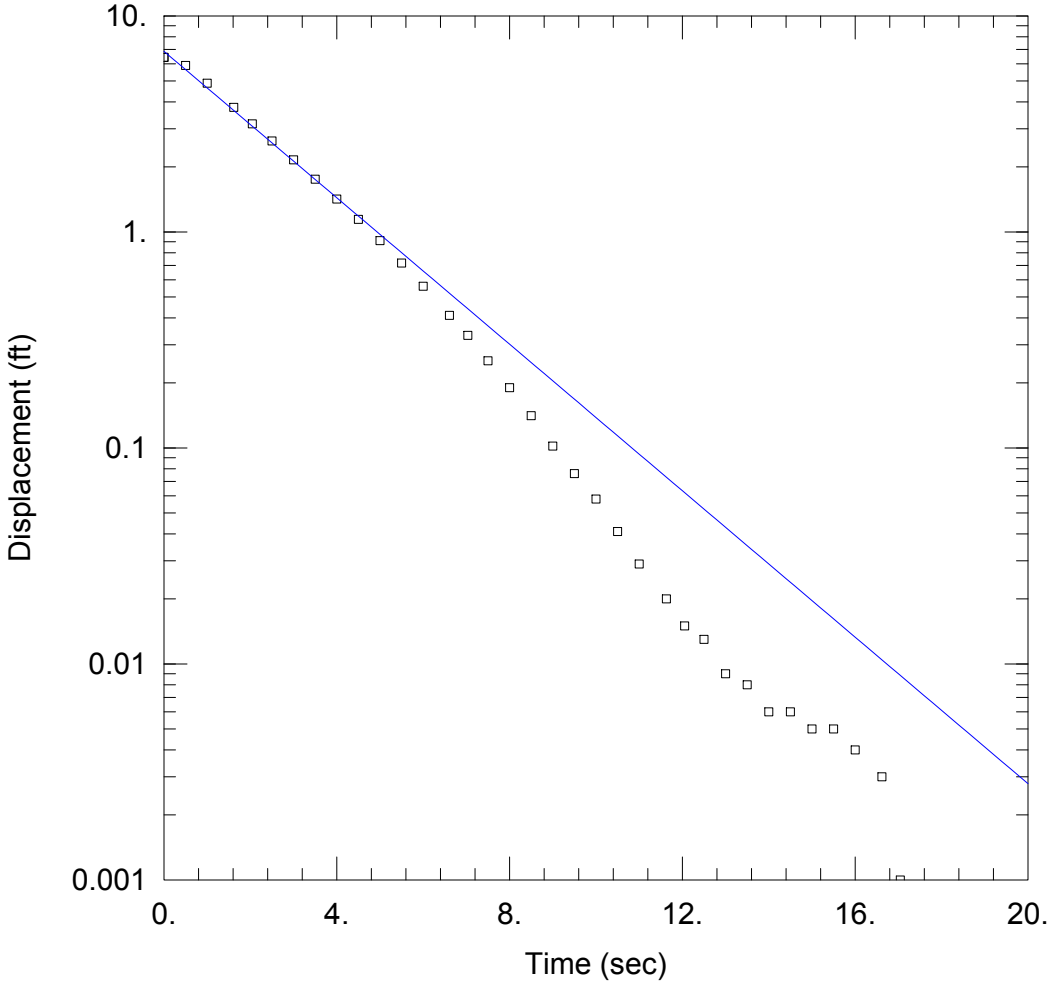
WELL DATA (New Well)

Initial Displacement: 5.84 ft
Total Well Penetration Depth: 48.01 ft
Casing Radius: 0.083 ft
Static Water Column Height: 48.01 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 65.07 ft/day
y0 = 5.846 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-3_2_BR.aqt
Date: 05/14/15 Time: 07:47:21

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-3
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (New Well)

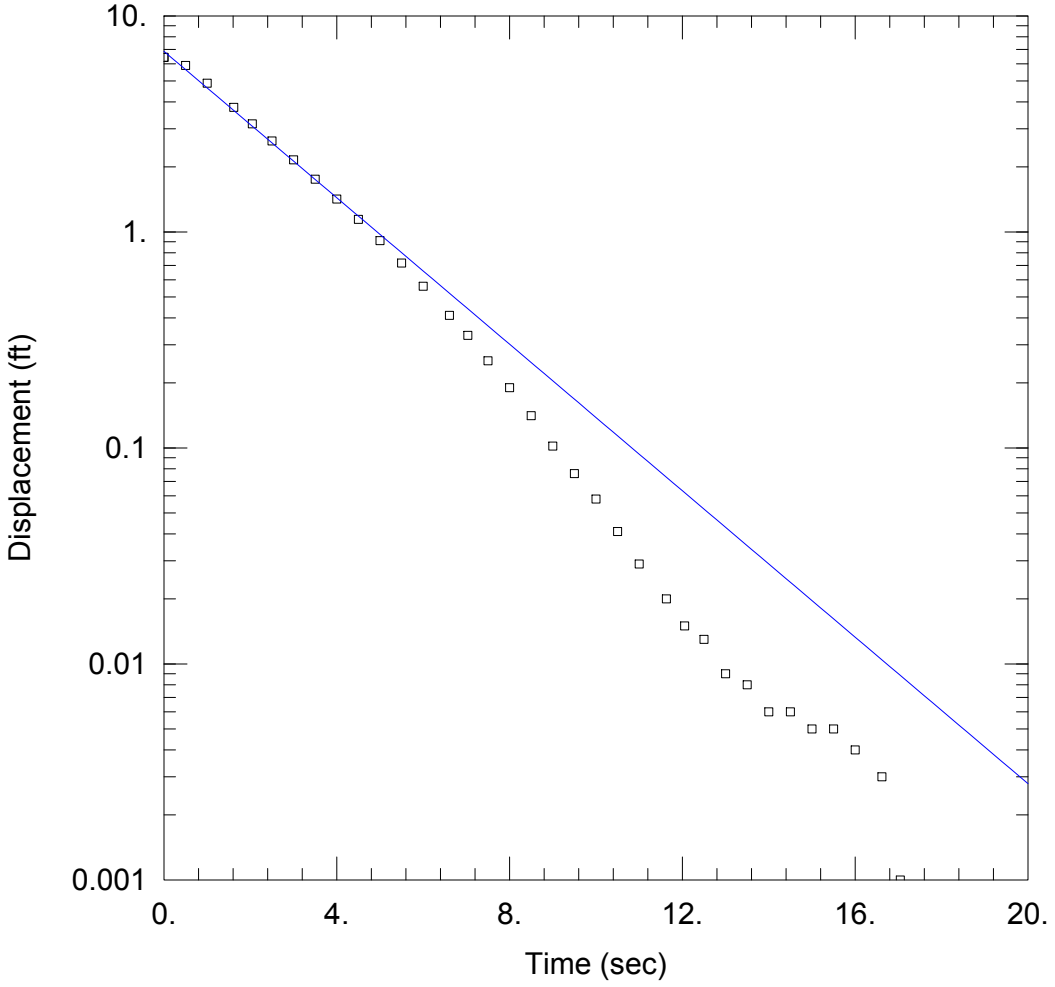
Initial Displacement: 6.43 ft
Total Well Penetration Depth: 48.01 ft
Casing Radius: 0.083 ft
Static Water Column Height: 48.01 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 54.75 ft/day y0 = 6.855 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-3_2_H.aqt
Date: 05/14/15 Time: 07:48:18

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-3
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft Anisotropy Ratio (Kz/Kr): 0.1

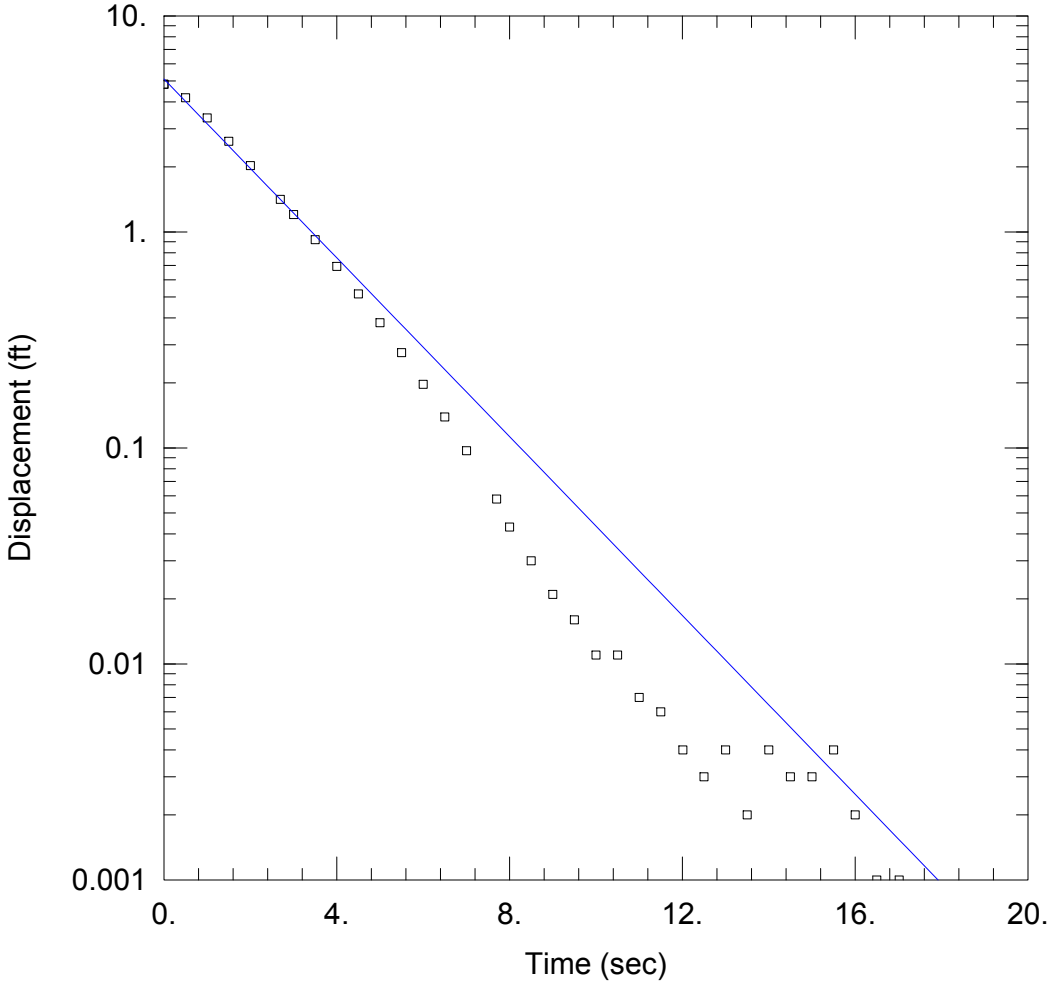
WELL DATA (New Well)

Initial Displacement: 6.43 ft
Total Well Penetration Depth: 48.01 ft
Casing Radius: 0.083 ft
Static Water Column Height: 48.01 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 64.26 ft/day
y0 = 6.855 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-3_3_BR.aqt
Date: 05/14/15 Time: 07:49:15

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-3
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft Anisotropy Ratio (Kz/Kr): 0.1

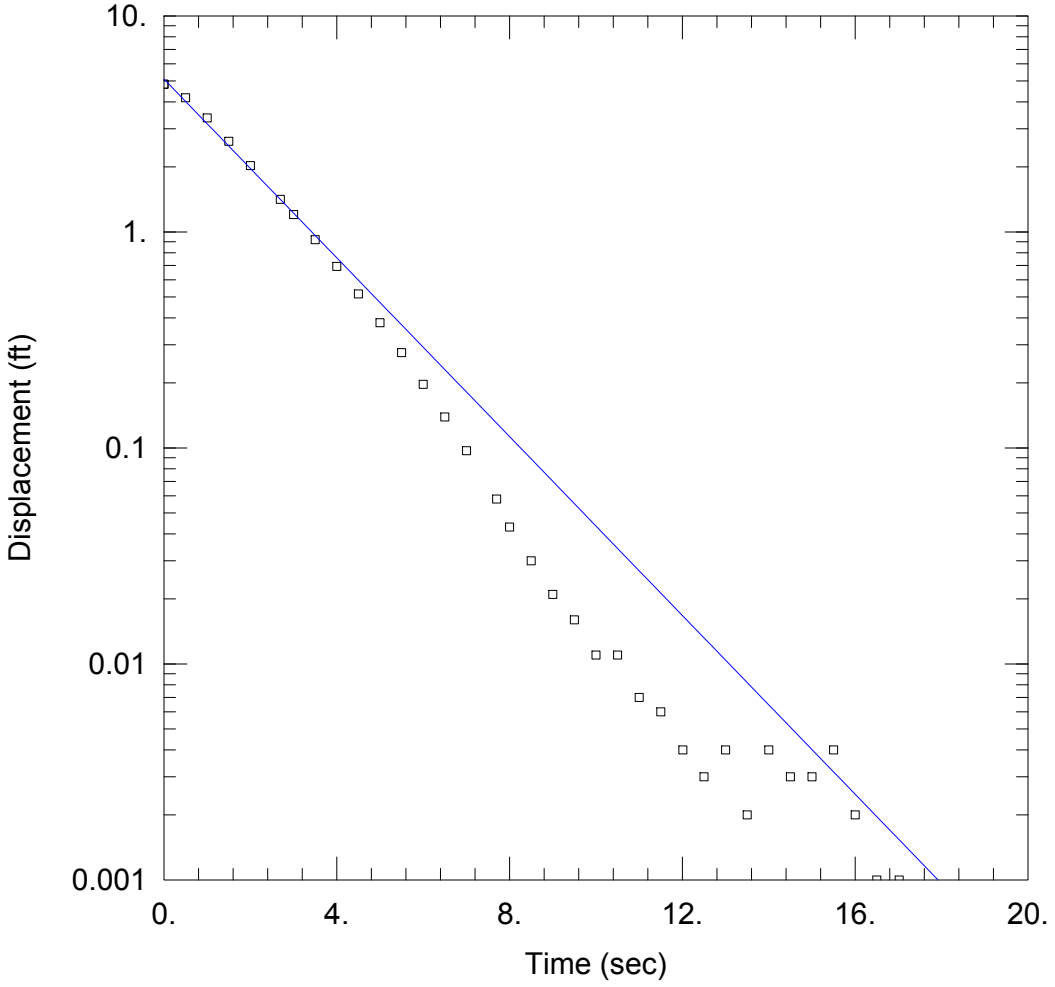
WELL DATA (New Well)

Initial Displacement: 4.83 ft
Total Well Penetration Depth: 48.01 ft
Casing Radius: 0.083 ft
Static Water Column Height: 48.01 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 66.84 ft/day
y0 = 5.101 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-3_3_H.aqt
Date: 05/14/15 Time: 07:50:45

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-3
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.35 ft Anisotropy Ratio (Kz/Kr): 0.1

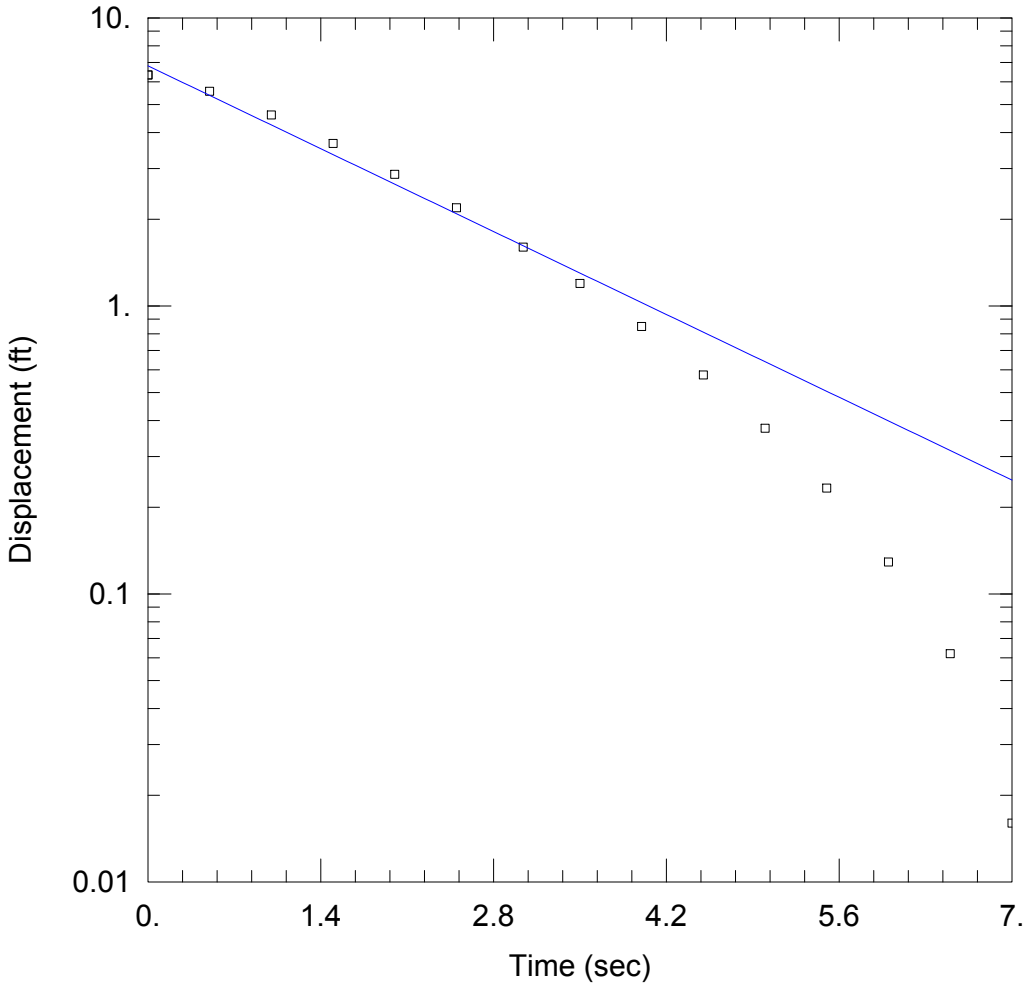
WELL DATA (New Well)

Initial Displacement: 4.83 ft
Total Well Penetration Depth: 48.01 ft
Casing Radius: 0.083 ft
Static Water Column Height: 48.01 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 78.45 ft/day
y0 = 5.101 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-4_1_BR.aqt
Date: 05/14/15 Time: 07:52:13

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-4
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.36 ft Anisotropy Ratio (Kz/Kr): 0.1

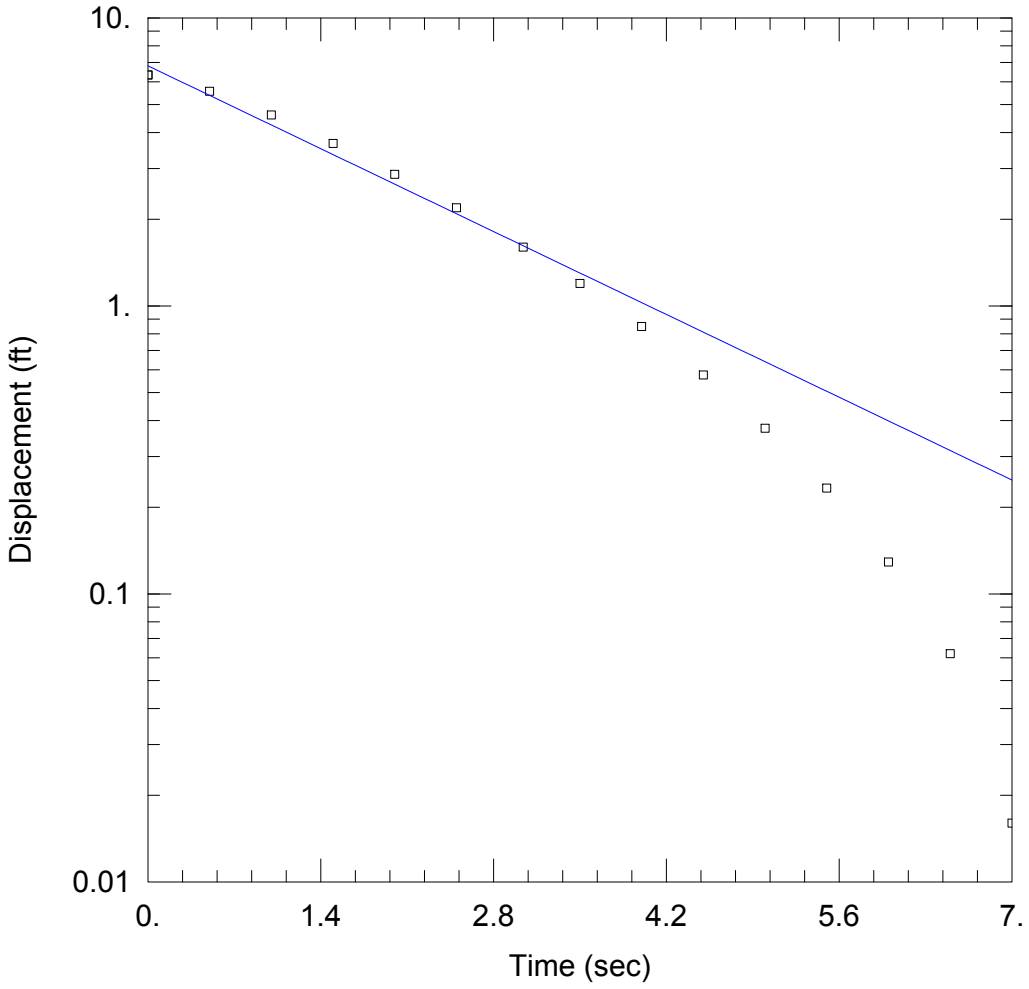
WELL DATA (New Well)

Initial Displacement: 6.34 ft
Total Well Penetration Depth: 47.81 ft
Casing Radius: 0.083 ft
Static Water Column Height: 47.81 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 66.36 ft/day
y0 = 6.817 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-4_1_H.aqt
Date: 05/14/15 Time: 07:53:08

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-4
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.36 ft Anisotropy Ratio (Kz/Kr): 0.1

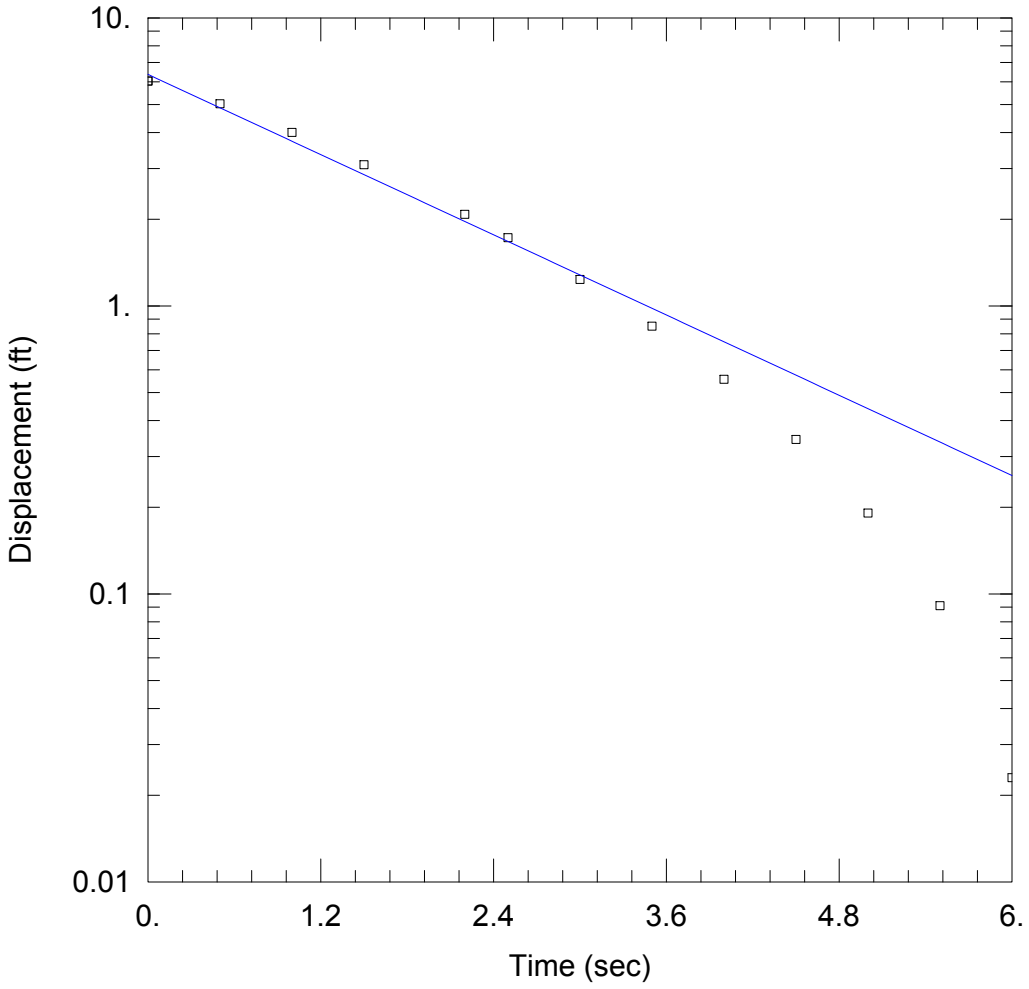
WELL DATA (New Well)

Initial Displacement: 6.34 ft
Total Well Penetration Depth: 47.81 ft
Casing Radius: 0.083 ft
Static Water Column Height: 47.81 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 77.92 ft/day
y0 = 6.817 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-4_2_BR.aqt
Date: 05/14/15 Time: 07:54:03

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-4
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.36 ft Anisotropy Ratio (Kz/Kr): 0.1

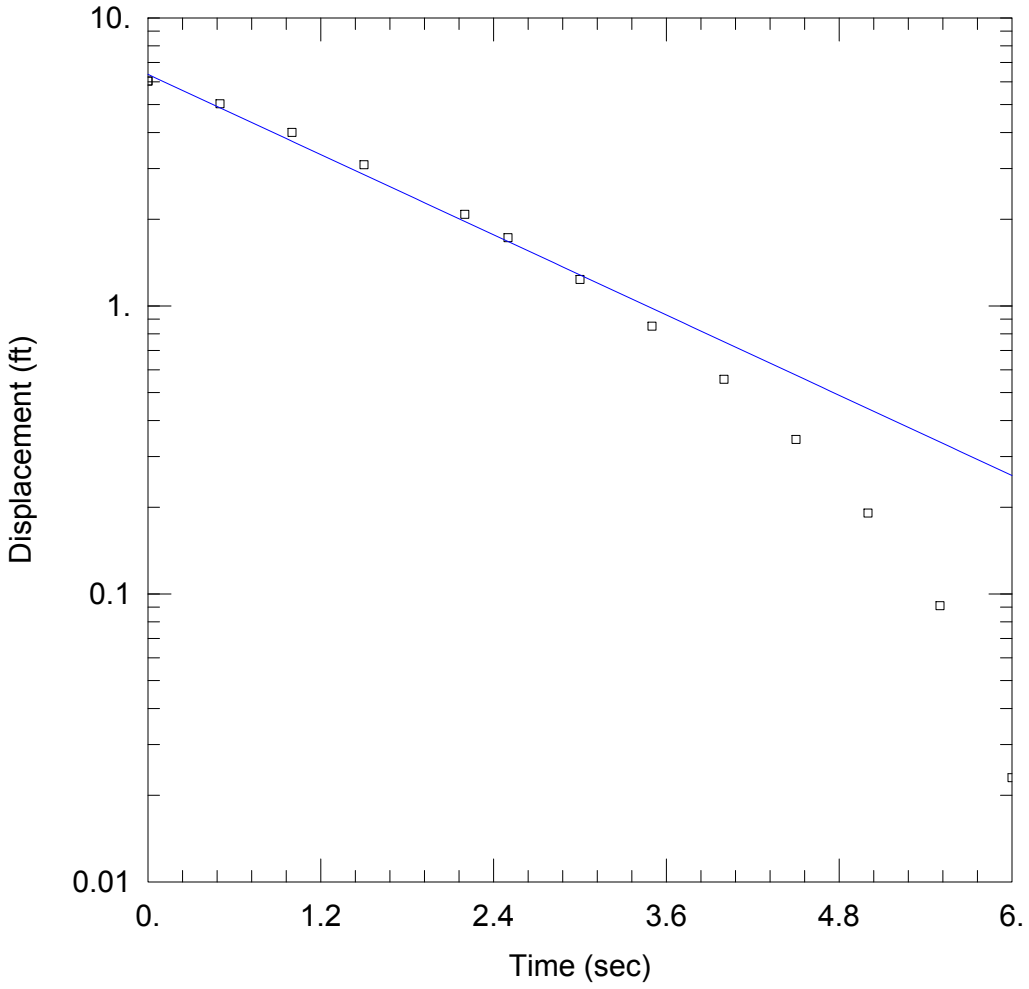
WELL DATA (New Well)

Initial Displacement: 6.04 ft
Total Well Penetration Depth: 47.81 ft
Casing Radius: 0.083 ft
Static Water Column Height: 47.81 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 74.94 ft/day
y0 = 6.367 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-4_2_H.aqt
Date: 05/14/15 Time: 07:54:58

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-4
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.36 ft Anisotropy Ratio (Kz/Kr): 0.1

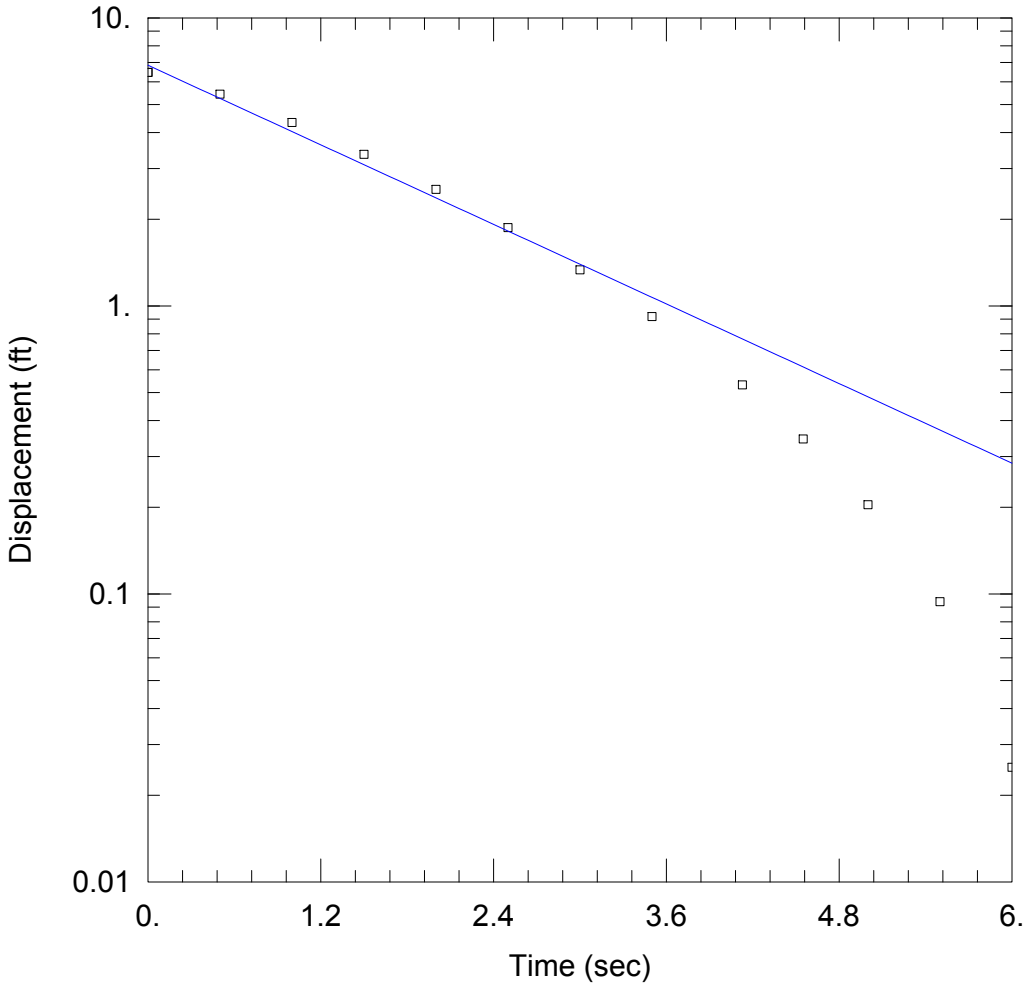
WELL DATA (New Well)

Initial Displacement: 6.04 ft
Total Well Penetration Depth: 47.81 ft
Casing Radius: 0.083 ft
Static Water Column Height: 47.81 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 88. ft/day
y0 = 6.367 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-4_3_BR.aqt
Date: 05/14/15 Time: 07:56:05

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-4
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.36 ft Anisotropy Ratio (Kz/Kr): 0.1

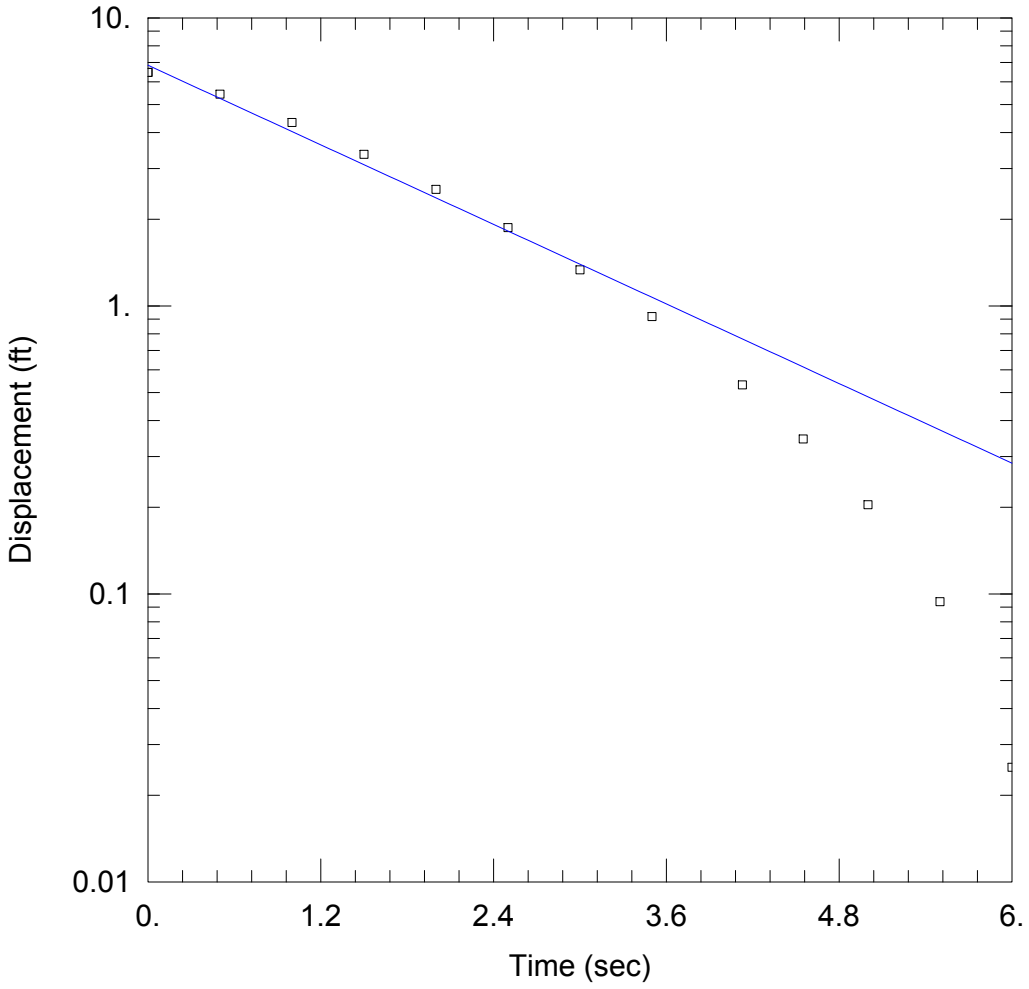
WELL DATA (New Well)

Initial Displacement: 6.47 ft
Total Well Penetration Depth: 47.81 ft
Casing Radius: 0.083 ft
Static Water Column Height: 47.81 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 74.34 ft/day
y0 = 6.849 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-4_3_H.aqt
Date: 05/14/15 Time: 07:57:00

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-4
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.36 ft Anisotropy Ratio (Kz/Kr): 0.1

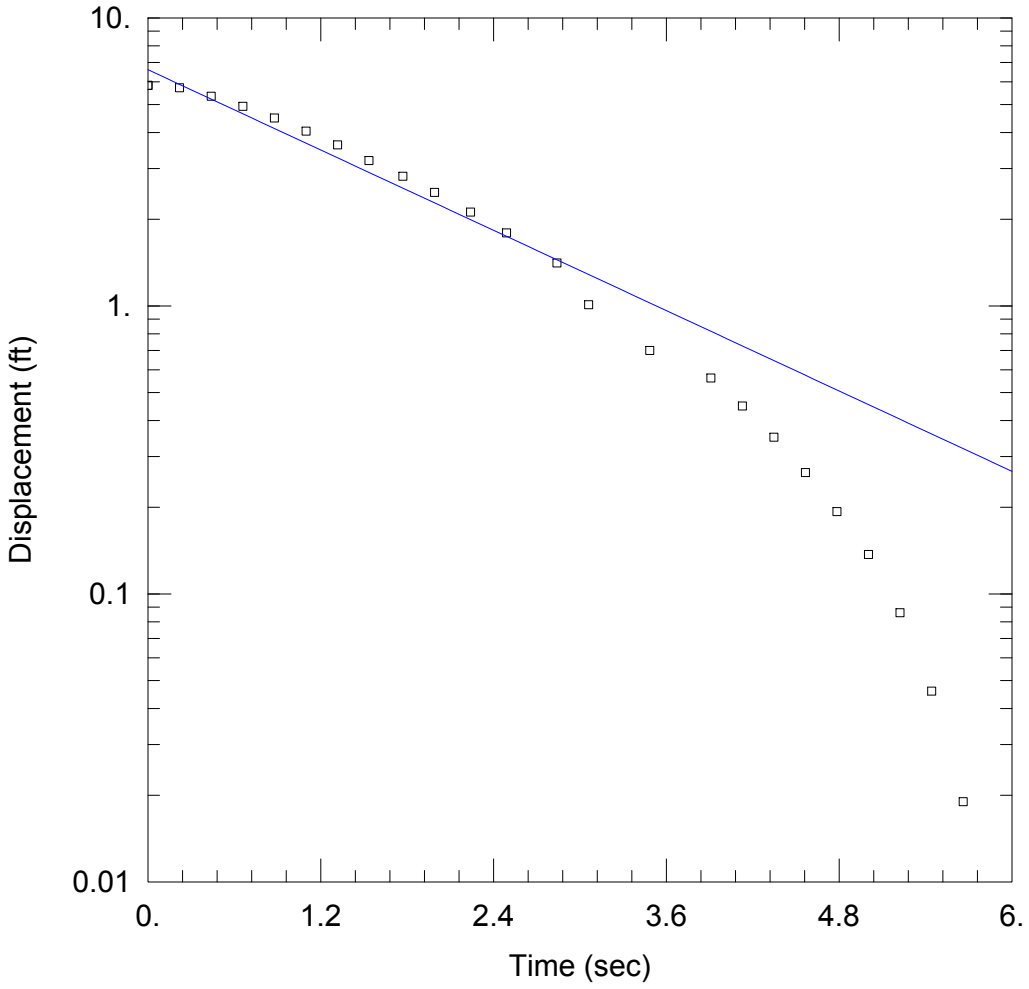
WELL DATA (New Well)

Initial Displacement: 6.47 ft
Total Well Penetration Depth: 47.81 ft
Casing Radius: 0.083 ft
Static Water Column Height: 47.81 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 87.3 ft/day
y0 = 6.849 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-4_4_BR.aqt
Date: 05/14/15 Time: 07:58:00

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-4
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.36 ft Anisotropy Ratio (Kz/Kr): 0.1

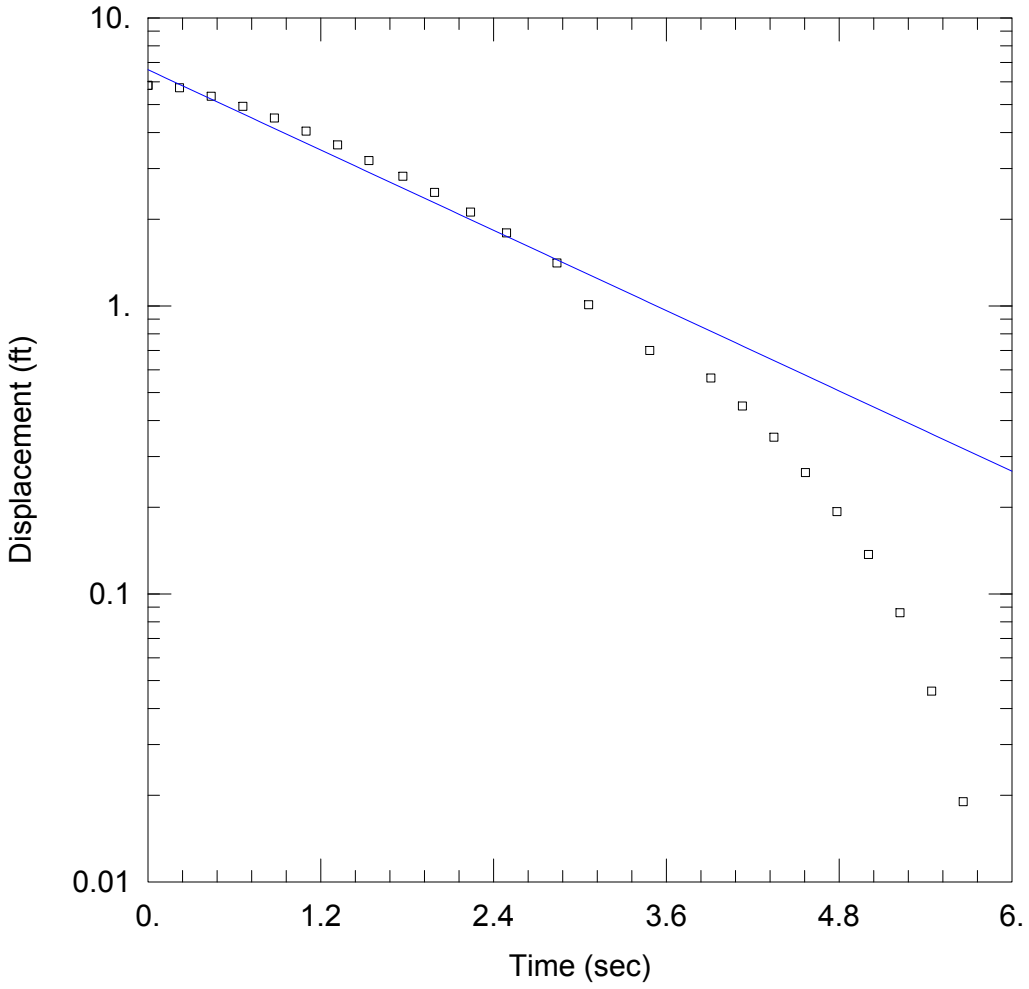
WELL DATA (New Well)

Initial Displacement: 5.83 ft
Total Well Penetration Depth: 47.81 ft
Casing Radius: 0.083 ft
Static Water Column Height: 47.81 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 75.03 ft/day
y0 = 6.609 ft

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WELL TEST ANALYSIS

Data Set: P:\Projects\GC5592 (Duke Sutton)\Slug and APT Analysis\PT-4_4_H.aqt
Date: 05/14/15 Time: 07:58:53

PROJECT INFORMATION

Company: Geosyntec
Client: Duke Sutton
Location: SC
Test Well: PT-4
Test Date: 3/25/2015

AQUIFER DATA

Saturated Thickness: 46.36 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (New Well)

Initial Displacement: 5.83 ft
Total Well Penetration Depth: 47.81 ft
Casing Radius: 0.083 ft
Static Water Column Height: 47.81 ft
Screen Length: 10. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 88.09 ft/day
y0 = 6.608 ft

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Appendix H
Technical Specifications

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TECHNICAL SPECIFICATIONS

L.V. SUTTON ENERGY COMPLEX
SITE ANALYSIS AND REMOVAL PLAN

December 2016
Revision 0

Prepared for



Duke Energy Progress, LLC
526 South Church Street
Charlotte, North Carolina 28202

Prepared by



Geosyntec Consultants of NC, PC
1300 South Mint Street, Suite 300
Charlotte, North Carolina 28203
License No. C-3500

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TECHNICAL SPECIFICATIONS
SITE ANALYSIS AND REMOVAL PLAN
L.V. SUTTON ENERGY COMPLEX
WILMINGTON, NORTH CAROLINA

Section 02 21 00 Surveying

Section 31 00 00 Earthwork

Section 31 02 19.13 Geotextiles

Section 31 05 16 Granular Drainage Material

Section 31 11 00 Clearing, Grubbing, and/or Stripping

Section 31 23 33 Trenching and Backfilling

Section 31 25 00 Sediment and Erosion Control

Section 31 31 19 Vegetation

Section 31 37 00 Riprap

Section 32 92 19 Seeding

Section 33 42 13 Pipe Culverts

Section 33 49 00 Storm Water Structures and Swales

Section 34 71 00 Road Construction

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SECTION 02 21 00

SURVEYING

PART 1 GENERAL

1.01 SCOPE

A. This section describes the requirements for surveying during construction, production of “as-built” documents, and computation of quantities for payment purposes. Survey work will be required to delineate areas for stripping; perform earthwork for general fill and CCR; and to perform other work, as needed, to complete various construction activities.

1.02 RELATED SECTIONS AND PLANS

A. Section 31 11 00 - Clearing, Grubbing, and/or Stripping

B. Section 31 00 00 - Earthwork

C. Section 31 23 33 - Trenching and Backfilling

D. Section 31 05 16 - Granular Drainage Material

E. Section 31 31 19 - Vegetation

F. Construction Quality Assurance (CQA) Plan.

1.03 REFERENCES

A. National Geodetic Survey Standards.

1.04 SUBMITTALS

A. Upon request, interim surveys performed shall be submitted to the OWNER with each payment request to substantiate the quantities claimed.

B. CONTRACTOR will be required to submit survey notes during construction upon request by the ENGINEER.

1.05 PROJECT RECORD DOCUMENTS

A. CONTRACTOR shall maintain on-site, a complete and accurate survey log documenting the survey work performed.

B. CONTRACTOR shall maintain on-site, a plan clearly showing all site reference points, survey control points, and benchmarks.

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C. CONTRACTOR shall maintain on-site an accurate and current set of marked-up drawings indicating the as-built conditions.

D. As-built surveys, stamped and signed, by a State of North Carolina Licensed/Registered Land Surveyor or Professional Engineer shall be submitted immediately following the completion of any applicable construction activity. Complete as-built surveys shall be submitted upon substantial completion of each phase of construction and are a prerequisite for contract closeout.

E. Upon completion of each work item, the CONTRACTOR shall prepare and/or update the as-built drawings.

PART 2 PRODUCTS

2.01 MATERIALS AND SURVEY EQUIPMENT

A. Provide materials and survey equipment as required to properly perform the surveys, including, but not limited to, instruments, tapes, rods, measures, mounts, and tripods, stakes and hubs, nails, ribbons, other reference markers, and all else as required.

B. The survey instruments used for this work shall be precise and accurate to meet the needs of the work described. All survey instruments should be capable of reading to a precision of 0.001 ft and with a setting accuracy of ± 0.8 seconds.

PART 3 EXECUTION

3.01 GENERAL

A. Maintain accurate and complete notes of surveys:

1. Handwritten survey notes and information shall be written with lead pencil(s) and entered in "write in rain" notebooks. A copy of the numbered, dated, and signed field book pages shall be provided to the ENGINEER upon request for use in checking the work.
2. Electronic field survey information shall be collected and backup equipment shall be available in the event of equipment malfunction.
    a. Electronic format for printed output of data collector field survey notes shall be compatible with the approved field book notation format.
    b. Electronic format for printed output of data collector field work shall be compatible with the CONTRACTOR's and ENGINEER's computer

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equipment and software for verifying and checking the work. A copy of the data disk shall be submitted to the ENGINEER upon request.

B. During construction, survey notes shall be retained by the CONTRACTOR and shall be submitted to the ENGINEER for review upon request. Prior to the placement of successive soil layer, the CONTRACTOR shall submit a written statement certifying compliance of the preceding layer thickness and grades to the ENGINEER. Surveys will be required from the CONTRACTOR prior to approval by the ENGINEER for the placement of overlying materials.

C. Conformance check surveys for elevation and for horizontal coordinates shall be to the nearest 0.01 ft and for angles shall be to the nearest 20 seconds.

D. Measurement and payment surveys for elevation and for horizontal distances shall be to the nearest 0.1 ft ± 0.05 ft.

E. Perform construction layout surveys in advance of scheduled construction activities. At completion of a survey, provide a copy of the field notes, drawings, or sketches to the ENGINEER for review. The CONTRACTOR shall allow the CQA Consultant and/or ENGINEER three business days for review. The CONTRACTOR is responsible for rework and/or construction delays caused by survey or staking errors.

F. Set slope stakes in accordance with accepted surveying practices.

G. Set grade stakes required for construction activities as the work progresses. Grade stakes shall be set regardless of whether GPS equipped grading equipment is used. The grade stakes are required to allow the OWNER, ENGINEER, and CQA personnel to readily field verify elevations and grades. Set fine grade stakes on all items for which the Construction Drawings specify a definite grade line.

H. Upon completion of the work, the CONTRACTOR shall provide the ENGINEER with all original surveying field notes, layouts, computations, and electronic files in standard bound survey notebooks. Electronic file information shall be compatible with the ENGINEER's computer equipment and software as requested.

I. Protect survey control points and replace disturbed survey control points at no additional cost to the Owner.

3.02 SPECIFIC FIELD REQUIREMENTS

A. Establish temporary control points, as necessary, to support construction activities.

B. Survey Documentation:

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1. Record the following information in survey notebooks for each control point established and for all other surveying:
   a. control point designation;
   b. northing and easting in State Plane North American Datum (NAD83);
   c. elevation in North American Vertical Datum (NAVD88);
   d. date of establishment;
   e. description and sketch of the control point location; and
   f. a minimum of three reference features that can be seen from the control point.
2. Document survey work in the field notebooks using the format and procedures described below:
   a. title and consecutive number on the front cover;
   b. consecutively numbered pages;
   c. table of contents, indicated by survey task, on the first numbered page;
   d. legend indicating symbols used in survey notes;
   e. names of survey team for each task;
   f. notes on weather and equipment;
   g. date and time on each page to indicate when work was recorded;
   h. notes in a uniform character such that they can be interpreted and used by anyone with survey knowledge; and
   i. description and/or sketches of the survey control used.

C. Preliminary Surveys:

1. Earthwork Staking: Stakes for cut and fill limits shall establish the exterior limits of excavations and berms. The maximum staking interval shall be 50 feet. Stakes shall be prominently noted with description of point, vertical distance to design elevation, and offset distance as applicable.
2. Structures: Stake structure centerlines so that the orientation, position, limits, and foundation elevation(s) are positively identified. Mark stakes to reflect the design elevation and offset distance as applicable.
3. Ditches and Channels: Stake ditches and channels such that the layout remains undisturbed during construction.
4. Pipes and Culverts: Stake pipes and culverts on 50-ft maximum stationing. Place offset stakes beyond excavation limits and material stockpiles. Continuously check invert elevation during placement.

D. Final Surveys:

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1. Final topography shall be staked at nominal 50-foot intervals. Additionally, the following points shall be staked and noted as applicable.
   a. Grade breaks.
   b. Mid-point of slopes less than 50 ft.
   c. Points of horizontal curvature and tangency.
   d. Points of stationing equation.
2. Pipes and culverts: Survey alignment and elevations of the top of all pipes at each change in direction, change in grade, all fittings (i.e., couplers, reducers, blind flanges, repairs, elbows, etc.), and at every 50 feet between fittings or changes in grade and direction. Survey inlet and outlet inverts of all pipes, culverts, and structures.
3. Survey other features including: buried electrical, manholes, leachate piping, pipe penetrations, and edge of liner markers.

3.03 SURVEYS FOR MEASUREMENT AND PAYMENT

A. Perform surveys to evaluate quantities of work performed and percent of completed work.

B. Calculate and certify quantities and submit survey results, calculations, and certification to the OWNER and ENGINEER for review and evaluation.

3.04 SURVEYS FOR CONFORMANCE CHECKS AND AS-BUILT DOCUMENTS

A. Survey the following surfaces to verify the lines and grades achieved during construction:

   1. For berms, ditches, drainage swales, roads, and other earthwork:
      a. original grade surface;
      b. compacted surface of cut slopes;
      c. top of general fill; and
      d. finished grade surface.

B. Perform earthwork conformance checks and as-built surveying immediately upon completion of a given installation to verify compliance with the Construction Drawings, facilitate progress, and avoid delaying commencement of the next installation. Provide the following minimum spacing and locations for survey points:

   1. surfaces with gradients less than 10 percent, survey on a square grid spaced not wider than 50 ft;

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2. on slopes greater than 10 percent, a square grid spaced not wider than 50 ft shall be used, but in all cases, a line at the crest, midpoint, and toe of the slope shall be taken;
3. a line of survey points spaced not more than 50 ft apart shall be taken along any slope break (this will include the inside edge and outside edge of any bench on a slope); and
4. a line of survey points spaced not more than 50 ft apart and at each end shall be taken at the top of any pipes, culverts, discharge structures, or other appurtenances.

3.05 PROJECT AS-BUILT DOCUMENTS

A. The CONTRACTOR shall provide partially-complete or finalized as-built survey information at any stage of the work to the Project Manager, ENGINEER, or OWNER within 24 hours of being requested. These interim submittals may be in the form of as-built drawings or in the form of tabulated coordinates of verified construction control points, as requested. This information may be used to verify proper layout and layer thicknesses as the work progresses, to calculate material quantities, and to perform other activities deemed necessary by the Project Manager to check the CONTRACTOR's work.

B. Within 7 days of construction completion, the contractor shall submit finalized as-built survey documents. Finalized as-built survey documents shall meet the following requirements:

1. Four (4) copies of as-built drawings shall be provided on D-size (24” x 36”) sheets with a north arrow, and a standard scale noted (e.g., 1”=50’, 1”=100’, etc.), unless otherwise approved by the ENGINEER. In addition, two CDs containing AutoCAD compatible versions of the as-built drawings shall be provided.
2. Each page of the as-built drawings shall bear a title block that includes: (i) the name and address of the general contractor responsible for the work; (ii) the name, date, address, and original signature and seal of the registered land surveyor who prepared the as-built drawing; and (iii) the facility / project name and location. The signatures included in the title block shall certify that the as-built drawings do, in fact, reflect the true as-built conditions as located under the direct supervision of the registered surveyor and/or professional engineer. The OWNER or ENGINEER will review and approve a preliminary set of finalized as-built drawings. The registered land surveyor shall make all appropriate changes to the as-built drawings to incorporate any OWNER or ENGINEER comments and to comply with these requirements.

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3. As-built drawings shall be clearly legible (e.g., no overlapping text) and include a legend/key that identifies points, series of points, and symbols shown on the sheet.
4. Fonts on all as-built drawings shall be black (i.e., not screened or grayscale), clear, and a minimum of 1/8 inch in height.

[END OF SECTION]

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SECTION 31 00 00

EARTHWORK

PART 1 GENERAL

1.01 SCOPE

A. This section includes the requirements for site preparation, excavation, surface water control, excavation dewatering, stockpiling, subgrade preparation, general fill, subbase preparation, and earthwork materials.

1.02 RELATED SECTIONS AND PLANS

A. Section 02 21 00 - Surveying

B. Section 31 11 00 - Clearing, Grubbing, and/or Stripping

C. Section 31 23 33 - Trenching and Backfilling

D. Section 31 25 00 - Sediment and Erosion Control

E. Construction Quality Assurance (CQA) Plan

1.03 REFERENCES

A. Latest version of American Society of Testing and Materials (ASTM) standards and other standards noted in this specification.

1.04 SUBMITTALS

A. Within 15 calendar days from Notice to Proceed, submit to the ENGINEER for review an Earthwork Work Plan. The Earthwork Work Plan shall include, at a minimum:

1. list of equipment proposed for the construction activities including earthwork and other scope of work specified described in the contract documents;
2. construction methods for each construction activity;
3. dewatering methods and techniques;
4. coordination of survey requirements for the earthwork;
5. proposed locations of temporary soil stockpile areas;
6. coordination of earthwork activities with surface water management and erosion and sediment control measures;
7. schedule for earthwork activities; and
8. dust control measures.

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1.05 CONSTRUCTION QUALITY ASSURANCE

A. The earthwork will be monitored and tested by the CQA Consultant as required in the CQA Plan.

B. The CQA Consultant will perform soil conformance testing on general fill to establish compliance with this section. Provide equipment and labor to assist the CQA Consultant in obtaining conformance samples from excavations and stockpiles.

C. The CQA Consultant will perform soil performance testing on the subgrade surface and general fill lifts to evaluate compliance with this section. The CQA Consultant will indicate any portion of the earthwork that does not meet the requirements of this section and will delineate the extent of the nonconforming area.

D. The CONTRACTOR shall correct all deficiencies and non-conformances identified by the CQA Consultant at no additional cost to the OWNER.

E. The CONTRACTOR shall be aware of the activities required of the CQA Consultant by the CQA Plan and shall account for these activities in the construction schedule.

1.06 EXISTING CONDITIONS

A. Existing site surface and subsurface conditions, based on available site data, are indicated on the Construction Drawings.

B. CONTRACTOR shall verify existing conditions as indicated in Section 02 21 00.

PART 2 PRODUCTS

2.01 MATERIALS

A. Obtain material for general fill from borrow sources designated or approved by the ENGINEER.

B. General fill material shall be free of debris, foreign objects, large rock fragments, organics, and other deleterious materials. General fill material shall classify as SW, SP, SW-SM, SW-SC, SP-SM, SP-SC, SM, or SC according to the Unified Soil Classification System (per ASTM D 2487). General fill material having the indicated classification is expected to be available from designated or approved borrow sources. Soils having other classifications may be acceptable as general fill, if approved by the ENGINEER.

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2.02 EQUIPMENT

A. Furnish compaction equipment to achieve the required minimum soil dry density within the range of acceptable moisture contents.

B. Furnish hand compaction equipment, such as a walk-behind compactor, hand tampers, or vibratory plate compactor, for compaction in areas inaccessible to large compaction equipment.

C. Furnish water trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable surface widths for required in-place moisture adjustment, to prevent drying of soil surfaces, and for dust control.

D. Furnish equipment such as excavators, scrapers, compactors, loaders, dozers, earth hauling equipment and all other equipment, as required for earthwork construction.

PART 3 EXECUTION

3.01 GENERAL

A. All general fill material to be compacted shall be at a moisture content that will readily facilitate effective compaction.

B. General fill material placed wet that exhibits pumping shall not be accepted regardless of the in-place density or percent compaction. Wet materials shall not be placed and compacted. Wet materials, if used, shall be allowed to dry in place, if feasible, or removed and replaced with suitable materials as directed by the ENGINEER.

3.02 SITE PREPARATION

A. Install construction fence and barricades around open trenches and excavated areas.

B. Install erosion and sediment controls in relevant areas of construction as indicated on the Construction Drawings and as required by Section 31 25 00. Maintain the erosion and sediment controls for the duration of the Contract and until the contained areas are vegetated in accordance with Section 31 31 19. Accumulated sediment behind silt fences and from drainage swales and structures shall be removed as required or as directed by the ENGINEER.

C. Prior to any earthwork activity, perform clearing, grubbing, and/or stripping as indicated on the Construction Drawings and in accordance with Section 31 11 00.

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3.03 SURFACE WATER CONTROL

A. Installation of surface water and erosion controls shall be in accordance with Section 31 25 00.

B. Install surface water and erosion controls in and around work areas to control runoff and erosion and to prevent surface water run-on into excavations. Perimeter controls may include shallow ditches, berms, or localized regrading.

3.04 EXCAVATION

A. Excavate designated areas to the subgrade elevations or excavation limits indicated on the Construction Drawings. Stockpile excavated material in areas designated by the Project Manager for use in subsequent construction.

3.05 EXCAVATION DEWATERING

A. Anticipate seepage of groundwater into, and accumulation of surface water runoff in excavations. Manage groundwater and surface water in excavations in accordance with this section.

B. Prevent surface water run-on from adjacent areas from entering the excavation.

C. All fill operations, except hydraulic filling, shall be performed in the dry. CONTRACTOR shall expect that groundwater is at or near the existing ground surface and shall be prepared to lower the groundwater in local areas as required. CONTRACTOR shall expect that work areas may be inundated with water and be prepared to dewater as required to perform work.

3.06 STOCKPILING

A. Separate stockpiles by material type.

B. Stockpile excavated soils at the areas indicated on the Construction Drawings or as designated by the ENGINEER.

C. Construct stockpiles no steeper than 3H:1V (horizontal:vertical), grade to drain, seal by tracking perpendicular to the slope contours with a dozer, and dress daily during periods when fill is taken from the stockpile.

D. Silt fence or berms shall be constructed at the base of stockpiles that will not be immediately used.

E. Restore all areas used for stockpiling when stockpiles are removed as directed by the OWNER.

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3.07 SUBGRADE PREPARATION

A. Subgrade material shall consist of soil relatively free of debris, foreign objects, organics and other deleterious materials.

B. Compact all subgrade to a minimum 95 percent of the standard Proctor (ASTM D 698) maximum dry density at a moisture content as required to attain the specified density or as approved by the ENGINEER.

C. In the presence of the CQA Consultant, perform subgrade proof rolling by driving a loaded dump truck (minimum weight of 10 tons per axle and minimum loaded weight of 20 tons) or other pneumatic-tired vehicle, back and forth across the area to confirm the firmness of subgrade surface. Overlap the passes such that one set of tires on each pass runs between the two sets of tire tracks from the previous pass. Soils shall not exhibit pumping or develop ruts more than two inches in depth. Minor rutting, defined as less than two inches in depth, shall be regraded or covered with general fill to match finish grade.

D. Subgrade for general fill shall be scarified to a depth of 2 inches using equipment identified in this section.

E. Unsuitable soils shall be removed and replaced with general fill to a minimum depth of 2 feet below the proposed subgrade elevation. Suitable soil exhibiting pumping or developing ruts more than two inches in depth will be removed to a minimum depth of 1 foot or dried in place, if feasible. Compact the general fill materials to a minimum 95 percent of standard Proctor (ASTM D 698) maximum dry density at a moisture content as required to attain the specified density or as approved by the ENGINEER.

F. In excavations or other areas where water accumulates, implement measures to remove the water in accordance with this section. Maintain the subgrade surface free of standing water and in firm condition to meet proof rolling requirements of this section. Maintain dewatered areas until overlying construction is complete.

G. Manage surface water as described in Section 31 25 00.

3.08 GENERAL FILL

A. Use fill that meets the requirements of this section. Place fill to the limits and grades shown on the Construction Drawings.

B. Place general fill material on surfaces that are free of debris, vegetation, or other deleterious material.

C. Place general fill material in loose lifts with a thickness of 12 inches $\pm$ 1 inch. In areas where compaction is to be performed using hand operated

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equipment, place the fill material in loose lifts with a loose thickness of 6 inches ± 1 inch.

D. Prior to placing a succeeding lift of material over a previously compacted lift, thoroughly scarify the previous lift to a depth of 2 inches by discing, raking, or tracking with a dozer. Moisture condition the preceding lift if not within the acceptable moisture range.

E. The trafficking of scarified surfaces by trucks or other equipment, except compaction equipment, is not permitted.

F. Except as specified in this section, compact general fill in each lift to at least 95 percent of its standard Proctor maximum dry density (ASTM D 698). Compact general fill at moisture content as required to attain the specified density or as approved by the ENGINEER.

G. Do not place fill during periods of precipitation. Placement may occur during periods of misting or drizzle, but only as authorized by the ENGINEER.

H. Dust shall be controlled by the application of water to the general fill surfaces.

3.09 SURVEY CONTROL

A. Survey limits and elevations of excavations, subgrade, and top of general fill in accordance with Section 02 21 00.

3.10 TOLERANCES

A. Perform the earthwork construction related to the berms, and composite liner system to within ±0.1 ft. of the elevations and within 10 percent of the slopes indicated on the Construction Drawings.

B. Positively draining slopes shall be maintained during all construction.

[END OF SECTION]

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SECTION 31 02 19.13

GEOTEXTILES

PART 1 GENERAL

1.01 SCOPE

A. This section includes the requirements for geotextile products and installation.

1.02 RELATED SECTIONS AND PLANS

A. Section 31 23 33 - Trenching and Backfilling

B. Section 31 05 16 - Granular Drainage Material

C. Construction Quality Assurance (CQA) Plan

1.03 REFERENCES

A. Latest version of American Society of Testing and Materials (ASTM) standards and other standards noted in this specification.

B. Federal Standard No. 751a - Stitches, Seams, and Stitching.

1.04 SUBMITTALS

A. Submit the following to the ENGINEER for review not less than 21 calendar days prior to use:

1. geotextile Manufacturer and product name;
2. certification of minimum average roll values and the corresponding test procedures for all geotextile properties listed in Tables 31 02 19.13-1 and 31 02 19.13-2; and
3. projected geotextile delivery dates.

B. Submit to the ENGINEER for review at least 14 calendar days prior to geotextile placement, manufacturing quality control certificates for each roll of geotextile as specified in this section.

1.05 CONSTRUCTION QUALITY ASSURANCE

A. The installation of geotextiles will be monitored by the CQA Consultant as required in the CQA Plan.

B. The CQA Consultant will perform material conformance testing of the geotextiles as required in the CQA Plan.

C. The CONTRACTOR shall be aware of the activities required of the CQA Consultant by the CQA Plan and shall account for these activities in the construction schedule.

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D. The CONTRACTOR shall correct all deficiencies and nonconformances identified by the CQA Consultant at no additional cost to the OWNER.

PART 2 PRODUCTS

2.01 GEOTEXTILE

A. Furnish geotextile products with minimum average roll values (95 percent lower confidence limit) meeting or exceeding the required property values in Tables 31 02 19.13-1 (for geotextile filters) and 31 02 19.13-2 (for geotextile separators).

B. Furnish geotextiles that are stock products.

C. Furnish geotextiles that are manufactured from first quality polymers, with no more than 20 percent reclaimed polymer used in production.

D. Furnish polymeric threads for stitching that are ultra-violet (UV) light stabilized to at least the same requirements as the geotextile to be sewn. Furnish polyester or polypropylene threads that have a minimum size of 2,000 denier.

2.02 MANUFACTURING QUALITY CONTROL

A. Sample and test the geotextile to demonstrate that the material conforms to the requirements of this section.

B. Perform manufacturing quality control tests to demonstrate that the geotextiles properties conform to the values specified in Tables 31 02 19.13-1 and 31 02 19.13-2. Perform as a minimum, the following manufacturing quality control tests at a minimum frequency of once per 50,000 square feet with minimum of 1 test per resin lot:

Test	Procedure
Mass per unit area	ASTM D 5261
Grab strength	ASTM D 4632
Tear strength	ASTM D 4533
Static puncture strength	ASTM D 6241

C. Perform additional manufacturing quality control tests on the geotextile filter at a minimum frequency of once per 100,000 square feet with minimum of 1 test per resin lot, to demonstrate that the apparent opening size (ASTM D 4751) and permittivity (ASTM D 4491) of the geotextile conform to the values specified in Table 31 02 19.13-1.

D. Submit quality control certificates signed by the geotextile manufacturer quality control manager. The certificates shall state that the geotextiles are

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continuously inspected and are needle-free. The quality control certificates shall also include: lot, batch, and roll number and identification; and results of manufacturing quality control tests including description of test methods used.

E. Do not supply any geotextile roll that does not comply with the manufacturing quality control requirements.

F. If a geotextile sample fails to meet the quality control requirements of this section, sample and test rolls manufactured at the same time or in the same lot as the failing roll. Continue to sample and test the rolls until the extent of the failing rolls are bracketed by passing rolls. Do not supply failing rolls.

2.03 PACKAGING AND LABELING

A. Supply geotextiles in rolls wrapped in relatively impermeable and opaque protective wrapping. Wrapping which becomes torn or damaged shall be repaired with similar materials.

B. Mark or tag geotextile rolls in accordance with ASTM D 4873 with the following information:

1. manufacturer's name;
2. product identification;
3. lot or batch number;
4. roll number; and
5. roll dimensions.

C. Geotextile rolls not labeled in accordance with this section or on which labels are illegible upon delivery to the site shall be rejected and replaced at no expense to the OWNER.

2.04 TRANSPORTATION

A. Deliver geotextiles to the site at least 14 calendar days prior to the planned deployment date to allow the CQA Consultant adequate time to perform conformance testing on the geotextile samples as described in the CQA Plan.

2.05 HANDLING AND STORAGE

A. Protect geotextiles from sunlight, moisture, excessive heat or cold, puncture, mud, dirt, and dust or other damaging or deleterious conditions. Follow all geotextile manufacturer recommendations for handling and storage. Geotextile rolls shall be covered with additional tarp cover (in addition to the roll cover) to prevent damage to the rolls.

B. Store geotextile rolls on palates or other elevated structures. Do not store geotextile rolls directly on the ground.

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C. Outdoor storage of geotextile rolls shall not exceed the manufacturer's recommendation or longer than 6 months, whichever is less.

PART 3 EXECUTION

3.01 PLACEMENT

A. Do not commence geotextile installation until the CQA Consultant completes conformance evaluation of the geotextiles and performance evaluation of previous work, including evaluation of CONTRACTOR's survey results for previous work.

B. Handle geotextiles so as to ensure they are not damaged in any way.

C. Take necessary precautions to prevent damage to underlying layers including rutting during placement of the geotextiles.

D. After unwrapping the geotextiles from its opaque cover, do not leave them exposed for a period in excess of 30 calendar days.

E. If white colored geotextiles are used, take precautions against "snow blindness" of personnel.

F. Examine the geotextile surface after installation to ensure that no potentially harmful foreign objects are present. Remove any such objects and replace any damaged geotextiles.

3.02 SEAMS AND OVERLAPS

A. Continuously overlap a minimum of 6 inches and sew filter geotextiles (i.e., spot sewing is not allowed) using a "single prayer" seam. Sew seams using Stitch Type 401 as per Federal Standard No. 751a. In lieu of sewing, geotextile filters may be overlapped a minimum of two feet.

B. Do not install horizontal seams on slopes that are steeper than 10 horizontal to 1 vertical. Seams shall be along, not across, the slopes.

C. Overlap separator geotextiles a minimum of 12 inches and ensure that the overlap is maintained.

3.03 REPAIR

A. Repair any holes or tears in the geotextiles using a patch made from the same geotextile material. Extend geotextile patches a minimum of 1 foot beyond the damaged area. Sew geotextile patches into place no closer than 1 inch from any panel edge. Should any tear exceed 50 percent of the width of the roll, remove and replace that roll.

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B. Remove any soil or other material that may have penetrated the torn geotextiles.

3.04 PLACEMENT OF SOIL MATERIALS

A. Place soil materials on top of geotextiles in such a manner as to ensure that:

1. the geotextiles and the underlying materials are not damaged; and
2. slippage does not occur between the geotextile and the underlying layers during placement.

B. Spread soil on top of the geotextile to cause the soil to cascade over the geotextile rather than be shoved across the geotextile.

C. Place aggregate over geotextile separators as indicated on the Construction Drawings prior to trafficking.

D. Place soil over geotextile filters as indicated on the Construction Drawings prior to trafficking.

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TABLE 31 02 19.13-1

REQUIRED PROPERTY VALUES FOR GEOTEXTILE FILTER

Properties (6)	Qualifier	Units (5)	Specified Values(1)	Test method
Product Requirements				
Type	--	--	Nonwoven needle-punched	--
Polymer composition	Minimum	%	95 polypropylene or polyester by wt	--
Mass per unit area	Minimum	oz/yd^2	8	ASTM D 5261
Filter Requirements				
Apparent opening size	Maximum	mm	O95 ≤ 0.21	ASTM D 4751
Permittivity	Minimum	sec^{-1}	0.5	ASTM D 4491
Mechanical Requirements				
Grab strength	Minimum	lb	200	ASTM D 4632(2)
Tear strength	Minimum	lb	75	ASTM D 4533(3)
Static puncture strength	Minimum	psi	500	ASTM D 6241
Durability Requirements				
Ultraviolet Resistance	Minimum	%	70	ASTM D 4355

Notes:

1. All values represent minimum average roll values.
2. Minimum of values measured in machine and cross machine directions with 1 inch clamp on Constant Rate of Extension (CRE) machine.
3. Minimum value measured in machine and cross machine direction.
4. Not Used.
5. mm = millimeter; % = percent; oz/yd^2 = ounce per square yard; sec = second; lb = pound; psi = pound per square inch
6. See Paragraph 2.02 for required MQC test frequencies.

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TABLE 31 02 19.13-2

REQUIRED PROPERTY VALUES FOR GEOTEXTILE SEPARATOR

Properties (6)	Qualifier	Units (5)	Specified Values (1)	Test method
Product Requirements				
Type	--	--	Nonwoven needle-punched	--
Polymer composition	Minimum	%	95 polypropylene or polyester	--
Mass per unit area	Minimum	oz/yd2	8	ASTM D 5261
Mechanical Requirements				
Grab strength	Minimum	lb	200	ASTM D 4632(2)
Tear strength	Minimum	lb	75	ASTM D 4533(3)
Static puncture strength	Minimum	psi	500	ASTM D 6241
Durability Requirements				
Ultraviolet Resistance	Minimum	%	70	ASTM D 4355

Notes:

1. All values represent minimum average roll values.
2. Minimum of values measured in machine and cross machine directions with 1 inch clamp on Constant Rate of Extension (CRE) machine.
3. Minimum value measured in machine and cross machine direction.
4. Not Used
5. % = percent
   oz/yd^2 = ounce per square yard
   lb = pound
   psi = pound per square inch
6. See Paragraph 2.02 for required MQC test frequencies.

[END OF SECTION]

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SECTION 31 05 16

GRANULAR DRAINAGE MATERIAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section includes the requirements for granular drainage material.

1.02 RELATED SECTIONS AND PLANS

A. Section 02 21 00 - Surveying

B. Section 31 02 19.13 - Geotextiles

C. Construction Quality Assurance (CQA) Plan

1.03 REFERENCES

A. Latest version of American Society of Testing and Materials (ASTM) standards and other standards noted in this specification.

1.04 SUBMITTALS

A. For each source of granular drainage material, submit the following to the ENGINEER for review not less than 21 calendar days prior to use:

1. source of the material;
2. test results conducted on each material such that the material is fully represented in accordance with ASTM C 136, ASTM D 2434, and ASTM D 3042; and
3. a 50-pound representative sample of the material.

1.05 CONSTRUCTION QUALITY ASSURANCE

A. The installation of the granular drainage material will be monitored by the CQA Consultant as required in the CQA Plan.

B. The CQA Consultant will perform material conformance testing and installation quality control testing on the granular drainage materials as required in the CQA Plan.

C. The CONTRACTOR shall be aware of the activities required of the CQA Consultant by the CQA Plan and shall account for these activities in the construction schedule.

D. The CONTRACTOR shall correct all deficiencies and nonconformances identified by the CQA Consultant at no additional cost to the OWNER.

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PART 2 PRODUCTS

2.01 MATERIALS

A. Furnish granular drainage materials consisting of homogeneous crushed or natural stones that is free of materials that, due to their nature or size, are deleterious to the intended use as determined by the ENGINEER.

B. Granular drainage material shall be rounded or subrounded (as defined by ASTM D 2488), shall have a gradation (per ASTM C 136) that meets the requirements for a No. 57 stone in ASTM D 448, and shall have a minimum hydraulic conductivity of 1 cm/sec based on laboratory permeability testing conducted in accordance with the ASTM D 2434.

C. Furnish granular drainage material having less than 5 percent loss by weight when tested in accordance with ASTM D 3042.

2.02 EQUIPMENT

A. Furnish, operate, and maintain equipment necessary to transport, place, and spread the granular drainage materials without damage to adjacent geosynthetics.

PART 3 EXECUTION

3.01 MATERIAL PLACEMENT

A. Do not commence placement of the granular drainage material until the CQA Consultant has completed conformance evaluation of the material and evaluation of previous work, including evaluation of the CONTRACTOR's survey results for previous work.

B. Place the granular drainage material to the minimum thicknesses and limits indicated on the Construction Drawings.

C. Surround granular drainage material with geosynthetic material as indicated on the Construction Drawings. Care shall be taken to avoid damage to geosynthetics during granular drainage material placement.

3.02 SURVEY CONTROL

A. Survey the limits and elevations of the top of the granular drainage material in accordance with Section 02 21 00.

3.03 TOLERANCES

A. Construct the granular drainage material to the minimum thicknesses indicated on the Construction Drawings.

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[END OF SECTION]

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SECTION 31 11 00

CLEARING, GRUBBING, AND/OR STRIPPING

PART 1 GENERAL

1.01 SCOPE

A. This section describes the requirements for clearing, grubbing, and/or stripping activities. Clearing, grubbing, and/or stripping activities will be required to perform the earthwork, and to perform other work, as needed, to complete various construction activities.

1.02 RELATED SECTIONS AND PLANS

A. Section 02 21 00 - Surveying

B. Section 31 00 00 - Earthwork

C. Section 31 25 00 - Sediment and Erosion Control

D. Section 31 31 19 - Vegetation

E. Construction Quality Assurance (CQA) Plan

1.03 COMPLIANCE WITH REGULATIONS

A. It is the sole responsibility of the CONTRACTOR to be completely familiar with and to follow all local, state, and federal regulations pertaining to the work required in this section.

1.04 CONSTRUCTION QUALITY ASSURANCE

A. Clearing, grubbing, and/or stripping operations shall be monitored by the CQA Consultant as outlined in the CQA Plan.

B. The CONTRACTOR shall be aware of the activities set forth in the CQA Plan and shall account for these activities in the construction schedule.

C. The CONTRACTOR shall assist CQA personnel in every manner necessary for the proper performance of activities set forth in the CQA Plan.

D. CQA testing or inspections in no manner relieves the CONTRACTOR of the responsibility to perform all work in conformance with the Construction Drawings and Specifications.

E. If quality control or quality assurance tests indicate work does not meet specified requirements, the CONTRACTOR shall perform the work as directed by the CQA Consultant at no additional cost to the OWNER.

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1.05 EXISTING CONDITIONS

A. The CONTRACTOR shall comply with applicable regulations in locating and providing clearance for all underground and above ground utilities, if applicable, prior to beginning construction activities. The CONTRACTOR shall immediately notify the OWNER and the ENGINEER if utility lines or structures not shown on the Construction Drawings are encountered. Repair of damage and all restitution for liabilities resulting from damage to existing facilities due to activities by the CONTRACTOR shall be at the CONTRACTOR's expense.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials to be cleared, grubbed, and/or stripped include trees, shrubs, debris, muck, or other foreign matter, as needed, to develop the work area and enable construction activities.

B. Vegetative stabilization and erosion control of stripped soil stockpiles shall be as specified in Section 31 25 00.

PART 3 EXECUTION

3.01 FAMILIARIZATION

A. Prior to implementing any of the work described in this section, the CONTRACTOR shall become thoroughly familiar with the site, the site conditions, and all portions of the work described in this section.

B. CONTRACTOR shall note that the elevation of groundwater is at or near the existing ground surface for areas covered under this Contract. Some areas may also be inundated with water at the start of construction. CONTRACTOR is responsible for any dewatering required to execute the required work.

C. Inspection:

1. Prior to implementing any of the work in this section, the CONTRACTOR shall carefully inspect and verify that related work required by other sections is complete to the point where the work described in this section may properly commence without adverse impact.
2. If the CONTRACTOR has any concerns regarding the related work required by other sections, he shall notify the ENGINEER in writing prior to the commencement of operations. Failure to notify the ENGINEER will be construed as CONTRACTOR acceptance of the related work of all other sections.

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3.02 SEDIMENT AND EROSION CONTROL

A. Prior to implementing any work described in this section, the CONTRACTOR shall install all sediment and erosion controls in the relevant area(s) of construction.

B. CONTRACTOR is solely responsible for selecting, implementing, and maintaining proper and fully adequate sediment and erosion controls at all times during construction.

3.03 CLEARING AND GRUBBING

A. Clearing and/or grubbing shall be performed in areas identified in the contract documents or as directed by the ENGINEER. All sediment and erosion controls, as described in Section 31 25 00 of the Specifications or as indicated on the Construction Drawings, shall be in place before the start of clearing.

B. If weather conditions are unsuitable for clearing and/or grubbing, as determined by the ENGINEER, the CONTRACTOR shall cease operations until permission to resume operations is obtained from the ENGINEER.

C. Clearing shall consist of removing trees, undergrowth, and deadwood. Trees shall be cut level with the adjacent ground surface. Grubbing shall consist of removing stumps, roots, and surficial debris from the areas identified in this section or as directed by the ENGINEER.

D. Clearing and/or grubbing activities shall be performed in a manner so as to minimize disturbance to the surrounding areas.

E. All cleared and/or grubbed materials shall be reduced to mulch and stockpiled as directed by the OWNER.

3.04 STRIPPING

A. Stripping shall be performed in areas identified in this section or as directed by the ENGINEER. All sediment and erosion controls shall be in place before the start of stripping. Stripping shall include all vegetation, organics, and other deleterious materials as required by the ENGINEER. Stripping depth shall be a minimum of 6 inches. However, overstripping shall be avoided.

B. If soil or weather conditions are unsuitable for stripping, as determined by the ENGINEER, the CONTRACTOR shall cease stripping activities until permission to resume work is obtained from the ENGINEER.

C. Equipment and methods of operation shall be selected by the CONTRACTOR to minimize disturbance to the surrounding areas.

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D. All stripped material shall be stockpiled in the areas designated by the OWNER. Stockpiled material shall be sloped and grassed as required in the Specifications or as directed by the ENGINEER.

3.05 SURVEYING AND CONSTRUCTION TOLERANCES

A. The CONTRACTOR shall retain a Surveyor who shall be responsible for providing survey control for the work. The areas to be cleared, grubbed, and/or stripped shall be surveyed prior to performing the work for the purpose of measurement and payment. All surveying shall be performed in accordance with Section 02 21 00 of the Specifications.

3.06 PROTECTION OF WORK

A. The CONTRACTOR shall protect all prior work, including all materials and related work of other sections.

B. In the event of damage, the CONTRACTOR shall immediately make all necessary repairs and replacements necessary, as directed and approved by the ENGINEER, at no additional cost to the OWNER.

[END OF SECTION]

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SECTION 31 23 33

TRENCHING AND BACKFILLING

PART 1 GENERAL

1.01 SCOPE

A. This section describes the requirements for trenching, backfilling, placing, and compacting materials, and for performing other work as directed by the ENGINEER.

1.02 RELATED SECTIONS AND PLANS

A. Section 02 21 00 - Surveying

B. Section 31 00 00 - Earthwork

C. Construction Quality Assurance (CQA) Plan

1.03 REFERENCES

A. Latest version of American Society of Testing and Materials (ASTM) standards and other standards noted in this specification.

B. Latest version of Occupational Safety and Health Administration (OSHA) Construction Standards.

1.04 SUBMITTALS

A. Submit a list of equipment for trenching and backfilling to the ENGINEER no less than 15 calendar days prior to construction/installation.

B. If the embedment fill material is obtained from a source different than the source of general fill, submit the source of the embedment fill, a representative sample, and results of tests conducted on the embedment fill samples in accordance with ASTM D 422 and ASTM D 2487.

1.05 CONSTRUCTION QUALITY ASSURANCE

A. The trenching and backfilling will be monitored by the CQA Consultant as required in the CQA Plan.

B. The CONTRACTOR shall be aware of the activities required of the CQA Consultant in the CQA Plan and shall account for these activities in the construction schedule.

C. The CONTRACTOR shall correct all deficiencies and non-conformances identified by the CQA Consultant at no additional cost to the OWNER.

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1.06 EXISTING CONDITIONS

A. In advance of trenching in an area, verify the accuracy of existing conditions indicated on the Construction Drawings. Immediately notify the ENGINEER in writing of deviations from the existing conditions indicated on the Construction Drawings.

B. The approximate locations of all known underground utilities, above ground utilities, and other structures, if any, are indicated on the Construction Drawings.

PART 2 PRODUCTS

2.01 MATERIALS

A. Embedment material and backfill material shall be obtained from the designated or other borrow area and shall meet the material requirements for general fill as specified in Section 31 00 00.

2.02 EQUIPMENT

A. Provide, operate, and maintain all equipment necessary to perform the work described in this section.

PART 3 EXECUTION

3.01 GENERAL

A. In areas of trenching and backfilling, maintain and protect existing underground utilities, above ground utilities, and other structures, if any.

B. Do not damage or disturb, if possible, the existing work/systems that must remain after trenching and backfilling is completed. If damaged or disturbed, these systems shall be restored to the condition existing prior to the trenching and backfilling operations.

3.02 TRENCHING

A. Use sheeting and bracing where and whenever necessary to maintain the safety and stability of all slopes, trenches, and adjacent structures, if any. Satisfy all applicable local, state, and federal requirements for slope and trench sheeting and bracing, including requirements of the Occupational Safety and Health Administration (OSHA) construction standards. Provide required sheeting and bracing materials on site prior to start of trenching. Adjust spacing and arrangement of sheeting and bracing as required by conditions encountered. Remove sheeting and bracing as backfill

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progresses. Fill any voids left from sheeting or bracing withdrawal with general fill or other approved materials.

B. Trench soils for pipes, culverts, storm water structures and/or to perform other work to depths and minimum dimensions indicated on the Construction Drawings. Fill material shall be placed and compacted with a hand tamper so as not to damage the geosynthetics, structures, or displace the pipes.

C. Protect and maintain the trench bottom. Remove rock fragments or raveled materials that collect on the trench bottom. Backfill excess excavation with general fill or other approved materials. Excavate any soft subgrade soils encountered at the trench bottom and backfill and compact general fill to subgrade elevation.

D. Dewater trenches and excavations as needed. Perform dewatering in accordance with Section 31 00 00.

E. Stockpile excess material from trenching in accordance with Section 31 00 00.

3.03 BACKFILLING

A. General:

1. do not backfill with saturated material;
2. do not backfill over wet or soft subgrade;
3. do not disturb or damage the installed pipes during backfilling; and
4. do not use heavy compaction equipment which exerts greater than 5 pounds per square inch ground pressure over pipes that are covered by less than 12 inches of backfill material.

B. Placement of backfill material:

1. place the first lift of backfill material in a 12-inch loose lift. Place subsequent lifts of trench backfill material in 8-inch ±1-inch loose lifts; and
2. compact each lift to 95 percent of the maximum standard Proctor dry unit weight at a moisture content generally within ±3 percent of the optimum moisture content as determined by ASTM D 698, or as directed by the ENGINEER.

C. Placement of embedment fill:

1. place embedment fill in 7-inch ±1-inch thick loose lifts to the elevation of the bottom of the pipe;
2. compact embedment fill with a minimum of 4 passes of a vibratory plate compactor prior to placing pipe;

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3. place pipe on top of the compacted embedment fill;
4. for pipes 12 inches in diameter or less, place additional pipe embedment fill on the sides and hand tamp the fill around the sides as needed to insure intimate contact between the pipe and the embedment fill below the spring line. Continue placing embedment fill until it is even with the top of the pipe. Compact the embedment fill with a minimum of 4 passes of a vibratory plate compactor. Do not compact on top of the pipe unless a minimum of 12 inches of trench backfill separates the compactor from the top of the pipe; and
5. for pipes greater than 12 inches in diameter, place embedment fill in 7-inch ±1-inch thick loose lifts to the limits shown on the Construction Drawings. Compact each lift with a minimum of 4 passes of a vibratory plate compactor.

3.04 SURVEY CONTROL

A. Survey the limits and invert elevations of all pipes, culverts, and structures in accordance with Section 02 21 00.

B. Survey the alignment and elevations of the top of all pipes at each change in grade and every 50 feet between changes in grades in accordance with Section 02 21 00.

3.05 TOLERANCES

A. Install pipes to within ±0.1 ft of the elevations and within 10 percent of the slopes indicated on the Construction Drawings.

B. Excavate anchor trenches within 0 to +0.2 feet of the depth indicated on the Construction Drawings.

[END OF SECTION]

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SECTION 31 25 00

SEDIMENT AND EROSION CONTROL

PART 1 GENERAL

1.01 SCOPE

A. Due to the nature of the work, site soils, and location with respect to active disposal cells and operation, the CONTRACTOR shall implement strict erosion and sedimentation control measures throughout the duration of the work. A preventative approach to sedimentation control shall be implemented by the CONTRACTOR in that multiple measures shall be installed and maintained to prevent sedimentation and/or erosion of exposed soils. The CONTRACTOR shall furnish all labor, materials, tools, and incidentals required to install and maintain the temporary sediment and erosion control measures and structures including, but not limited to, silt fence, straw bales, check dams, temporary diversion berms, and sediment traps, throughout the duration of the construction work. Such controls shall be implemented and maintained throughout the construction until the stabilization of permanent erosion control devices. The CONTRACTOR shall also be responsible for removing the temporary sediment and erosion control measures and structures after the construction work is completed.

B. The CONTRACTOR shall contain all storm water discharges within the property boundary. No discharge shall be allowed off of property.

C. The CONTRACTOR shall protect all existing storm water structures and ponds. Sediment deposits shall be removed and damaged vegetation shall be repaired. The CONTRACTOR shall maintain all existing storm water features including, but not limited to berms, swales, and culverts. Any disturbed storm water features shall be repaired by the CONTRACTOR.

D. Regardless of any minimum requirements set forth in this section, it is the CONTRACTOR'S sole responsibility to select, implement, and maintain proper and fully adequate erosion and sediment controls at all times (24 hours a day on all days) throughout the duration of the project. Repair of any damage and all restitution for liabilities resulting from inadequate erosion and sediment control shall be at the CONTRACTOR'S expense.

1.02 RELATED SECTIONS AND PLANS

A. Section 02 21 00 - Surveying

B. Section 31 11 00 - Clearing, Grubbing and/or Stripping

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C. Section 31 00 00 - Earthwork

D. Construction Quality Assurance (CQA) Plan

1.03 REFERENCES

A. NCDENR Stormwater BMP Manual, May 2012.

1.04 COMPLIANCE WITH REGULATIONS

A. It is the sole responsibility of the CONTRACTOR to be completely familiar and comply with all local, state, and federal regulations pertaining to the work required in this section.

1.05 CONSTRUCTION QUALITY ASSURANCE

A. Sediment and erosion control activities shall be monitored as outlined in the CQA Plan.

B. The CONTRACTOR shall be aware of the activities set forth in the CQA Plan and shall account for these activities in the construction schedule.

C. The CONTRACTOR shall assist the CQA Consultant in every manner necessary for the proper performance of activities set forth in the CQA Plan.

D. CQA testing or inspections does not relieve the CONTRACTOR of the responsibility to construct all work in conformance with the Construction Drawings and Specifications.

E. If quality control or quality assurance tests indicate work does not meet specified requirements, the CONTRACTOR shall remove, replace, and retest the work at no additional cost to the OWNER.

1.06 SUBMITTALS

A. The CONTRACTOR shall submit samples and manufacturer's product data sheets and recommended methods of installation for the proposed silt fence to the ENGINEER at least 14 days prior to starting installation. The manufacturer's product data sheets shall provide documentation and certification that the silt fence products meet or exceed the requirements specified in Part 2.01 of this section.

PART 2 PRODUCTS

2.01 SILT FENCE

A. Furnish silt fence with either woven or nonwoven fabric. Silt fence shall:

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1. be woven fabric consisting of slit films of polypropylene treated with ultraviolet light stabilizers or nonwoven fabric consisting of long chain polymeric filaments or polyester yarns;
2. be inert to hydrocarbons and chemicals commonly found in soils;
3. be resistant to mildew, rot, insects, and rodent attack;
4. have fence post of minimum 2" x 2" lumber and with minimum length of 36 inches spaced a maximum distance of 6 ft along fabric; and
5. have minimum fabric width of 36 inches.

2.02 STRAW BALES

A. Furnish rectangular shaped bales of hay weighing at least 40 pounds per bale. Straw bales shall be free of primary noxious weed seeds and shall be staked in place.

2.03 VEGETATION

A. Vegetation shall be as specified in Section 31 31 19 of these Specifications.

PART 3 EXECUTION

3.01 INSTALLATION

A. Silt fence shall be installed in accordance with the manufacturer's recommendations as needed or as directed by the ENGINEER, prior to any construction activities. Minimum fabric burial depth shall be 6 inches or as recommended by the manufacturer, whichever is greater.

B. Temporary diversions shall be provided as needed to prevent run-on of storm water from outside the limits of work from entering the work area. Temporary diversions shall not result in erosion or sedimentation, or cause flooding outside the limits of work. Temporary diversions intended for use longer than 30 days shall be established with vegetation in accordance with Section 31 31 19 of these Specifications.

C. The exterior slopes of road shoulders (if applicable) shall be grassed immediately after final grading and shaping.

D. The CONTRACTOR shall use straw bales to contain sediment and water from dewatering operations and promote infiltration. Accumulated sediment shall be removed and stockpiled for reuse in an area designated by the ENGINEER.

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3.02 PROTECTION OF WORK

A. The CONTRACTOR shall protect all prior work, including materials and related work of other sections.

B. In the event of damage, the CONTRACTOR shall immediately make all repairs and replacements necessary, as directed and approved by the ENGINEER, at no additional cost to the OWNER.

[END OF SECTION]

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SECTION 31 31 19

VEGETATION

PART 1 GENERAL

1.01 SCOPE

A. This section includes the requirements for sodding, seeding, liming, fertilizing, and maintaining vegetation until established and accepted. Areas to be vegetated include areas noted on the Construction Drawings and any other areas as directed by the ENGINEER.

1.02 RELATED SECTIONS AND PLANS

A. Section 02 21 00 - Surveying

B. Section 31 00 00 - Earthwork

C. Construction Quality Assurance (CQA) Plan

1.03 SUBMITTALS

A. Submit the following to the ENGINEER not less than 30 calendar days prior to use for review:

1. proposed type and source of sod and seed; and
2. Manufacturer's product data for commercial fertilizer and lime and the recommended methods of application.

B. Submit a plan for handling and storage of materials to prevent damage by moisture, heat, or exposure. Include all recommendations of Manufacturers and Suppliers.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sod shall be live, thriving, and meet the requirements of North Carolina Department of Agriculture and Consumer Services.

B. Seeds shall be live seed and meet the requirements of North Carolina Department of Agriculture and Consumer Services.

C. The seeds should have been harvested from the previous year’s crop.

D. All seed bags shall have a label attached stating the date of harvest, LOT number, percent purity, percent germination, noxious weed certification, and date of test.

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E. Use fertilizer that is dry or liquid commercial grade fertilizer uniform in composition that meets the requirements of all State and Federal regulations and standards of the Association of Agricultural Chemists. Deliver fertilizer to the site in original, properly labeled, unopened, clean, containers each showing the Manufacturer's guaranteed analysis conforming to applicable fertilizer regulations and standards. Use fertilizer that is 16-4-8 or as modified by the ENGINEER based on testing of the topsoil by the CONTRACTOR. Apply fertilizer to all sodded areas.

F. Use lime that is agricultural ground limestone with a minimum total neutralizing power of 90 percent. The lime shall have a gradation of at least 40 percent passing the U.S. Standard Number 100 sieve, and at least 95 percent passing the U.S. Standard Number 8 sieve.

PART 3 EXECUTION

3.01 PLANTING AND APPLICATION OF FERTILIZER

A. Do not commence vegetation until the ENGINEER reviews the results of soil analyses.

3.02 NOTIFY THE ENGINEER 24 HOURS PRIOR TO LAYING SOD, SEEDING, OR FERTILIZING.

A. The seed and fertilizer shall be placed by hydro seeding, or other method approved by the ENGINEER.

B. The underlying soil layer should be graded to the lines and limits as indicated on the Construction Drawings. The soil layer surface shall be scarified and damp immediately prior to the seed or sod placement.

C. Repair all gullies, washes, or disturbed areas that develop subsequent to final dressing of the prepared surface.

D. Seeded areas shall be watered after germination as necessary until the vegetation is well established.

E. Apply fertilizer and lime to all vegetated areas unless otherwise indicated by the ENGINEER.

F. Apply fertilizer and lime at the specified rates. If not applied hydraulically, thoroughly rake the fertilizer and lime into the prepared surface to a minimum depth of 2 inches.

G. Application rates:

1. Application rates for seeding shall be according to Manufacture/Supplier recommendations or as directed by the ENGINEER.

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2. Application rates for fertilizer and lime in this section may be adjusted after the results of the site soil test results performed by the CONTRACTOR are available.
3. Base contract price on application rates for fertilizer and lime specified in this section. Contract price will be adjusted for any variations either due to decreasing or increasing the application rates.

H. For areas to be covered with seed or sod:

1. Apply fertilizer at a uniform rate of 1,200 pounds per acre or as otherwise directed by the ENGINEER.
2. Apply agricultural lime at a rate of two tons per acre or as otherwise directed by the ENGINEER.

3.03 MAINTENANCE

A. Maintain seeded and sodded areas immediately after placement until vegetation is well established and exhibits a vigorous growing condition.

B. The CONTRACTOR shall supply and apply supplemental irrigation for the maintenance period following the placement of the seed or sod. All seeded and sodded areas should receive a minimum of 1½ inches of water per week either by precipitation or supplemental irrigation.

C. Maintain the seeded and sodded areas in satisfactory condition. Maintenance of the seeded and sodded areas includes repairing eroded areas, revegetating, watering, and mowing (if applicable). A satisfactory condition of a seeded or sodded area is defined as a 10,000 square feet section of turf that has no bare spots larger than three square feet.

D. The inspection will be performed by the ENGINEER, who will determine whether repair of sodded areas or revegetation is required.

3.04 ACCEPTANCE

A. The vegetated areas shall be accepted at the end of the warranty period if a satisfactory condition as defined in this section exists.

3.05 WARRANTY PERIOD

A. Vegetated areas shall be subject to a warranty period of not less than 60 days from the issuance of the ENGINEER's final completion notice to the CONTRACTOR for the Contract over 100 percent of the areas seeded and sodded.

B. At the end of the warranty period, the ENGINEER will perform an inspection upon written request by the CONTRACTOR. Vegetated areas not demonstrating satisfactory condition of vegetation as outlined above, shall be

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repaired, resodded, and maintained to meet all requirements as specified herein at the CONTRACTOR's expense. All unaccepted areas requiring repair, replacement of sod and/or reseeding shall be subject to a 60 day warranty period commencing at the completion of the reworking.

C. After all necessary corrective work has been completed, the ENGINEER will certify in writing the final acceptance of the vegetated areas.

[END OF SECTION]

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SECTION 31 37 00

RIPRAP

PART 1 GENERAL

1.01 SCOPE

A. This section includes the requirements of riprap products and placement that will need to be installed at the location of the storm water drainage structures.

1.02 RELATED SECTIONS AND PLANS

A. Section 33 49 00 - Storm Water Drainage Structures

B. Section 31 02 19.13 - Geotextiles

C. Construction Quality Assurance (CQA) Plan

1.03 SUBMITTALS

A. Submit the following to the ENGINEER for review no less than 30 calendar days prior to riprap use.

1. source of the riprap; and
2. certification from the supplier that the riprap meets the material requirements of this Section.

1.04 CONSTRUCTION QUALITY ASSURANCE

A. The placement of riprap will be monitored by the CQA Consultant as required by the CQA Plan.

B. The CQA Consultant will perform material conformance testing as required by the CQA Plan.

C. The CONTRACTOR shall be aware of the activities required of the CQA Consultant by the CQA Plan and account for these activities in the construction schedule.

D. The CONTRACTOR shall correct all deficiencies and non-conformances identified by the CQA Consultant at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Riprap shall consist of hard, durable, angular field or quarry stone.

B. Riprap shall conform to NCDOT Class 1 riprap Specifications.

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PART 3 EXECUTION

3.01 PLACEMENT

A. Place riprap to the thickness, elevations, and locations indicated on the Construction Drawings.

B. Place riprap upon geotextile separator meeting requirements of Section 31 02 19.13 and over prepared layers as indicated on the Construction Drawings.

C. Carefully place riprap to avoid segregation or disturbance or damage of the underlying material. Place the material in a manner to produce a well graded mass of riprap with the minimum practicable percentage of voids. Distribute the larger pieces throughout the entire mass such that the finished riprap is free from objectionable pockets of small or large pieces.

D. Do not place riprap by dumping into chutes or by similar methods likely to cause segregation of various sizes.

E. Do not place riprap in a manner that causes damage to an underlying geotextile separator or geocomposite. Repair damaged geotextile as directed by the ENGINEER and in accordance with Section 31 02 19.13.

3.02 SURVEY CONTROL

A. Survey the location of riprap placement in accordance with Section 02 21 00.

3.03 TOLERANCES

A. Place the riprap to the minimum thicknesses as indicated on the Construction Drawings.

[END OF SECTION]

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SECTION 32 92 19

SEEDING

PART 1 GENERAL

1.01 SUMMARY

A. The CONTRACTOR shall furnish all labor, materials, and equipment required to complete seeding and establish vegetation in disturbed areas at the Site in accordance with this Section.

B. The seeding activities relating to erosion and sediment control vegetation shall include, but not be limited to, the following:

1. determining herbicides, fertilizer, ratios, times of application, and schedules;

2. seeding of sediment and erosion control vegetation;

3. applying fertilizer and soil amendments;

4. installing, maintaining, replacing, and removing mulch;

5. soil tests to determine the required soil additives for all stabilized areas; and

6. mowing and other vegetation maintenance practices.

1.02 RELATED SECTIONS AND PLANS

A. Section 01 00 00 – General Requirements

B. Section 31 25 00 – Erosion and Sediment Control

C. Section 31 11 00 – Clearing, Grubbing, and Stripping

1.03 REFERENCES

A. Latest version of North Carolina Department of Environment and Natural Resources Manual (NCDENR), Practice Standards and Specifications, Chapter 6.11 Permanent Seeding

B. Latest version of North Caroline Department of Transportation Standard Specifications for Roads and Structures (NCDOT), Section 1060.

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1.04 SUBMITTALS

A. At least 30 calendar days prior to implementing permanent vegetative stabilization activities, the CONTRACTOR shall provide the Construction Manager with the following:

1. soil test results per NCDENR Chapter 6.11;

2. the seed mixture, quantity, and application rate proposed for use;

3. the mulch type and application rate proposed for use;

4. the fertilizer type and application rate proposed for use; and

5. the seed bed preparation process proposed for use.

1.05 PERFORMANCE REQUIREMENTS

A. Project work shall conform to erosion and sediment control measures requirements of the NCDENR.

B. Before proceeding with seeding activities, the CONTRACTOR shall carefully check and verify dimensions and quantities and shall immediately inform the Construction Manager of any discrepancies between the Drawings and actual conditions. No work shall be performed in an area where a discrepancy has been identified until approval has been provided by the Construction Manager.

C. The CONTRACTOR shall be required to obtain all required permits, including the Land Disturbance Permit, upon contract award.

1.06 SAFETY

A. The CONTRACTOR shall be familiar with, and shall at all times conform to, the regulations promulgated by the Occupational Safety and Health Administration ("OSHA") and set forth in *"General Industry Occupational Safety and Health Standards",* 29 C.F.R. Part 1910, and *"Safety and Health Regulations for Construction,"* 29 C.F.R. Part 1926, and other applicable state and local standards and regulations.

B. The CONTRACTOR shall comply with all provisions of the OWNER's safety policies.

C. The CONTRACTOR shall perform work in a safe manner in accordance with the accepted CONTRACTOR's Health and Safety Plan ("CHASP").

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PART 2 PRODUCTS

2.01 MATERIALS

A. Materials shall be checked and approved by the Construction Manager or his designee before delivery to the Site and/or installation. Such approval shall not relieve the CONTRACTOR of his obligations under the Construction Documents.

B. Seeding materials under this Section 32 92 19 shall include but not be limited to the following items:

1. Fertilizer. Fertilizer shall be commercially-prepared and granular. Fertilizer shall be uniform in composition, dry, and free-flowing.

   a. Fertilizer shall conform to all applicable state and federal regulations.

   b. Fertilizer for permanent seeding shall be of the specified organic composition as determined by NCDOT 1060.

2. Limestone. Limestone shall be ground dolomitic limestone with 98-100 percent passing a 20 mesh sieve and 50 percent passing a 100 mesh sieve.

3. Seed. Grass seed shall meet the requirements specified in the NCDENR Manual. The CONTRACTOR shall use the seed mix requirements for General Slope (3:1 or less) for the appropriate region, as outlined by the NCDENR Manual.

4. Mulch. Oat or wheat straw shall be used. Straw shall be dry and free from weeds, weed seeds, and foreign matter detrimental to plant life. Mulch shall conform to NCDOT 1060-5.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Preparation:

1. General. Rake the soil surface to remove all root clumps, stones, and debris 1 inch or greater in size. True up all depressions and edges. Soil in the area to be seeded shall be prepared in accordance NCDOT 1060.

2. Grading. Establish a smooth grade ready to receive seed. The finished grade must conform to the grades and elevations as shown on the Drawings.

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3. Topsoil. Topsoil shall be in place for areas to be permanently seeded.

B. Application:

1. General. Seeding shall conform to NCDOT 1060 and the Erosion and Sediment Control Plan. Initial seeding shall consist of uniformly applying seed, mulch, and water on prepared areas. Over-seeding shall consist of applying seed, mulch, and water to areas previously seeded.

2. Lime: Apply lime uniformly at the rate of 2 tons per acre or as recommended in the soil test report using approved application methods listed in NCDOT 1060-3. After application, the soil shall be loosened to a depth of 3 inches by disking, harrowing, or other approved method. Washed and disturbed areas shall be final dressed prior to applying fertilizer. Lime application is not required for areas to be temporarily seeded for periods of less than 4 months.

3. Fertilizer. Incorporate fertilizer into the top 3 inches of soil by discing or power rake.

   a. For areas to be permanently seeded, apply fertilizer uniformly at the rate of 30 pounds per 1,000 square feet.

   b. For areas to be temporarily seeded, apply fertilizer uniformly at the rate of 15 pounds per 1,000 square feet.

4. Seeding Time. Seed shall be sown during favorable weather conditions. Seed shall not be sown when the ground is frozen or when air temperatures are below freezing. Do not sow under windy conditions.

5. Seeding. Sow seed uniformly, dividing the selected rate in half and sowing in cross directions using a mechanical spreader. Do not allow seed to drift into adjacent planting beds.

6. Rolling. After machine sowing, lightly cover seed by harrowing or raking. Compact lawn area seedbeds by rolling with a 200 pound hand roller.

7. Mulching. Mulching shall comply with the pertinent provisions NCDOT 1060-5

   a. Apply mulch within 48 hours of sowing seed. Apply mulch of loose straw uniformly at the rate of 2 tons per acre. Between October 16 and January 31, the application rate shall be increased to 3 tons per acre. Mulch shall be anchored to the seeded surface by discing, netting, or by other methods approved by the OWNER or Construction Manager.

   b. Areas to be temporarily seeded need be mulched only during the fall

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or during the summer when weather conditions are excessively hot or dry.

8. Watering. Immediately after completion of mulching, apply water thoroughly to mulch and seedbed with a fine mist spray. Water heavily once per week during dry weather until a thick cover of grass is established.

9. Hydroseeding. Hydroseeding may be used as an alternative application method upon approval of the OWNER. The use of alternative soil amendments and mulch will be considered provided the application rates comply with the rates specified in this Section.

C. The CONTRACTOR shall provide silt fences as needed to prevent runoff from seeded areas until vegetation has become established.

D. Upon completion of work, the CONTRACTOR shall remove from the Site cord, wrappings, stakes, and extraneous materials. The CONTRACTOR shall remove tools, equipment, and other materials, except those necessary for maintenance. Litter developing by reason of the CONTRACTOR's maintenance activities shall be removed as it accumulates.

E. The CONTRACTOR shall maintain areas until seed has germinated and produced a thick stand of grass but for not less than one (1) year following issuance of the notice of termination by NCDENR of the erosion and sediment control plan for the Site.

F. During the maintenance period, the CONTRACTOR shall perform all mowing, watering, repair of erosion areas, replacement of cover soil and topsoil, cleaning of drainage ditches and drainage system components clogged by eroded topsoil and cover soil, and reseeding until a thick stand of grass has been produced as accepted by the Construction Manager and OWNER. Maintenance shall also include visual inspection of the cover system components for damage (e.g., penetrations of the soil cover or exposure of the geosynthetic layer). Observed damage shall be temporarily covered with a tarp or other impervious cover and notated within maintenance records maintained by the CONTRACTOR. The CONTRACTOR shall report the damage to the Construction Manager within one business day of being observed to initiate protocols to evaluate and repair the damage, and submit notification to NCDENR.

G. Mow areas intended for “groomed appearance” on a schedule during the growing season and as required throughout the year to provide the desired appearance for the particular species used for erosion control.

1. The range of turf species suggested for lawns in the three growing regions of North Carolina vary as to optimum maintained height. The selected species should be maintained at a height recommended by the seed

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producer. Do not cut too short and do not allow the turf to attain a height that will cause the crop to decline or die. Consult individual seed producers and/or packaging for recommended mowing heights.

2. Mow with a mulching mower to limit the amount of clippings removed, or mow and blow in such a manner that clippings are not evident and not to adversely affect the growing capacity and/or health of the existing vegetation turf. It is important clippings are allowed to remain spread throughout the lawn area, to the extent possible, so that they might aid in building a more productive soil profile and root zone.

3. Mowing other stabilized areas to promote continued growth. Stabilized areas that are not to achieve a “groomed” appearance are to be mowed to recommended mowing heights for the particular species and as frequently as recommended by the individual seed producer to foster erosion control and ease of maintenance. In areas where it is desirable for woody native volunteer vegetation to become established, the CONTRACTOR will pay attention to mowing stakes or another indicator to protect desired woody natives from the mowing operation

4. The CONTRACTOR shall cut the grass at least once, but not more than twice per season, after a thick stand of grass is produced. The CONTRACTOR shall coordinate grass cutting with the Construction Manager or OWNER so that inspections can be conducted immediately following cutting.

H. A satisfactory stand of vegetative cover shall be defined as a cover of living plants, after true leaves are formed, of the required seed species designated for use in which gaps larger than 25 square inches do not occur.

I. The CONTRACTOR shall make site observations monthly to check for the presence of invasive species that could lead to unprotected soil and sediment damage and, if found, treat them immediately with the appropriate cultural practices and/or by the use of seasonally-appropriate and site appropriate herbicides.

J. The CONTRACTOR shall commence post-construction maintenance within two weeks of notification that maintenance is required. Maintenance will be conducted to the satisfaction of the Construction Manager or OWNER.

3.02 ADJUSTMENT OF PRACTICES

A. If the planned measures do not result in effective control of erosion and sediment runoff meeting the requirements of the General Permit for Discharges of Stormwater from Construction Activities, the CONTRACTOR shall immediately adjust his activities and/or institute additional measures so as to eliminate erosion and sediment runoff at no additional cost to the OWNER.

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B. If the CONTRACTOR fails or refuses to comply promptly, the Construction Manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time lost due to stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the CONTRACTOR.

[END OF SECTION]

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SECTION 33 42 13

PIPE CULVERTS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes all materials, equipment, and labor necessary for the installation of culverts and related appurtenances.

1.02 RELATED SECTIONS AND PLANS

A. Section 00 21 00 – Surveying

B. Section 31 25 00 – Sediment and Erosion Control

C. Section 31 23 33 – Trenching and Backfilling

D. Section 31 37 13 – Rip Rap

1.03 REFERENCES

A. Latest version of American Association of State Highway Transportation Officials (AASHTO) Standards:

1. AASHTO M252 Standard Specification for Corrugated Polyethylene Drainage Pipe

2. AASHTO M294 Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter

B. Latest version of ASTM International (ASTM) Standard:

1. ASTM D2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications.

2. ASTM D3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

3. ASTM D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

4. ASTM F405 Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings.

5. ASTM F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

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6. ASTM F667 Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings.

7. ASTM F2306 Standard Specification for 12 to 60 in [300 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Gravity Flow Storm Sewer and Subsurface Drainage Applications.

1.04 SUBMITTALS

A. Submit the following to the ENGINEER for review at least 30 calendar days prior to use:

1. culverts Manufacturer's product data and recommended methods of storage, handling, and proposed installation;

2. shop drawings for culverts showing the layout and details of joints, special connections, and fittings; and

3. Manufacturer's written certification that culverts and joint material meet the material requirements of this Section.

B. Provide list of equipment, description of installation methods, and other required information for installation of culverts.

1.05 CONSTRUCTION QUALITY ASSURANCE

A. The installation of storm water drainage structure and swale will be monitored by the CQA Consultant as required by the CQA Plan.

B. The CQA Consultant will perform material conformance testing and installation quality control testing during construction of drainage structure and swale as required by the CQA Plan.

C. The CONTRACTOR shall be aware of the activities required of the CQA Consultant by the CQA Plan and account for these activities in the construction schedule.

D. The CONTRACTOR shall correct all deficiencies and non-conformances identified by the CQA Consultant at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 CULVERTS AND FITTINGS

A. Furnish ADS N-12 (water-tight) high density polyethylene (“HDPE”) corrugated plastic pipe (CPP) and fittings or ENGINEER approved equivalent.

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2.02 CULVERT OUTLET AND INLET PROTECTION

A. Furnish riprap meeting the requirements of Section 31 37 00.

2.03 EQUIPMENT

A. Furnish all equipment necessary to perform the Work specified in this Section.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install culverts as shown on the Construction Drawings.

B. Examine culverts and joint materials before installation for damage. Reject damage materials. Install culverts in accordance with Manufacturer's installation recommendations and as approved by the ENGINEER.

C. Prior to culvert installation, complete trenching and place pipe embedment fill in accordance with Section 31 23 33 unless otherwise shown on the Construction Drawings.

D. Install CPP culverts to the lines and grades shown on the Construction Drawings.

E. Install joints for CPP culverts in accordance with the Manufacturer's recommendations.

F. After installation of the culverts, perform trench backfilling as specified in Section 31 23 33.

G. Culvert inlet and outlet protection shall be placed as shown on the Construction Drawings.

3.02 SURVEY CONTROL

A. Survey the final locations and invert elevations of the culverts in accordance with Section 02 21 00.

3.03 TOLERANCE

A. Install culverts, and inlet structures within ±0.1 feet of the invert elevations indicated on the Drawings and to provide positive drainage at all times.

[END OF SECTION]

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SECTION 33 49 00

STORM WATER STRUCTURES AND SWALES

PART 1 GENERAL

1.01 SCOPE

A. This section includes the requirements for products and installation of storm water drainage structures and swales.

1.02 RELATED SECTIONS AND PLANS

A. Section 31 00 00 - Earthwork

B. Section 31 23 33 - Trenching and Backfilling

C. Section 31 05 16 - Granular Drainage Materials

D. Section 31 37 00 - Riprap

E. Construction Quality Assurance (CQA) Plan

1.03 REFERENCES

A. AASHTO M294 - Standard Specification for Corrugated Polyethylene Pipe, 300- to 900-mm (12- to 36-in.) Diameter.

B. Guidelines for Drainage Studies and Hydraulic Design, North Carolina Division of Highways, March 1999

C. ASTM D 2412 - Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

1.04 SUBMITTALS

A. Submit shop drawings for pre-cast concrete storm water drainage structures to the ENGINEER for approval a minimum of 30 days prior to use.

B. The CONTRACTOR shall submit to the ENGINEER the Manufacturer’s certification of compliance with these Specifications for all materials delivered to the site and shall comply with the pipe Manufacturer’s recommendations for handling, storing, and installing pipes and fittings.

C. Submit shop drawings for concrete headwall and thrust block to the ENGINEER for approval a minimum of 30 days prior to construction.

1.05 CONSTRUCTION QUALITY ASSURANCE

A. The installation of storm water drainage structure and swale will be monitored by the CQA Consultant as required by the CQA Plan.

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B. The CQA Consultant will perform material conformance testing and installation quality control testing during construction of drainage structure and swale as required by the CQA Plan.

C. The CONTRACTOR shall be aware of the activities required of the CQA Consultant by the CQA Plan and account for these activities in the construction schedule.

D. The CONTRACTOR shall correct all deficiencies and non-conformances identified by the CQA Consultant at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. The concrete junction box shall conform to Guidelines for Drainage Studies and Hydraulic Design (March 1999).

B. Furnish corrugated HDPE pipe with diameter as indicated on the Construction Drawings and meeting the following requirements:

1. Pipe shall comply with AASHTO M294 Type “C” and shall be constructed of new polyethylene compounds which meet the minimum cell classification of 323410C or 333410B as defined and described in ASTM D 3550. Compounds that have a higher cell classification in one or more properties are acceptable provided the product requirements are met.
2. The minimum parallel plate stiffness values when tested in accordance with ASTM 2412 shall be 30-psi (0.21-Mpa).
3. The pipe shall be homogeneous throughout and free of foreign inclusions and visible defects.

C. Furnish HDPE pipe fittings, as needed, based on the CONTRACTOR’s shop drawings that meet the following requirements:

1. Fittings shall not reduce or impair the overall integrity or function of the pipeline.
2. Only fittings supplied or recommended by the manufacturer shall be used.
3. Fittings for corrugated HDPE pipe shall comply with material requirements for the corrugated HDPE pipe.
4. Fittings shall be free of foreign inclusions and visible defects.

D. The concrete headwall shall conform to Index No. 250 of the Guidelines for Drainage Studies and Hydraulic Design (March 1999).

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PART 3 PART 3 EXECUTION

3.01 PREPARATION

A. All excavation, shoring, and storm water control required for the construction of drainage structures shall be performed in accordance with Section 31 00 00.

B. Excavation shall be to the required depth. Over-excavated areas shall be backfilled with general fill material, properly compacted as specified in Sections 31 00 00 and Section 31 23 33.

3.02 INSTALLATION

A. Drainage Structures

1. Set drainage structures at the proper elevation with proper bearing on a suitable foundation.
2. Pipe openings shall be neatly cut two inches larger than the outside diameter of the pipe. Fill openings around pipe with non-shrink grout to provide a smooth watertight joint between structure and pipe.
3. Opening for the upstream pipe shall be covered with a piece of plywood for future use.
4. Cut pipe entering the structure to the correct length prior to installation. Removal of excess pipe in structure after installation will not be acceptable.
5. All backfilling required for the installation of drainage structures shall be performed in accordance with Section 31 23 33.

3.03 SURVEY CONTROL

A. Survey the location and elevation of all storm water drainage structures and the lines, slopes, and grades in accordance with Section 02 21 00.

3.04 TOLERANCE

A. Install drainage swales and structures to within ±0.1 ft of elevations indicated on the Construction Drawings or as directed by the ENGINEER.

[END OF SECTION]

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SECTION 34 71 00

ROAD CONSTRUCTION

PART 1 GENERAL

1.01 SCOPE

A. This section describes the requirements for constructing the roads as indicated on the Construction Drawings.

1.02 RELATED SECTIONS AND PLANS

A. Section 02 21 00 - Surveying

B. Section 31 00 00 – Earthwork

C. Section 31 31 19 - Vegetation

D. Construction Quality Assurance (CQA) Plan

1.03 REFERENCES

A. Latest version of American Society of Testing and Materials (ASTM) standards and other standards noted in this specification.

1.04 SUBMITTALS

A. At least 14 days prior to the start of road construction, the CONTRACTOR shall provide for ENGINEER's review the equipment and construction method for placing and compacting the road materials.

B. For each source of the base material, submit the following to the ENGINEER for review at least 21 calendar days prior to road construction:

1. source of the material;
2. test results conducted on three samples of the material which demonstrates the material meets the requirements of the NCDOT Specifications; and
3. a 50-pound representative sample of the proposed material.

1.05 CONSTRUCTION QUALITY ASSURANCE

A. The construction of the roads will be monitored by the ENGINEER as required by the CQA Plan.

B. The CQA Consultant will perform material conformance testing and installation quality control testing during road construction as required by the CQA Plan.

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C. The CONTRACTOR shall be aware of the activities required by the CQA Consultant in the CQA Plan and account for these activities in the construction schedule.

D. The CONTRACTOR shall correct all deficiencies and non-conformances identified by the CQA Consultant at no additional cost to the OWNER.

PART 2 PRODUCTS

2.01 MATERIALS

A. Furnish base material for the road and other roads meeting the requirements of Subgrades, Bases, and Shoulders, Division 5, Section 520 of the NCDOT Specifications. CONTRACTOR shall submit reports of testing and supplier certifications showing that base material meets this section at least 21 days before material is delivered to the site.

B. Furnish embankment material and prepared subbase materials for the roads meeting the requirements of general fill material in Section 31 00 00 from designated borrow area or other areas as directed by the ENGINEER.

2.02 EQUIPMENT

A. Furnish, operate, and maintain equipment necessary to construct roads in accordance with the requirements of this section.

B. Use Caterpillar CS 563 or equivalent self-propelled vibratory compactor, as approved by the ENGINEER, for compacting the subgrade, embankment, and base materials.

PART 3 EXECUTION

3.01 ROADS

A. The roads shall be constructed to the thickness, grades, lines, and limits indicated on the Construction Drawings.

B. The base materials shall be placed in two equal lifts and compacted to the grades, lines, and limits indicated on the Construction Drawings and compacted in accordance with this Section.

3.02 COMPACTION REQUIREMENTS AND TEST FREQUENCIES

A. Embankment materials for roads shall be compacted to 95 percent of maximum dry density determined by ASTM D 698. Construction quality control tests will be performed by the CQA Consultant at a minimum

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frequency of one test for every 200 linear feet per lift or as directed by the ENGINEER.

B. Prepared subbase for roads shall be compacted to 98 percent of maximum dry density determined by ASTM D 698. Construction quality control tests will be performed by the CQA Consultant at a minimum frequency of one test for every 200 linear feet per lift or as directed by the ENGINEER.

C. Base course materials for roads shall be compacted to 95 percent of maximum dry density determined by ASTM D 698 or as directed by the ENGINEER. Construction quality control tests will be performed by the CQA Consultant at a minimum frequency of one test for every 200 linear feet per lift or as directed by the ENGINEER.

3.03 SURVEY CONTROL

A. Survey the grades, lines, and limits of the roads construction in accordance with Section 02 21 00 to verify compliance with the Construction Drawings.

3.04 TOLERANCES

A. Place and compact embankment materials and base materials to ± 0.1 ft of the elevations indicated on the Construction Drawings.

B. Construct the roads to within ±0.1 ft of the final grades and slopes indicated on the Construction Drawings.

[END OF SECTION]

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Appendix I
CQA Plan

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CONSTRUCTION QUALITY ASSURANCE PLAN

L.V. SUTTON ENERGY COMPLEX
SITE ANALYSIS AND REMOVAL PLAN

December 2016
Revision 0

Prepared for



Duke Energy Progress, LLC
526 South Church Street
Charlotte, North Carolina 28202

Prepared by



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1 INTRODUCTION

1.1 Overview

This Construction Quality Assurance (CQA) Plan describes the quality assurance and construction quality control (CQC) activities that will be undertaken during construction of the Duke Energy Progress, LLC (DEP) L.V. Sutton Energy Complex (Sutton) closure of the 1971 and 1984 Basins and the Lay of Land Area (LOLA) located near Wilmington, North Carolina. The purpose of this document is to define the scope, formal organization, and procedures necessary to achieve a high level of quality and assure that the construction of the Sutton closure is in compliance with the approved design as shown or indicated in the Construction Drawings and the Technical Specifications. This plan addresses the CQA and CQC activities to be performed during construction.

1.2 Project Description

The construction required to develop the Sutton Closure is presented in the Construction Drawings and Technical Specifications. The development of the closure includes the following general activities; however, the project specific construction activities are included in the contract documents for the project.

- excavation of Coal Combustion Residuals (CCR) from the basins and LOLA;
- removal of parts of the dikes of the 1971 and 1984 Basins and the LOLA;
- reconstruction of dikes in the 1971 Basin and LOLA;
- filling and regrading in the 1984 Basin;
- construction of surface water management system; and/or
- general site work including earthwork and the establishment of vegetation.

1.3 CQA Plan Scope

The CQA Plan establishes the quality assurance activities to be implemented during construction at Sutton. The CQA Plan was developed in consideration of the current North Carolina Department of Environment and Natural Resources (NCDENR) guidelines and regulations. The scope of the CQA Plan includes:

- defining the responsibilities of parties involved with the construction of the Sutton Closure;
- providing guidance in the proper construction of Sutton Closure components;

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- establishing testing protocols for the evaluation of Sutton Closure components;
- establishing procedures for construction documentation; and
- providing the means for assuring that the overall construction conforms to the Construction Drawings and Technical Specifications.

The CQA Plan is intended to establish procedures for the CQA Consultant and to inform the Contractor of CQA activities during the construction of the Sutton Closure. The CQA Plan is considered a supplement to the Technical Specifications and a part of the construction contract. In the case of any conflict between the CQA procedures described in this plan and the requirements of the Technical Specifications, the Technical Specifications will govern.

1.4 CQA Plan Organization

The remainder of this CQA Plan is organized as follows:

- definitions of key terms are presented in Section 2;
- project organization and descriptions, responsibilities, and qualifications of key parties involved with the construction at Sutton are presented in Section 3;
- requirements for CQA documentation are described in Section 4;
- CQA activities for the soil components of the Sutton Closure, to include fill placement and general earthwork, are presented in Section 5;
- CQA activities for geotextiles and geocomposites are presented in Section 6;
- CQA activities for piping and fittings are covered in Section 7;
- CQA activities for concrete associated work are outlined in Section 8; and
- CQA activities for road construction and general civil site work are presented in Sections 9 and 10, respectively.

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2 CQA PLAN DEFINITIONS

2.1 Construction Quality Assurance and Construction Quality Control

In the context of this document, construction quality assurance and construction quality control are defined as follows:

- Construction Quality Assurance (CQA) - The planned and systematic means and actions designed to assure with adequate confidence that materials and/or services meet Construction Drawing and Technical Specification requirements.

- Construction Quality Control (CQC) - Those actions which provide a means to measure and regulate the characteristics of an item or service in relation to contractual and regulatory requirements.

  In the context of this document:

- CQA refers to means and actions employed by the CQA Consultant, Engineer, or DEP to assure conformity of the various components of the Sutton Closure construction project with the requirements of the Construction Drawings and Technical Specifications.

- CQC refers to those actions taken by the Contractor, Manufacturers, or Installers to ensure that the materials and the workmanship of the various components of the Sutton Closure construction project meet the requirements of the Construction Drawings and Technical Specifications. In the case of the geosynthetic components of these systems, CQC is provided by the Manufacturers and Installers of the various geosynthetics and reviewed by the CQA Consultant.

2.2 Plans and Specifications

In this CQA Plan, reference to Construction Drawings and Technical Specifications is understood to mean those plans and specifications issued as a part of a specific contract for construction of a component or phase at Sutton. In all cases, it is expected that this CQA Plan will conform to the Construction Drawings and Technical Specifications. In case of conflict, the approved Construction Drawings and Technical Specifications will govern.

2.3 Geosynthetics

Geosynthetics is the generic term for all synthetic materials used in geotechnical engineering applications; the term includes geotextiles, geogrids, geonets, geomembranes, geosynthetic clay liners (GCL), and geocomposites. There is only one type of geosynthetic products referenced in this CQA Plan that are included in the Sutton Closure construction. This geosynthetic is the geotextiles used as filters or separators.

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2.4 Construction Activities

In the context of this CQA Plan, the Sutton Closure construction is understood to include:

- excavation of CCR;
- surface-water management system components;
- other site work including grading and general earthwork;
- road work; and
- other construction activities as assigned by DEP.

2.5 CQA Lines of Communications

Successful execution of this CQA Plan is dependent on open and continuous communication between all parties having a role in the project. The lines of communication between DEP, Design Engineer, Construction Manager, Contractor, and CQA Consultant are defined in the organization charts included in Section 3 of this CQA Plan.

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3 PROJECT ORGANIZATION AND PERSONNEL

3.1 Overview

The Sutton Closure construction organization chart is shown in Figure 3-1. It is understood that the Project Manager will act on behalf of the DEP in all matters relating to the construction of the Sutton Closure. Day-to-day construction activities at Sutton will be managed through the direct interaction of several parties below Project Manager level including but not limited to the Construction Manager, Design Engineer, Contractor, and CQA Consultant. The organization chart for the Sutton Closure CQA Consultant is presented in Figure 3-2. The description, qualifications, and responsibilities of the parties responsible for construction and CQA at Sutton project are described below.

3.2 Construction Manager

The Construction Manager shall be an individual employed by the Project Manager and who is responsible for overall management of the construction project at Sutton. In this CQA plan the term "Construction Manager" shall refer specifically to an authorized representative of the Project Manager at Sutton. The Construction Manager will hold a minimum of a baccalaureate degree in construction management, engineering, or related field or have 10 years of construction management experience. The Construction Manager will also have 3 years of earthworks construction experience. The Construction Manager shall be responsible for coordination and oversight of all construction activities including: (i) contract administration; (ii) construction management; (iii) review of any modifications or changes to the construction contract documents; and (iv) final approval authority for contract or shop drawings and submittals.

3.3 Design Engineer

The Design Engineer is the individual representing the firm having responsibility for Sutton Closure design. The Design Engineer will hold a minimum of a baccalaureate degree in engineering, be a Professional Engineer registered in the state of North Carolina, and have 10 years' experience in engineering, or related fields. The Design Engineer shall have expertise which demonstrates significant familiarity with geosynthetics and soils, as appropriate. The Design Engineer is responsible for approving all design and specification changes and making design clarifications that may be required during Closure construction at Sutton. The Design Engineer shall assist the Construction Manager in reviewing and approving the Contractor's shop drawings and submittals, as necessary. The Design Engineer will not be present on-site full time, but will visit the project during construction and attend the project coordination meetings as required to assure conformance with plans and specifications. The Design Engineer will be capable of discussing and interpreting all elements of the Sutton Closure design. The Design Engineer shall have the authority to recommend changes or modifications to the Construction Drawings and Technical Specifications for approval by DEP and NCDENR, as required.

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3.4 Contractor

The Contractor is the firm or corporation having a legally binding agreement to construct components of the Sutton Closure, or shall be qualified construction personnel hired directly by DEP and working under the direct supervision of a construction foreman and superintendent. The Contractor is represented on-site by a qualified individual who is authorized to act on behalf of the Contractor in all matters pertaining to the construction at Sutton. The Contractor shall be qualified, as required by the contract, to perform all aspects of work required to successfully construct the project. The Contractor shall be registered in accordance with applicable local, state, and federal requirements and shall demonstrate adequate (as defined by DEP) prior related experience. The Contractor's field representative shall be a qualified individual who is able to perform all tasks associated with the Sutton Closure construction activities. The Contractor's field representative shall demonstrate experience similar to the Construction Manager. The Contractor's field representative shall have the authority to direct and instruct the Contractor's crews and its subcontractors.

The Contractor is responsible for all construction materials and activities. The Contractor is also responsible for scheduling and coordination of the required work with its subcontractors to complete the project within the construction schedule approved by the Construction Manager. The Contractor shall provide an experienced supervisory representative at all times during any construction activity on-site. The Contractor is responsible for furnishing as-built record drawings and a copy of all documentation required during the construction at Sutton. The Contractor is also responsible for updating all construction drawings for any deviations from the original plans and specifications on a regular basis.

The Contractor's field representative is responsible for coordinating and supervising the work of all subcontractors on-site. At a minimum, the Contractor's field representative will be responsible for the following:

- informing the Construction Manager of any discrepancies between the plans and specifications and the field conditions;
- submitting all documentation required by the Construction Drawings and Technical Specifications in a timely manner;
- attending all project coordination meetings held on-site;
- scheduling all phases of the construction;
- maintaining a daily log of all construction activities on-site;
- implementing and verifying all QC procedures required of the Contractor and/or subcontractors; and
- submitting proposed alternative materials or construction methods to the Construction

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Manager for approval prior to acquisition, use, and/or implementation.

3.5 CQA Consultant

3.5.1 Definition

The CQA Consultant is the party, independent from DEP and the Contractor, responsible for observing, testing, and documenting activities related to the CQA and CQC (e.g., review submittals) of the soil and geosynthetic components and other activities related to the construction at Sutton as described in this CQA Plan. The CQA Consultant and Design Engineer may be the same.

3.5.2 Qualifications

The CQA Consultant shall be a firm with documented experience specializing in geotechnical engineering, construction management, and CQA. The CQA Consultant shall possess the equipment, personnel, and licenses necessary to conduct the monitoring and testing activities required by this CQA Plan and the Sutton Closure Construction Drawings and Technical Specifications. The CQA Consultant shall also be experienced in the installation and CQA of soil and geosynthetic materials similar to those materials to be used for the Sutton Closure construction. The CQA Consultant will be experienced in the preparation of CQA documentation including CQA plans, field documentation, field testing procedures, laboratory testing procedures, construction specifications for construction, construction plans, and CQA certification reports. The CQA Consultant shall provide qualified staff for the project.

In addition, the CQA Consultant shall provide the following, in writing, to DEP as required:

- corporate background and information;
- a detailed summary of the firm's CQA capabilities;
- a detailed summary of the firm's CQA experience; and
- a representative list of at least 10 completed facilities for which the CQA Consultant has provided CQA monitoring services.

The CQA Consultant shall provide resumes of personnel to be involved in the project including:

- the CQA Certifying Engineer, who operates from the office of the CQA Consultant and who conducts periodic visits to Sutton as required;
- the CQA Site Manager, who is located at Sutton; and
- CQA Field Monitors, who will be located at Sutton and working under the direction of the CQA Site Manager.

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The CQA Consultant organization will be led by the CQA Certifying Engineer, who will hold, at a minimum, a baccalaureate degree in engineering and be a Professional Engineer registered to practice in the state of North Carolina. The CQA Site Manager will be the representative of the CQA Consultant at Sutton and will have experience in similar construction and be specifically familiar with the construction of soil and geosynthetic components of the landfill.

3.5.3 Responsibilities

The CQA Consultant shall be responsible for monitoring and documenting the activities of the Contractor relative to the installation of the various appurtenances related to the construction at Sutton. The CQA Consultant will be responsible for monitoring the compliance of construction materials delivered to Sutton with the submittals and/or shop drawings previously reviewed and approved by the Construction Manager. The CQA Consultant shall assure that the Contractor's construction methods and workmanship are performed in accordance with the Construction Drawings and Technical Specifications. The CQA Consultant shall be responsible for obtaining and testing samples of the various construction materials in accordance with the testing frequencies identified in this plan. The CQA Consultant shall also be responsible for obtaining, labeling, and shipping samples for off-site laboratory testing in accordance with the requirements of this plan and the appropriate specifications.

The CQA Consultant shall be responsible for soils quality assurance testing to be performed by both the on-site and off-site testing laboratories. The CQA Consultant shall be responsible for staffing and operating the on-site soils laboratory, if required. Test results from the on-site and off-site laboratories shall be submitted to the Construction Manager within a time frame that will not impede or delay construction activities.

The on-site soils laboratory, if required, shall be equipped to perform routine index testing including, but not limited to:

- standard Proctor (ASTM D 698);
- particle-size analysis (ASTM D 422 and ASTM C 136);
- Atterberg limits (ASTM D 4318);
- moisture content (ASTM D 2216 and ASTM D 4643);
- soils classification (ASTM D 2487); and
- percent passing No. 200 sieve (ASTM D 1140).

The CQA Consultant shall also be responsible for conducting routine field tests during construction of the Sutton closure, which shall include:

- moisture content by nuclear methods (ASTM D 6938);

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- in-place density by nuclear methods (ASTM D 6938);
- lift thickness by direct measurement;
- sand cone (ASTM D 1556); and
- drive cylinder (ASTM D 2937).

The CQA Consultant will be responsible for the quality control of its on-site laboratory testing program and for documenting the calibration of the soils laboratory testing equipment. Equipment calibration certificates shall be maintained in the CQA Consultant's on-site project file. All tests will be conducted in accordance with ASTM or other applicable state or federal standards. Test results shall be submitted to the Construction Manager within a time frame that will not impede or delay construction of activities.

The duties of the CQA Personnel are discussed in the following subsections.

3.5.3.1 CQA Certifying Engineer

The CQA Certifying Engineer:

- reviews the Closure Construction Drawings and Technical Specifications;
- reviews soils and geosynthetics-related documents (such reviews are for familiarization and for evaluation of constructability only);
- attends scheduled and project-specific meetings related to construction quality activities;
- administers the CQA program (i.e., assigns and manages on-site CQA personnel, reviews field reports, and provides engineering review of CQA-related activities);
- provides quality control of CQA documentation;
- reviews changes to the construction design and assures any major changes are submitted to NCDENR for approval prior to incorporation into the Construction Drawing and Technical Specifications; and
- with the CQA Site Manager, prepares the final certification report.

3.5.3.2 CQA Site Manager

The CQA Site Manager:

- acts as the on-site representative of the CQA Consultant;

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- familiarizes all CQA Field Monitors with the site, project documents, and the CQA requirements;
- manages the daily activities of the CQA Field Monitors;
- attends regularly scheduled CQA-related meetings on-site;
- reviews the ongoing preparation of the construction record drawings;
- reviews test results provided by the Contractor;
- verifies the calibration and condition of on-site testing equipment;
- reviews the CQA Field Monitors' daily reports and logs;
- provides reports to the Construction Manager, and documents in a daily report, any reported relevant observations by the CQA Field Monitors;
- prepares a daily report for the project;
- oversees the collection and shipping of laboratory test samples;
- reviews results of laboratory testing and makes appropriate recommendations;
- reports unresolved deviations from the CQA Plan and Construction Drawings and Technical Specifications to the Construction Manager;
- assists with the preparation of the final certification report;
- reviews appropriate certifications and documentation from the Contractor and the Geosynthetics Manufacturer and Installer, and makes appropriate recommendations;
- reviews the Geosynthetics Manufacturer's QC documentation;
- reviews the geosynthetics Installer's personnel qualifications for conformance with those required by the Technical Specifications; and
- performs duties of CQA Field Monitor as needed.

3.5.3.3 CQA Field Monitors

The duties of the CQA Field Monitors are monitoring and documenting construction of the soils and geosynthetics components of the Closure and other Sutton Closure activities, as assigned by the CQA Site Manager.

The duties of the CQA Field Monitors will include:

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- monitoring material stockpiles for any deterioration of materials;
- monitoring surface-water drainage in the areas of soil and geosynthetic material stockpiles;
- preparing daily field reports;
- recording CQA activities on field logs;
- reporting problems to the CQA Site Manager;
- collection of samples from the constructed soil components in accordance with the CQA Plan;
- monitoring soil placement and compaction operations;
- monitoring the unloading and on-site handling and storage of the geosynthetics;
- monitoring geosynthetic repair operations;
- monitoring geosynthetic material deployment and installation operations; and
- collecting conformance samples for testing by CQA laboratories.

In addition to these specific duties, CQA Field Monitors will document on-site activities that could result in damage to the soils or geosynthetic components of the Closure. Observations so noted by the CQA Field Monitors shall be reported immediately to the CQA Site Manager.

3.6 Soils CQA Laboratory

3.6.1 Definition

The Soils CQA Laboratory is the party, independent from DEP and Contractor, responsible for conducting geotechnical laboratory tests in accordance with standards referenced in the Construction Drawings and Technical Specifications and this CQA Plan. The testing results generated by the Soils CQA Laboratory shall be used by the CQA Consultant to verify compliance of the soils construction materials with the plans and specifications and submittals previously approved by the Construction Manager.

It is anticipated that the on-site Soils CQA Laboratory will be utilized to perform the conformance evaluation testing of the various soils components at Sutton. The off-site soils CQA Laboratory may be for more sensitive performance testing required during construction.

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3.6.2 Qualifications

The Soils CQA Laboratory will be experienced in testing of soils similar to those proposed for use in the construction at Sutton in accordance with ASTM and other applicable soil test standards. The Soils CQA Laboratory will be capable of providing test results within a maximum of 7 working days of receipt of samples and will maintain that capability throughout the duration of the earthwork construction.

Prior to construction, the Soils CQA Laboratory, if different from the CQA Consultant, shall submit their qualifications and QA/QC procedures to the Construction Manager for review and approval. The qualifications presented by the Soils CQA Laboratory shall, as a minimum, include:

- corporate background and statement of qualifications;
- list of testing capabilities including reference to ASTM test methods;
- a laboratory QA/QC plan;
- information on staff size and experience; and
- information regarding test result turnaround time.

3.6.3 Responsibilities

The Soils CQA Laboratory will be responsible for testing the various soils components at Sutton. These tests shall include, but not be limited to, material qualification (conformance) tests and material construction quality control (performance) tests as described in Construction Drawings and Technical Specifications. The CQA Consultant will be responsible for coordinating the Soils CQA Laboratory testing.

3.7 Geosynthetics CQA Laboratory

3.7.1 Definition

The Geosynthetics CQA Laboratory is the party, independent from DEP, Contractor, and geosynthetics Manufacturer and Installer, responsible for conducting tests on samples of geosynthetic materials used in construction of the Closure in accordance with standards referenced in the Construction Drawings and Technical Specifications and this CQA Plan. The testing results generated by the Geosynthetics CQA Laboratory shall be used by the CQA Consultant to verify compliance of the geosynthetic materials with plans and specifications and submittals previously approved by the Construction Manager.

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3.7.2 Qualifications

The Geosynthetics CQA Laboratory shall hold current accreditation by Geosynthetic Research Institute (GRI) or be approved by the Design Engineer and have experience in testing geosynthetics similar to those proposed for use during construction at Sutton. The Geosynthetics CQA Laboratory shall be familiar with ASTM and other applicable geosynthetic test standards.

Prior to construction, the Geosynthetics CQA Laboratory, if different from the CQA Consultant, shall submit their qualifications to the Construction Manager for review and approval. The qualifications presented by the Geosynthetics CQA Laboratory shall, as a minimum, include:

- corporate background and statement of qualifications;
- listing of testing capabilities including reference to ASTM or other applicable test methods;
- a laboratory QA/QC plan;
- information on staff size and experience; and
- information regarding test result turnaround time.

3.7.3 Responsibilities

The Geosynthetics CQA Laboratory will be responsible for testing the geosynthetic component of the Closure. These tests shall include, but not be limited to, geosynthetic conformance and performance tests as described in the Construction Drawings and Technical Specifications. The CQA Consultant will be responsible for coordinating the Geosynthetics CQA Laboratory testing.

3.8 Geosynthetics Manufacturers

The geosynthetics Manufacturers are the firms or corporations responsible for production of the geosynthetic materials to be used in construction at Sutton. The geosynthetics Manufacturers shall be able to provide sufficient production capacity and qualified personnel to meet the demands of the project schedule. Prior to shipment of any material to Sutton, each geosynthetics Manufacturer shall be pre-qualified and approved by the Construction Manager. The geosynthetic Manufacturers shall meet the qualifications outlined in the Technical Specifications, respectively.

Each geosynthetics Manufacturer is responsible for the production and quality control of its respective geosynthetic product. In addition, each geosynthetics Manufacturer is responsible for the condition of the geosynthetic until the material is accepted by the Contractor. Each geosynthetics Manufacturer shall produce a consistent high quality product that shall meet all the requirements of the Technical Specifications. Each geosynthetics Manufacturer shall submit

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quality control documentation to the Construction Manager for its respective products as required by the Technical Specifications.

3.9 Geosynthetics Installers

The geosynthetics Installers will be experienced and qualified to install the geosynthetic materials of the type specified for this project. The geosynthetics Installers will be approved and/or licensed by the geosynthetics Manufacturers. A copy of the approval letter or license will be submitted by the Contractor to the Construction Manager as required by the Technical Specifications. The geosynthetics Installers shall meet the qualifications outlined in the Technical Specifications. The geosynthetics Installers will designate one representative as its supervisor, who will be responsible for acting as the geosynthetics Installer's spokesman at Sutton.

The geosynthetics Installer's supervisor will be responsible for installation of the geosynthetics used in construction at Sutton and for providing supervision and guidance to the installation crew. The geosynthetics Installer's supervisor is also responsible for the following: (i) obtaining samples, as required by the CQA Plan and the specifications; (ii) field testing; (iii) documenting quality control testing activities; and (iv) coordinating the geosynthetics installation activities with the Construction Manager. The geosynthetics Installer's supervisor will be responsible for documenting the geosynthetics installation activities, including, but not limited to, on-site personnel, material inventories, production figures, the Installer’s quality control, test results, installation deficiencies, and resolution of construction problems.

3.10 Surveyor

The Surveyor is responsible for lines and grades required for control of the work on an ongoing basis during all phases of the Sutton Closure construction. The Surveyor may be retained by the Contractor, however, they will be independent (not from the same company or parent company) and be available as needed by the CQA Consultant to perform any necessary surveying that may be required for their program. Close interaction between the Surveyor, Contractor, and the CQA Consultant is essential to ensure that construction at Sutton is completed in accordance with the Construction Drawings and Technical Specifications. The project Surveyor shall be a state of North Carolina licensed Professional Land Surveyor or registered Professional Engineer who shall sign and seal all construction survey record drawings. All surveying personnel shall be experienced in the provision of surveying services, including detailed accurate documentation as required in the Technical Specifications. The Surveyor is responsible for all surveying activities and products in accordance with the Technical Specifications.

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4 DOCUMENTATION

4.1 Overview

An effective CQA Plan depends largely on recognition of all construction activities that should be monitored and the assignment of responsibilities for the monitoring of each activity. This is most effectively accomplished and verified by the documentation of quality assurance and quality control activities. The CQA Consultant shall be responsible for assuring that the Contractor's quality control requirements have been addressed and satisfied.

The CQA Site Manager shall provide the Construction Manager descriptive daily field reports, data sheets, and logs, as requested, which document that monitoring activities have been accomplished. Examples of some of the forms that will be used to document CQA activities are included in Appendix A. The CQA Site Manager shall also maintain at the job site a complete file of Construction Drawings and Technical Specifications, this CQA Plan, the Contractor's Quality Control Plan(s), checklists, test procedures, daily logs, and other pertinent construction and CQA documents.

4.2 Daily Record Keeping

The CQA Consultant's daily reporting procedures shall include: (i) daily summary report; (ii) monitoring logs; (iii) testing data sheets; and (iv) when appropriate, problem identification and corrective measures reports.

4.2.1 Daily Summary Reports

The CQA Consultant's daily summary reports shall include the following information as applicable:

- an identifying sheet number for cross referencing and document control;
- date, project name, location, and other pertinent project identification;
- data on weather conditions;
- summary on meetings held and their results;
- process description(s) and location(s) of construction activities underway during the time frame of report;
- descriptions and specific locations of areas, or units, of work being tested and/or observed and documented;
- description of locations where tests and samples were taken;
- a narrative summary of field test results;

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- off-site materials received, including quality control documentation;
- decisions made regarding acceptance of units of work, and/or corrective actions to be taken in instances of substandard testing results;
- identifying sheet numbers of data sheets and/or problem reporting and corrective measures reports used to substantiate the decisions described above; and
- signature of the respective CQA Site Manager and/or the CQA Field Monitor.

4.2.2 CQA Monitoring Logs and Test Data Sheets

Monitoring observations, sampling information, and test results shall be recorded on the appropriate monitoring logs and test data sheets. The CQA Consultant shall use the monitoring logs and test data sheets to ensure completeness of the required CQA activities. Any corrections to the monitoring logs and test data sheets shall be single line crossed out, initialed by the CQA personnel responsible for the correction and dated. Examples of relevant monitoring logs are presented in Appendix A.

The CQA Consultant's monitoring logs and test data sheets shall include the following information as applicable:

- project specific information such as project name and location;
- the date the CQA activity was performed;
- a unique identifying sheet number for cross-referencing and document control;
- description or title of the CQA activity or test procedure;
- location of the CQA activity or location from which the sample was obtained;
- type of CQA activity or procedure used (reference to standard method when appropriate);
- recorded observation or test data, with necessary calculations;
- results of the CQA activity and comparison with specification requirements (pass/fail); and
- the initials or signature of personnel involved in CQA inspection activity.

4.2.3 Nonconformance Identification and Reporting

A nonconformance is defined herein as material or workmanship that does not meet the specified requirement(s). Nonconformance identification and corrective measures reports

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should be cross-referenced to specific summary reports, logs, or test data sheets where the nonconformance was identified. The reports should include the following information as applicable:

- a unique identifying sheet number for cross-referencing and document control;
- detailed description of the problem;
- location of the problem;
- probable cause;
- how and when the problem was located;
- estimation of how long problem has existed;
- suggested corrective measures;
- documentation of corrections (reference to inspection data sheets);
- suggested methods to prevent similar problems; and
- signature of the appropriate CQA Field Monitor and concurrence by the CQA Site Manager.

In some cases, not all of the above information will be available or obtainable. However, when available, such efforts to document nonconformances can help avoid similar nonconformances in the future. The CQA Site Manager shall distribute copies of the report to the Construction Manager for further actions.

4.3 Photographic Documentation

The CQA Site Manager will be responsible for obtaining photographic documentation of the Contractor's activities, materials installation methods, and testing procedures. Photographs will serve as a pictorial record of work progress, problems, and corrective measures. Photographic reporting data sheets should be utilized to organize and document photographs taken during construction at Sutton. Such data sheets could be cross-referenced or appended to summary reports, CQA monitoring logs, or test data sheets and/or problem identification and corrective measures reports. At a minimum, photographic reporting data sheets should include the following information:

- a unique identifying number on data sheets and photographs for cross-referencing and document control;
- person responsible for photograph;

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- the date and location where the photograph was taken; and
- location and description of the work;

Digital files shall be organized and kept in a protected and secure file or database.

4.4 Design and/or Specifications Changes

Design and/or specifications changes may be required during construction. In cases of Contractor initiated changes, the Contractor must submit written requests for such changes to the Construction Manager. The Design Engineer shall review and respond to these requests in a timely manner. All design and/or specifications changes will be made only with the approval of the Engineer of Record and Design Engineer and approval by NCDEQ as required. Such changes will take the form of a design change notice (DCN).

4.5 Nonconformances

The Construction Manager will be informed, by the CQA Consultant, in writing of any significant recurring nonconformance by the Contractor, surveyor, geosynthetic Installer, or their subcontractors with the Construction Drawings, Technical Specifications, or CQA Plan. The cause of the nonconformance will be determined by the CQA Consultant. The Contractor will be directed by the Construction Manager to make appropriate changes in materials or procedures in order to correct the nonconformance. When this type of evaluation is made, the results will be documented, and any revision to procedures or specifications must be approved by the Design Engineer.

4.6 CQA Certification Report

At the completion of construction phases, the CQA Consultant will provide DEP with a construction phase final certification report for submittal to NCDENR. This report will acknowledge: (i) that the work has been performed in compliance with the approved Construction Drawings, Technical Specifications, and approved modifications; (ii) physical sampling and testing has been conducted at the appropriate frequencies; and (iii) that the summary documentation provides the necessary supporting information.

At a minimum, the report will include:

- summary of CQA activities;
- CQA monitoring logs and testing data sheets including sample location plans;
- laboratory test results;
- problem identification and reports of corrective measures reports;

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- a descriptive summary of any changes to the Construction Drawings or Technical Specifications; and

- a summary statement indicating compliance with the Construction Drawings or Technical Specifications and any approved changes that are signed and sealed by the CQA Certifying Engineer.

The record drawings, which include scale drawings depicting the location of the construction and details pertaining to the extent of construction (e.g., depths, plan dimensions, elevations, soil component thicknesses, etc.), will also be included as part of the final certification report.

4.7 Storage of Records

The CQA Site Manager will be responsible for the CQA document storage during the construction at Sutton. This includes the CQA Consultant's copy of the Construction Drawings and Technical Specifications, the CQA Plan, and the originals of the data sheets and reports. When the Sutton Closure construction is complete and upon issuance of the final certification report, the CQA document originals will be organized and retained by the CQA Consultant until requested by DEP. Required records shall include, but not be limited to, field logbooks, other data collections forms, equipment calibration records, costs data, drawings, maintenance records, and associated reports.

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5 SOILS CONSTRUCTION

5.1 Introduction

CQA monitoring and testing shall be performed during installation of the soils components. Criteria to be used for determination of acceptability of the various soil components are identified in the Construction Drawings and Technical Specifications and this CQA Plan.

5.2 Soil Components

All general fill placement, grading, and compaction will be monitored and tested in accordance with the Construction Drawings, Technical Specifications, and this CQA Plan.

5.3 Record Drawings and As-Built Surveys

During construction of the soil components at Sutton, the CQA Consultant shall routinely review record drawings submitted by the Contractor. The drawings are used to verify location of work, percent of work completed, layer thickness, or final grades. Prior to the placement of successive soil layers, the CQA Consultant shall review as-built surveys that indicate compliance of the preceding layer thickness, lines, and grades. Once an as-built survey has been received, it will be the responsibility of the CQA Consultant to review the information in a timely manner and notify the Contractor of any noncompliance.

5.4 Related Construction Drawings and Technical Specifications

Several sections of the Technical Specifications should be referenced by the CQA Consultant for pertinent soil materials physical properties and construction requirements. Related specifications include the following:

- Section 02 21 00 Surveying
- Section 31 00 00 Earthwork
- Section 31 02 19.13 Geotextiles
- Section 31 05 16 Granular Drainage Material
- Section 31 11 00 Clearing, Grubbing, and/or Stripping
- Section 31 23 33 Trenching and Backfilling
- Section 31 25 00 Sediment and Erosion Control
- Section 31 31 19 Vegetation
- Section 31 37 00 Riprap
- Section 32 92 19 Seeding
- Section 33 42 13 Pipe Culverts
- Section 33 49 00 Storm Water Structures and Swales

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- Section 34 71 00 Road Construction

Prior to the start of soils construction, the CQA Consultant shall review the information required by the Technical Specifications listed above. Compliance of the submittals with the Technical Specifications shall be determined by the Construction Manager.

5.5 Subgrade

During construction, monitoring of the subgrade preparation shall be performed by the CQA Consultant. This subgrade shall be the base over which structural fill is placed (reconstructed dikes or other pertinent structures). The CQA Consultant shall monitor the subgrade to assure a firm and smooth surface that is free of vegetation and other deleterious materials is achieved. Material placed to achieve grades indicated on the Construction Drawings shall be monitored by the CQA Consultant to verify that the subgrade material and fill placement, grading, and compaction complies with the Technical Specifications. Areas that do not meet the Technical Specifications will be delineated and nonconforming areas will be reworked by the Contractor. This process will be repeated until acceptable results are achieved.

The CQA Consultant shall monitor the repair and rework of fill material that is damaged by excess moisture (causing softening). If such conditions are found to exist, the CQA Consultant shall evaluate the suitability of the subgrade by the following methods as applicable:

- moisture/density testing; and/or
- continuous visual inspection during proof-rolling.

The subgrade for the basin only needs to support topsoil placement and does not need to be free of vegetation or smooth before topsoil placement.

5.6 Conformance Testing

The CQA Consultant will observe and test the soil components to ensure they are uniform and conform to the requirements of the Technical Specifications. For soil materials obtained from on-site sources, visual inspections and conformance tests shall be performed by the CQA Consultant prior to the materials being used. If soil materials are obtained from off-site borrow sources, visual inspection and conformance tests shall be performed at the source location or as the materials arrive at Sutton. Borrow area inspections may also be utilized by the CQA Consultant to ensure that only suitable soil materials are transported to the Sutton Closure. For off-site borrow areas containing non-uniform materials, it shall be necessary for the Contractor and the CQA personnel to coordinate excavation and monitoring of the segregation of substandard materials. All materials failing to comply with conformance standards shall be rejected for use at Sutton.

Initial evaluation of various soil types by CQA personnel during construction shall be largely visual; therefore, the CQA personnel must be experienced with visual-manual soil classification procedures. CQA personnel shall be aware that changes in color or texture can be indicative of

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a change in soil type. CQA personnel shall observe soils for deleterious materials (e.g., roots, stumps, and large objects). When necessary, the visual-manual procedure for the description and identification of soils shall be conducted by the CQA Consultant in accordance with test method ASTM D 2488.

5.6.1 Test Methods

Conformance tests used to evaluate the suitability of soil materials during construction shall be performed in accordance with the current ASTM or other applicable test procedures indicated in Table 5-1. Documentation and reporting of the test results shall be the responsibility of the CQA Consultant.

The standard Proctor test (ASTM D 698) shall be used for the evaluation of moisture/density relationships unless otherwise indicated. Any conflict regarding acceptance of test results shall be resolved by the Design Engineer.

5.6.2 Test Frequency

The frequency of conformance tests shall conform to the minimum frequencies presented in Table 5-1. The frequency of testing may be increased at the discretion of the CQA Consultant or if variability of the materials is observed. The testing frequencies described herein for general fill shall also apply to materials used by the Contractor in areas outside the limits of the liner and final cover systems at Sutton.

5.7 Construction Monitoring

During installation of the various soil components, the CQA Consultant shall visually observe and document the Contractor's earthwork activities for the following:

- changes in the soil consistency;
- the thickness of lifts as loosely placed and as compacted;
- soil conditioning prior to placement including general observations regarding moisture distribution, clod size, etc.;
- placement method which may damage or cause displacement or wrinkling of geosynthetics;
- the action of the compaction and heavy hauling equipment on the construction surface (sheepsfoot penetration, pumping, cracking, etc.);
- the number of passes used to compact each lift;
- desiccation cracks or the presence of ponded water; and

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- final lift or layer thickness.

5.8 Performance Testing

During construction, the CQA Consultant shall observe and test the soil components to ensure they are installed in accordance with the requirements of the Construction Drawings and Technical Specifications. The CQA Consultant shall also evaluate the procedures, methods, and equipment used by the Contractor to install the various soil components.

5.8.1 Test Methods

All performance testing shall be conducted in accordance with the Technical Specifications or as directed by the Design Engineer. The field testing methods used to evaluate the suitability of soils during their installation shall be performed by the CQA Consultant in accordance with current ASTM test procedures indicated in Table 5-2. Documentation and reporting of the test results shall be the responsibility of the CQA Consultant.

The standard Proctor test (ASTM D 698) shall be used for the evaluation of moisture/density relationships unless otherwise indicated. In-place surface moisture/density by nuclear test methods (ASTM D 6938) shall be used for in-situ field testing. At the discretion of the CQA Consultant, the sand cone test method (ASTM D 1556) or drive cylinder test method (ASTM D 2937) may be used to establish correlations of moisture and density in cases of uncertainty, and as a check of the nuclear surface moisture/density gauge calibration. Any conflict regarding acceptance of test results shall be resolved by the Design Engineer.

5.8.2 Test Frequency

Performance testing shall be conducted during the course of the work. The minimum construction performance testing frequencies are presented in Table 5-2. The frequency may be increased at the discretion of the CQA Consultant or if variability of the materials is observed by the CQA Consultant. Sampling locations shall be selected by the CQA Consultant. If necessary, the location of routine in-place density tests shall be selected using a non-biased sampling approach.

A special testing frequency shall be used at the discretion of the CQA Consultant when visual observations of construction performance indicate a potential problem. Additional testing for suspected areas shall be considered when:

- rollers slip during rolling operations;
- lift thickness is greater than specified;
- material is at improper and/or variable moisture content;
- it is suspected that less than the specified number of roller passes are made;

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- dirt-clogged rollers are used to compact the material;
- rollers may not have used optimum ballast;
- there is change to subgrade condition since subgrade approval;
- fill materials differ substantially from those specified;
- the degree of compaction is doubtful; and
- as directed by the Design Engineer or the Construction Manager.

During construction, the frequency of testing may also be increased in the following situations:

- adverse weather conditions;
- breakdown of equipment;
- at the start and finish of grading;
- material fails to meet specifications; and
- the work area is reduced.

5.9 Deficiencies

If a defect is discovered in the soils construction, the CQA Consultant shall immediately determine the extent and nature of the defect. If the defect is indicated by an unsatisfactory test result, the CQA Consultant shall determine the extent of the deficient area by additional tests, observations, a review of records, or other means that the CQA Consultant deems appropriate. If the defect is related to adverse site conditions, such as overly wet soils or surface desiccation, the CQA Consultant shall define the limits and nature of the defect and the appropriate remedy.

As soon as possible, after determining the extent and nature of substandard materials, noncompliant construction practice, or other such deficiency in materials or workmanship which cannot be immediately resolved on-the-spot, the CQA Consultant shall notify the Construction Manager and Contractor and schedule appropriate retests when the work deficiency is to be corrected.

The CQA Consultant shall verify that the Contractor has corrected all noted deficiencies. If a specified criterion cannot be met, or unusual weather conditions hinder work, the Contractor shall submit suggested solutions or alternatives to the Construction Manager for review.

At locations where the field testing indicates conditions which do not comply with the requirements of the Technical Specifications, the failing area shall be reworked to the satisfaction of the CQA Consultant. Alternatively, at the CQA Consultant's option, undisturbed

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samples of in-place material shall be obtained for appropriate testing. All retests performed by the CQA Consultant must verify that the deficiency has been corrected before any additional work is performed by the Contractor in the area of the deficiency.

5.10 Documentation

The documentation of soils CQA testing activities is an important factor in assuring the successful construction, performance, and approval of the soil components of the Sutton Closure. The CQA monitoring observations, sample location descriptions, field test results, and on-site laboratory test results shall be documented by the CQA Consultant on forms specifically designed for their purpose. Reports and forms shall be submitted to the Construction Manager as requested.

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6 GEOTEXTILES

6.1 Introduction

The CQA Consultant shall perform conformance testing and shall monitor the installation of geotextile filters and separators as required by Section 31 05 19.13 of the Technical Specifications and this CQA Plan. The testing used to evaluate the conformance of the geotextiles with the requirements of the Technical Specifications shall be performed by the CQA Consultant. The testing shall be performed in accordance with the current versions of the ASTM or other applicable test procedure indicated in Table 6-1. DEP shall be notified prior to installation of any geosynthetics material.

6.2 Transportation, Handling, and Storage

The CQA Consultant shall monitor the on-site transportation, handling, and storage of the geotextile. The Construction Manager shall designate a geotextile storage location. During transportation, handling, and storage, the geotextile shall be protected from ultraviolet light exposure, precipitation or other inundation, mud, dirt, dust, puncture, cutting or any other damaging or deleterious conditions.

Handling of the geotextile rolls shall be performed in a competent manner such that damage does not occur to the geotextile or to its protective wrapping. Rolls of geotextiles shall not be stacked upon one another to the extent that deformation of the core occurs or to the point where accessibility can cause damage in handling. Furthermore, geotextile rolls shall be stacked in such a way that access for conformance sampling is possible. Protective wrappings shall be removed less than one hour prior to unrolling the geotextile. After unrolling, a geotextile shall not be exposed to ultraviolet light for more than 30 calendar days.

Outdoor storage of geotextile rolls shall not exceed the Manufacturers recommendations or longer than six (6) months whichever is less. For storage periods longer than six (6) months a temporary enclosure shall be placed over the rolls or they shall be moved to an enclosed facility. The location of temporary field storage shall not be in areas where water can accumulate. The rolls shall be elevated off the ground to prevent contact with ponded water.

Upon delivery at Sutton, the Contractor, Installer, and CQA Consultant shall conduct an inspection of the rolls for defects and damage. This inspection shall be conducted without unrolling the materials unless defects or damages are found or suspected. The CQA Consultant shall indicate to the Construction Manager:

- rolls, or portions thereof, which should be rejected and removed from Sutton because they have severe flaws; and
- rolls which include minor repairable flaws.

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The CQA Consultant shall also monitor that equipment used to handle the geotextiles on-site is adequate and does not pose any risk of damage to the geotextiles when used properly.

6.3 Conformance Testing

6.3.1 Sampling Procedures

Samples shall be taken across the entire width of the roll and shall not include the first three (3) feet of the roll. Unless otherwise specified, samples shall be three (3) feet long by the roll width. The required minimum geotextile conformance sampling frequencies are provided in Table 6-1. The CQA Consultant shall mark the machine direction on the samples with an arrow and affix a label, tag, or otherwise mark each sample with the following information:

- date sampled;
- project number;
- lot/batch number and roll number;
- conformance sample number; and
- CQA personnel identification.

The geotextile rolls which are sampled shall be immediately rewrapped in their protective coverings to the satisfaction of the CQA Consultant.

6.3.2 Testing Procedure

Conformance testing of the geotextile materials will be conducted to ensure compliance with both the Technical Specifications and the Manufacturer's list of minimum average roll values. As a minimum, the geotextile conformance test procedures listed in Table 6-1 shall be performed by the Geosynthetics CQA Laboratory.

6.3.3 Test Results

The CQA Consultant shall review all laboratory conformance test results and verify compliance of the test results with the specification shown in Appendix B prior to deployment of the geotextiles. Any non-conformance shall be reported to the Construction Manager.

6.3.4 Conformance Test Failure

In the case of failing test results, the Contractor may request that another sample from the failing roll be retested by the Geosynthetics CQA Laboratory with the Manufacturer's technical representative present during the test procedure. If the retest fails or if the option to retest is not exercised, then two isolation conformance samples shall be obtained by the CQA Consultant. These isolation samples shall be taken from rolls, which have been determined by correlation

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with the Manufacturer's roll number, to have been manufactured prior to and after the failing roll. This method for choosing isolation rolls for testing should continue until passing tests are achieved. All rolls that fall numerically between the passing roll numbers shall be rejected. The CQA Consultant will verify that the Contractor has replaced all rejected rolls. The CQA Consultant shall document all actions taken in conjunction with geotextile conformance failures.

6.3.5 Placement

The CQA Consultant shall monitor the placement of all geotextiles to assure they are not damaged in any way, and the following conditions are met.

- On slopes, the geotextiles shall be securely anchored in the anchor trench and then deployed down the slope in such a manner as to continually keep the geotextile in tension.

- In the presence of wind, geotextiles shall be weighted with sandbags or the equivalent. Such sandbags shall be installed during placement and shall remain until replaced with earth cover material.

- Trimming of the geotextiles shall be performed using only an upward cutting hook blade. Special care must be taken to protect other materials from damage which could be caused by the cutting of the geotextiles.

- The CQA Consultant shall monitor that the Installer is taking necessary precautions to prevent damage to underlying layers during placement of the geotextile.

- During the placement of geotextiles, care shall be taken not to entrap stones, excessive dust, debris, or moisture that could generate clogging of drains or filters.

- A visual examination of the geotextile shall be carried out over the entire surface, after installation, to ensure that no potentially harmful foreign objects, (e.g., stones, sharp objects, small tools, sandbags, etc.) are present.

6.4 Seams and Overlaps

All geotextile filters shall be continuously sewn (i.e., spot sewing is not allowed). Geotextiles shall be overlapped a minimum of six (6) inches prior to seaming. No horizontal seams shall be allowed on side slopes that are steeper than 10 horizontal to 1 vertical (i.e. seams shall be along, not across, the slope), except as part of a patch.

Sewing shall be done using polymeric thread with chemical and ultraviolet resistance properties equal to or exceeding those of the geotextile. The seams shall be sewn using a single row type "401" two-thread chain stitch. The CQA Consultant shall monitor the geotextile seaming procedures to verify that seams and overlaps are in accordance with Section 31 05 19.13 of the Technical Specifications.

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Geotextile separators may be overlapped a minimum of two (2) feet in lieu of sewing.

6.5 Repair

The CQA Consultant shall monitor that any holes or tears in the geotextile are repaired as follows:

- On-slopes: A patch made from the same geotextile is double seamed into place (with each seam 1/4 in. to 3/4 in. apart and no closer than 1 in. from any edge) with a minimum 12-in. overlap. Should any tear exceed 50 percent of the width of the roll, that roll shall be removed from the slope and replaced.

- Non-slopes: A patch made from the same geotextile is sewn in place with a minimum of 12 in. overlap in all directions away from the repair area.

Care shall be taken to remove any soil or other material which may have penetrated the torn geotextile. The CQA Consultant shall observe all repairs and assure that any non-compliance with the above requirements is corrected.

6.6 Placement of Soil Materials

The CQA Consultant shall monitor the Contractor's placement of all materials located on top of a geotextile to verify that:

- no damage occurs to the geotextile;

- no shifting of the geotextile from its intended position occurs and underlying materials are not exposed or damaged;

- excess tensile stress does not occur in the geotextile; and

- equipment ground pressure on geotextiles overlying geomembranes does not exceed those specified in Section 31 05 19.13 of the Technical Specifications.

Soil backfilling shall be completed within 30 days of placement of the geotextiles. On side slopes, soil layers shall be placed over the geotextile from the bottom of the slope upward.

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7 ROAD CONSTRUCTION

7.1 Introduction

The CQA Consultant shall monitor and test materials used in the construction of the various roads to assure compliance with Construction Drawings and Technical Specifications.

7.2 Subgrade Preparation

In-place moisture/density testing by nuclear methods (ASTM D 6938) shall be performed by the CQA Consultant for all compacted fill materials. Fill placement and compaction shall be conducted in accordance with Section 31 00 00 of the Technical Specifications. For road subgrades, nuclear moisture/density tests shall be performed at a minimum frequency of 1 test per 200 lineal feet per lift. The CQA Consultant shall monitor the Contractor's proof rolling of cut sections.

7.3 Subbase Layer

The CQA Consultant shall monitor and test the subbase layer to ensure it is constructed to the thickness grades and density as required by the Construction Drawings and the Technical Specifications. Moisture/density tests shall be performed at a minimum frequency of 1 test per 200 lineal feet per lift.

7.4 Base Layer

The CQA Consultant shall monitor the installation of the base aggregate to ensure it is constructed to the thickness, grades, and limits shown on the Construction Drawings. The CQA Consultant shall monitor the test section required in Section 34 71 00 of the Technical Specifications.

7.5 Quality Assurance Testing

Quality assurance testing of the materials used in construction of the roads shall be the responsibility of the CQA Consultant. The frequency of CQA testing for the subbase aggregate and base aggregate materials is as follows:

- particle size analysis (ASTM C136) at a frequency of one test per 5,000 yd^3; and
- density and moisture (ASTM D 6938) at a frequency of one test per 300 lineal feet per lift.

Requirements for in-situ density of base aggregates shall be defined during the compaction of a test strip. The base aggregate shall be compacted in accordance with the requirements of Section 34 71 00 of the Technical Specifications.

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7.6 Repairs

If a defective area is discovered, the CQA Consultant will evaluate the extent and nature of the defect. After this determination the Contractor shall correct the deficiency to the satisfaction of the Construction Manager. The Contractor shall not perform additional work in the area until the Construction Manager approves the correction of the defect. In the event of damage, the Contractor shall immediately make repairs and replacements as necessary to the satisfaction of the Construction Manager.

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8 GENERAL SITE WORK

8.1 Introduction

The CQA Consultant shall monitor the activities that are to be performed for various general site work items including, but not limited to riprap, erosion and sediment control, culverts, fences and gates, and vegetation for compliance with Construction Drawings and Technical Specifications.

8.2 Conformance Testing

Conformance testing of materials to ensure compliance with the Construction Drawings and Technical Specifications shall be performed by the CQA Consultant at the discretion of the Construction Manager. If non-conformances or other deficiencies are found by the CQA Consultant in the Contractor's materials or completed work, the Contractor will be required to repair or replace the deficiency at no cost to DEP. Any noncompliant items shall be reported to the Construction Manager.

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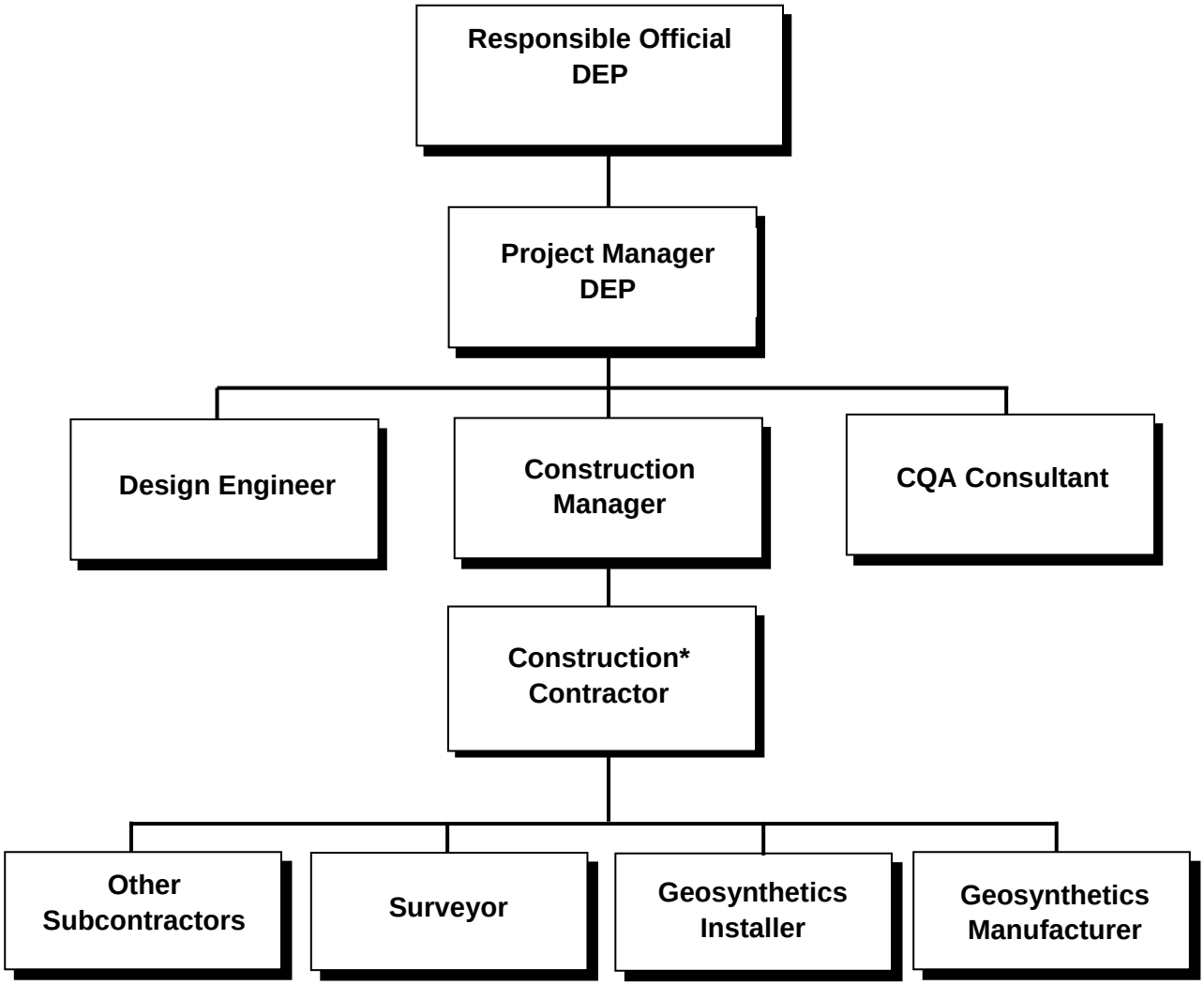
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FIGURES

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Figure 3-1

Sutton Closure Construction Organization Chart

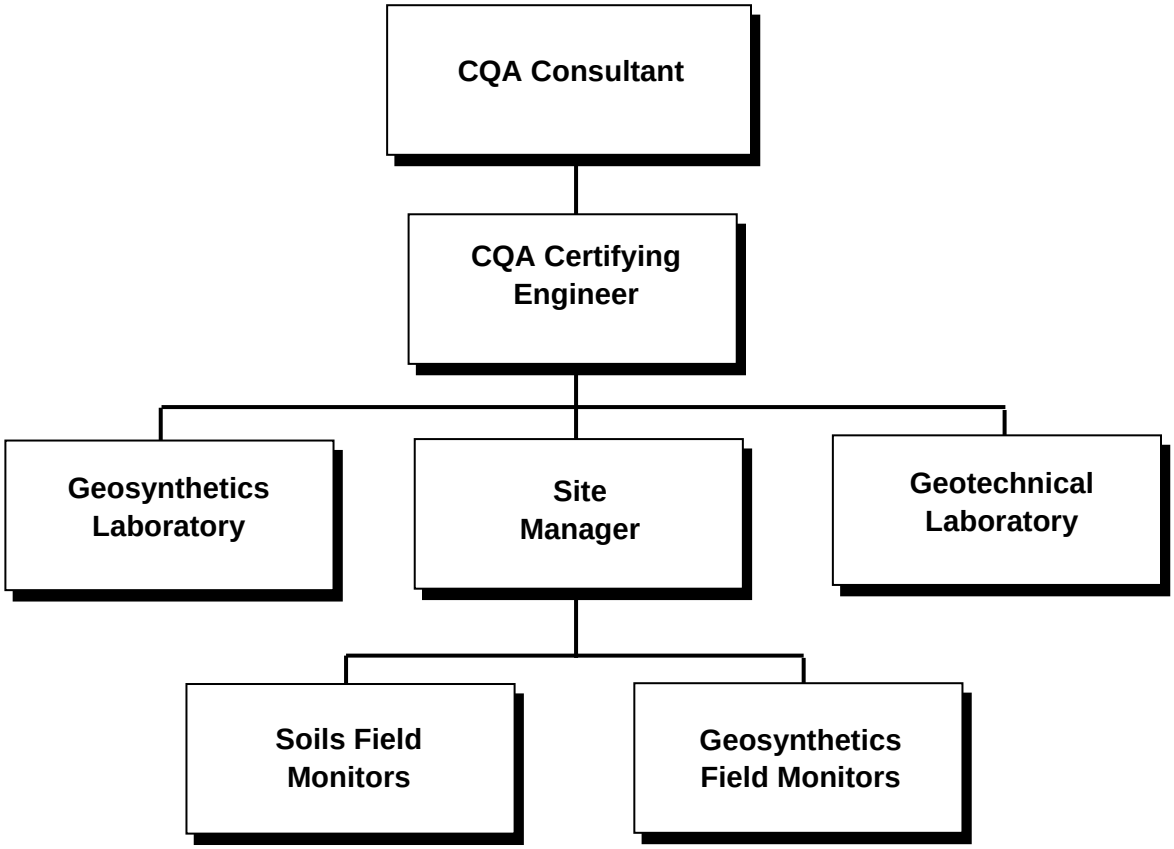


*The Construction Contractor is assumed to have earthwork capabilities as an integral part of the firm. Otherwise, the earthwork subcontractor is a major entity in this chart under the prime contractor.

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Figure 3-2

Sutton Closure CQA Organization Chart



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TABLES

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TABLE 5-1

MINIMUM CONFORMANCE TESTING FREQUENCIES FOR SOIL COMPONENTS

TEST NAME/ TEST METHOD	GENERAL FILL	GRANULAR DRAINAGE MATERIAL	VEGETATIVE LAYER
SPECIFICATION SECTION	31 00 00	31 05 16	31 31 19
Particle Size Analysis/ASTM D 422	1 test per 10,000 yd^3	N/A	1 test per 5,000 yd^3
Particle Size Analysis/ASTM C 136	N/A	1 test per 2,000 yd^3	N/A
Atterberg Limits/ASTM D 4318 (for plastic soils only)	N/A	N/A	N/A
Soil Classification/ASTM D 2487	1 test per 10,000 yd^3	1 test per 2,000 yd^3	1 test per 5,000 yd^3
Standard Proctor/ASTM D 698	1 test per 25,000 yd^3	N/A	N/A
Hydraulic Conductivity/ ASTM D 2434	N/A	1 test per 2,000 yd^3	N/A
Organic Content/ASTM D2974	N/A	N/A	1 test per 5,000 yd^3

N/A = Not Applicable

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TABLE 5-2

MINIMUM PERFORMANCE TESTING FREQUENCIES FOR SOIL COMPONENTS

TEST NAME/ TEST METHOD	GENERAL FILL/ MISC. SOILS
SPECIFICATION SECTION	31 00 00
In-Situ Moisture/ASTM D 6938	1 tests per lift per acre or 1 test per 250 lf per lift
In-situ Density/ASTM D 6938	1 tests per lift per acre or 1 test per 250 lf per lift
Sand Cone/ASTM D 1556 or Drive Cylinder/ASTM D 2937	1 test per 25 nuclear tests (at the discretion of the CQA Consultant)

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TABLE 6-1

GEOTEXTILE CONFORMANCE TESTING REQUIREMENTS

TEST NAME	TEST METHOD	MINIMUM TESTING FREQUENCY
Mass per Unit Area	ASTM D 5261	1 test per 100,000 ft^2
Grab Strength	ASTM D 4632 (1)	1 test per 100,000 ft^2
Trapezoidal Tear Strength	ASTM D 4533 (2)	1 test per 100,000 ft^2
Puncture Resistance	ASTM D 4833 (3)	1 test per 100,000 ft^2
Static Puncture Strength	ASTM D 6241	1 test per 100,000 ft^2
Apparent Opening Size (5)	ASTM D 4751	1 test per 200,000 ft^2
Permittivity (5)	ASTM D 4491	1 test per 200,000 ft^2

Notes:

1. Minimum of values measured in machine and cross machine directions with 1 inch clamp on Constant Rate of Extension (CRE) machine.
2. Minimum value measured in machine and cross machine direction.
3. Tension testing machine with a 1.75-inch diameter ring clamp, the steel ball being replaced with 0.31-inch diameter solid steel cylinder with a flat tip centered within the ring clamp.
4. At least one test shall be performed for each lot. A lot is defined by ASTM 4354.
5. Apparent opening size and permittivity testing shall be performed for geotextile filter only.

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Appendix A
CQA Forms and Logs

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WEEKLY FIELD REPORT

PROJECT: _____

LOCATION: _____ PROJECT NO.: _____ TASK NO.: _____

DESCRIPTION: _____ WEEK ENDING: _____

COPY TO: _____ PER: _____

Geosyntec consultants

NUCLEAR GAUGE STANDARD COUNT LOG **(ASTM D 6938)**

PROJECT: ______________________________

LOCATION: ______________________ PROJECT NO.: __________ TASK NO.: ______

DESCRIPTION: ______________________________ YEAR: ______

NUCLEAR GAUGE MODEL: ______________ SERIAL NO.: ______________

DATE ARRIVED ON-SITE: ______________ DATE DEPARTED SITE: ______________

DATE OF MOST RECENT LEAK TEST: ______________________________

DATE (day/mo)	MOISTURE COUNT (≤ 2%)	DENSITY COUNT (≤ 1%)	PASS	FAIL	QA ID	DATE (day/mo)	MOISTURE COUNT (≤ 2%)	DENSITY COUNT (≤ 1%)	PASS	FAIL	QA ID

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Geosyntec consultants

MATERIAL INVENTORY

PROJECT: _____

LOCATION: _____ PROJECT NO.: _____ TASK NO.: _____

DESCRIPTION: _____ YEAR: _____

MATERIAL TYPE: _____ MANUFACTURER: _____

INVENTORY			Q.A. CONFORMANCE					Q.C. DOCUMENTS				
DATE	BATCH / ROLL NUMBER	QA ID	DATE SAMPLED	SAMPLE NO.	PASS	FAIL	QA ID	DATE REC'VED	DATE CHECKED	PASS	FAIL	QA ID

AVERAGE ROLL WIDTH: _____ (ft) AVERAGE ROLL LENGTH _____ (ft)

NUMBER OF ROLLS ABOVE: _____ CUMULATIVE NUMBER OF ROLLS: _____

CUMULATIVE AREA: _____ (ft^2) NO. OF CONFORMANCE TESTS (page/total): _____/_____

COMMENTS: _____

Geosyntec consultants

FIELD NUCLEAR MOISTURE/DENSITY TEST LOG **(ASTM D 6938)**

PROJECT: _____

LOCATION: _____ PROJECT NO.: _____ TASK NO.: _____

DESCRIPTION: _____ DATE: _____ day _____ month _____ year

SPECIFICATION REQUIREMENTS: MATERIAL SOURCE: _____

MATERIAL TYPE: ☐ FILL ☐ SUBGRADE ☐ SUBBASE ☐ CLAY ☐ OTHER: _____ MAX. LIFT THICKNESS: _____ (in.)

MINIMUM COMPACTION: _____ (%) ☐ ASTM D 698 ☐ ASTM D 1557 MOISTURE CONTENT RANGE: - _____ to + _____ of OPT.

NUCLEAR GAUGE TYPE: _____ GAUGE SERIAL NO.: _____ CORRECTION FACTOR: Y= _____

TEST NO.	TEST LOCATION	PROBE DEPTH / LIFT NO.	LABORATORY RESULTS			FIELD TEST RESULTS						RE-TEST NO.	RE-TEST	
			SAMPLE NO.	OMC (%)	MAX. DRY UNIT WT. (pcf)	FIELD MOISTURE CONTENT[1] (%)	WET UNIT WT (pcf)	DRY UNIT WT (pcf)	PERCENT COMPACT. (%)	PASS	FAIL		PASS	FAIL

NOTES: (1) FIELD MOISTURE CONTENT = GAUGE READING/CORRECTED MOISTURE

COMMENTS: _____

CHECKED BY: _____

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Appendix B
Required geotextile filter and separator properties

Tables 31 02 19.13-1 and 31 02 19.13-2 (from Technical Specification Section 31 02 19.13)

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TABLE 31 02 19.13-1

REQUIRED PROPERTY VALUES FOR GEOTEXTILE FILTER

Properties (6)	Qualifier	Units (5)	Specified Values(1)	Test method
Product Requirements				
Type	--	--	Nonwoven needle-punched	--
Polymer composition	Minimum	%	95 polypropylene or polyester by wt	--
Mass per unit area	Minimum	oz/yd^2	8	ASTM D 5261
Filter Requirements				
Apparent opening size	Maximum	mm	O95 ≤ 0.21	ASTM D 4751
Permittivity	Minimum	sec^{-1}	0.5	ASTM D 4491
Mechanical Requirements				
Grab strength	Minimum	lb	200	ASTM D 4632(2)
Tear strength	Minimum	lb	75	ASTM D 4533(3)
Static puncture strength	Minimum	psi	500	ASTM D 6241
Durability Requirements				
Ultraviolet Resistance	Minimum	%	70	ASTM D 4355

Notes:

1. All values represent minimum average roll values.
2. Minimum of values measured in machine and cross machine directions with 1 inch clamp on Constant Rate of Extension (CRE) machine.
3. Minimum value measured in machine and cross machine direction.
4. Not Used.
5. mm = millimeter; % = percent; oz/yd^2 = ounce per square yard; sec = second; lb = pound; psi = pound per square inch
6. See Paragraph 2.02 for required MQC test frequencies.

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TABLE 31 02 19.13-2

REQUIRED PROPERTY VALUES FOR GEOTEXTILE SEPARATOR

Properties [6]	Qualifier	Units [5]	Specified Values [1]	Test method
Product Requirements				
Type	--	--	Nonwoven needle-punched	--
Polymer composition	Minimum	%	95 polypropylene or polyester	--
Mass per unit area	Minimum	oz/yd2	8	ASTM D 5261
Mechanical Requirements				
Grab strength	Minimum	lb	200	ASTM D 4632[2]
Tear strength	Minimum	lb	75	ASTM D 4533[3]
Static puncture strength	Minimum	psi	500	ASTM D 6241
Durability Requirements				
Ultraviolet Resistance	Minimum	%	70	ASTM D 4355

Notes:

1. All values represent minimum average roll values.
2. Minimum of values measured in machine and cross machine directions with 1 inch clamp on Constant Rate of Extension (CRE) machine.
3. Minimum value measured in machine and cross machine direction.
4. Not Used
5. % = percent
   oz/yd^2 = ounce per square yard
   lb = pound
   psi = pound per square inch
6. See Paragraph 2.02 for required MQC test frequencies.

[END OF SECTION]

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Appendix J
Post-Closure Care Plan

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POST-CLOSURE CARE PLAN

L.V. SUTTON ENERGY COMPLEX
SITE ANALYSIS AND REMOVAL PLAN

December 2016
Revision 0

Prepared for



Duke Energy Progress, LLC
526 South Church Street
Charlotte, North Carolina 28202

Prepared by



Geosyntec Consultants of NC, PC
1300 South Mint Street, Suite 300
Charlotte, North Carolina 28203
License No. C-3500

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1 INTRODUCTION

This Post-Closure Care Plan (Plan) is submitted as part of the Closure Plan Report for L.V. Sutton Energy Complex (Sutton), located in Wilmington, North Carolina. This plan has been prepared for Duke Energy Progress, LLC. (DEP) pursuant to CAMA Regulations §130A-309.212(a)(4) k.

2 PROJECT DESCRIPTION

The closure of Sutton consists of the total excavation of the coal combustion residuals (CCR) present in the 1971 and 1984 Basins and the Lay of Land Area (LOLA). The CCR will be placed in an on-site lined landfill. The 1971 Basin and LOLA will effectively become part of the Cooling Pond while the 1984 Basin will be graded to drain to the Cooling Pond. We note that this plan only deals with the excavation and later stabilization of the basins and LOLA; a post-closure care plan for the on-site landfill is being submitted under a separate report.

3 CLOSURE SCHEDULE

3.1 Introduction

Following the completion of the CCR excavation and removal, the dikes at the 1971 Basin and LOLA will be breached in order to allow the Cooling Pond to expand into these basins. The western dike of the 1984 Basin will be removed and the rest of the dike of the 1984 Basin will be lowered to match the existing contours. The previously inside area of the 1984 Basin will be graded such that it drains to the Cooling Pond. The exposed areas will be vegetated. This post-closure plan is for the closure of 1971 and 1984 Basins and LOLA.

3.2 Closure Certification

Following closure of each basin or portions of basins, the owner and operator shall notify the Division that a Certification, signed by the certifying engineer verifying that closure has been completed in accordance with the closure plan, has been placed in the operating record. This Certification will state that Sutton was closed in accordance with the Closure Plan and applicable regulations and laws.

3.3 Record Keeping

Following final closure of the basins, the owner and operator shall record a notation on the facility property deed to this effect, or some other instrument that is normally examined during a title search, and notify the Division that the notation has been recorded and a copy has been placed in the operating record. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land had been used as a CCR disposal facility and its future use is restricted under the Closure Plan.

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4 CLOSURE SYSTEM DESIGN

4.1 Closure System Materials

4.1.1 Vegetation

The surface of the closure system will be vegetated either by seeding or sodding. The grass seed will have a high tolerance to drought. The sod will be of firm texture, having a compacted growth and good root development. The minimum requirements of the grass seed and sod are presented in the Technical Specifications presented as part of the Closure Plan.

4.1.2 Vegetative Layers

The upper 6 inches of the final cover system will consist of loosely placed vegetative layer and will be vegetated to minimize erosion. The minimum requirements of vegetative soil layer are presented in the Technical Specifications presented as part of the Closure Plan.

5 POST-CLOSURE ACTIVITIES

Post-closure activities will be conducted at the facility in accordance with CAMA Regulations §130A-309.212(a)(4) k for a period of 30 years following final closure of the facility. The Division may decrease the length of the post-closure period if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment, and the Division approves this demonstration. The period might be increased by the Division if the Division determines that the lengthened period is necessary to protect human health and the environment.

The end of the post-closure period must be certified by a registered professional engineer. To accomplish certification over the required 30-year duration, a registered professional engineer will prepare annual certifications. The annual certifications will document that the closure system has been monitored and maintained in accordance with the Post-Closure Plan. The annual certifications shall be based on observations and results documented on regular post-closure monitoring reports, maintenance records, and compliance monitoring reports maintained in the Operating Record.

5.1 Contact

The person responsible for the facility during the post-closure care period is:

On-Site Environmental Professional
Duke Energy Progress, LLC
L.V. Sutton Energy Complex
801 Sutton Steam Road
Wilmington, North Carolina
(910) 341-4754

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5.2 Post-Closure Maintenance

Post-closure maintenance will be conducted at Sutton for a period of 30 years after final closure. Maintenance activities will be required for the closure system to remain functional. The vegetative cover shall be mowed as necessary. The vegetative cover shall be amended and fertilized as needed to maintain healthy vegetation. Depressions in the cover that pond water or otherwise impair the function of the cover will be filled and/or regraded. Areas subject to regrading will be revegetated. Animal burrows and eroded areas should be filled in with compacted soil and reseeded. If vegetative cover is not adequate in a particular area, fertilizer or other soil amendments should be applied and the area reseeded in order to re-establish vegetation. Insecticides may be used to eliminate insect populations that are detrimental to the vegetation. In addition to maintenance of the vegetative cover, any items noted as requiring maintenance in Section 5.3 Inspection Plan would also require maintenance.

Maintenance will include mowing at least two times per year as well as needs identified through the monitoring program will be initiated no later than 60 days after the discovery or within 24 hours if a danger or imminent threat to human health or the environment is indicated.

5.3 Inspection Plan

Routine inspections will be conducted throughout the post-closure care period and documented accordingly. These inspections will be carried out quarterly unless issues are detected that indicate that more frequent visits are required. Potential impacts to the public and environment will be considered in determining the inspection frequency. Items to be included in the quarterly inspection will be as follows:

- Access and security control such as fences, gates, locks, and other measures that control site and facility access
- Closure system for signs of erosion, settlement, or subsidence
- Condition and/or presence of vegetation (for distressed or dying vegetation or woody vegetation with potential to penetrate the low permeability barrier)
- Storm water management
- Erosion and sediment control
- Groundwater monitoring system
- Integrity of site benchmarks
- Vector control

5.4 Closure System Integrity

DEP shall maintain the integrity and effectiveness of the closure system including repairing the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the closure system.

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5.5 Monitoring Plan

Post-closure monitoring will be conducted at Sutton for a period of 30 years after final closure. Monitoring will include: (i) sampling of groundwater three times per year; and (ii) monthly inspection of the final closure systems for the first year and quarterly inspections thereafter. A monitoring plan which addresses groundwater monitoring has been prepared and is included in the Closure Report. Groundwater monitoring shall continue throughout the post-closure care period in accordance with the Plan.

5.6 Post-Closure Land Use

The primary land use for Sutton after closure will be open dormant green space and open water. Post-closure use of the property shall not affect the integrity of the closure system, or the function of the monitoring systems. The Division may approve disturbance if the owner or operator demonstrated that disturbance of the closure system will not increase the potential threat to human health or the environment.

5.7 Completion of Post-Closure Care

The Division shall be notified following certification of completion of the post-closure care period for the facility and that a certification signed by a registered professional engineer licensed in the state of North Carolina, verifying that post-closure care has been completed in accordance with the post-closure plan has been placed in the operating record.

6 FINANCIAL ASSURANCE

In accordance with the North Carolina Solid Waste Management Rules (15A NCAC 13B.1628) and North Carolina Session Law S.L. 2011-262, financial assurance will be provided by DEP in the form of the Corporate Financial Test (40 C.F.R. §258.74(e)). Documentation as required by 40 C.F.R. §258.74(e)(2) shall be placed in the facility operating record before the initial receipt of waste. The Director will be notified when the documentation of financial assurance has been placed in the operating record.

After the initial placement of documentation of financial assurance as required by 40 C.F.R. §258.74(e)(2) in the facility operating record, DEP will annually update the information and place updated information in the operating record within 90 days following the close of their fiscal year. The Director may provide up to an additional 45 days if DEP can demonstrate that 90 days is insufficient time to acquire audited financial statements.

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Appendix L
Cost Estimate

This business and technical information requested by DEQ is “confidential” pursuant to N.C.G.S. § 132-1.2 and, therefore, is not a public record subject to public disclosure under North Carolina’s Public Records Law. Accordingly, it is being submitted under separate cover concurrent herewith.

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Appendix K
Volume Calculations

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BORROW LOCATION	MATERIAL (CU.YDS)
1	33,000
2	12,000
3	22,000
4	42,000
5	91,000
6	23,000
TOTAL	223,000

NOTE: 1 THRU 4 BASED ON CUT TO EL. +20.0
5 & 6 BASED ON 4' CUT BELOW EL. 20.0
TO EL. +16.0. SEE NOTES 7 & 8.

ESTIMATED QUANTITIES
(NET BY FIELD)

ITEM	1984 SCOPE (NOTE 2)	1983 SCOPE (NOTE 2)	NOTES
1. CLEARING	2 ACRES.	95 ACRES	
2. EXCAVATION	3915,613 CY (SEE NOTE 4)	16,650 CY	SEE DRAWINGS NOTED ABOVE
3. FILL	504,741 CY	171,33[illegible] CY	SEE CONSTRUCTION
4. CRUSHED STONE	2694 CY	—	SEE ACCESS ROAD INSTALLATION
5. SEEDING	2275 ACRES	6[illegible]5 ST	
6a. RIP RAP	1,400 TON	-0-	
6b. FILTER FABRIC	2400 SY	-0-	
7a. 48" ø RISER	21 LF	10 LF	
7b. 36" ø CULVERT	70 LF	-0-	
7c. 24" ø CULVERT	0	120 LF	
8. 30" ø CMP	-0-	500 LF	D-3238-3
9. RAW POND OUTLET STRUCTURE	SEE D-3252	SEE D-3252	
10. CLAY LINER	87 ACRES	—	SEE D-3237 SH-3
11. MAC FILL	80,077 CY	—	SEE SECTION D-3236-1

GENERAL NOTES

1. DIKES WERE CONSTRUCTED TO ELEVATION +22.0 FOR THE NEW AND EXISTING ASH POND AREAS. SITE DRAINAGE AND ACCESS TO THE DIKE CREST IN AREA WERE ALSO COMPLETED DURING THAT PHASE.
2. THE 1984 SCOPE WILL INCLUDE RAISING DIKES FOR THE EXISTING ASH POND AREA TO ELEVATION +28.0 AND RAISING DIKES IN THE NEW POND AREA TO ELEVATION +24.0. MODIFICATIONS TO THE DISCHARGE STRUCTURES FOR THE NEW AND EXISTING ASH PONDS ARE ALSO INCLUDED IN THE 1984 SCOPE OF WORK.
3. THE CREST OF INTAKE CANAL DIKE WILL BE LOWERED AT THE OUTER END APPROXIMATELY TO ELEVATION +3.5 FOR ASH POND EXPANSION.
4. ALL MATERIAL FOR DIKE FILL TO BE OBTAINED FROM WITHIN ASH POND AREA OR OTHER DESIGNATED BORROW AREAS, SEE NOTE 5.
5. ADDITIONAL BORROW SHALL BE FROM AREAS 1-4 AS SHOWN ON (D,10) ONLY. CUT AREAS 1-4 TO EL. +20.0 AND AREAS 5-6 TO EL. +16.0. SLOPE TO DRAIN TO EXISTING DRAINAGE STRUCTURES (SEE D-3230, (H,11)).
6. RELOCATE ROAD AS SHOWN ON (D,10). MIN ROAD EL. SHALL BE +18.0. FOR ROAD TYPICAL SECTION SEE D-3237-0.

LIST OF DRAWINGS

D-3236	PLAN - (SHEET 1)
D-3237	DIKE SECTIONS (3 SHEET 1)
D-3238	SECTIONS & DETAILS (SHEET 1)
D-3239	DIKE SECTIONS (SHEET 1)
D-3252	PLAN - (SHEET 2)
D-3[illegible]	SECTIONS & DETAILS (SHEET 2)

REFERENCE DRAWINGS

BROWN & ROOT DRAWINGS
G-3177 NORTH POND DISCHARGE STRUCT. - SHT 1
G-3178 NORTH POND DISCHARGE STRUCT. - SHT 2

SPECIFICATIONS

FPE & CO - 82-S-287 L.V. SUTTON STEAM ELECTRIC PLANT SPECIFICATION FOR NEW ASH POND EARTHWORK.

EXHIBIT 1

NO.	DATE	REVISION	BY	CH	APPROVED
6	10-14-85	AS-BUILT	TKP	[illegible]	[illegible]
5	5-10-84	UPDATED PROPERTY LINE, ADD'L D.I. LIMITS & S.C.S. (SH 1,3)	BDS	CH	[illegible]
4	5-15-83	REVISED EST. QUANTITIES (6/8) ADD ST. APPR. RDS.	BDS	[illegible]	[illegible]
3	4-15-83	ISSUED FOR CONSTRUCTION W&S EXPANSION WORK REVISED EST. QUANTITIES (6/8)	RK	CH	[illegible]
2	2-15-83	ISSUED FOR CONSTRUCTION REVISED PLAN FOR 1983 EXPANSION WORK	RSF	[illegible]	[illegible]
1	4-1-83	[illegible]	[illegible]	[illegible]	[illegible]
0	1/21/83	ISSUED FOR CONSTRUCTION	RSA	[illegible]	[illegible]
A	DEC 1 '82	ISSUED FOR SCHEMES	RSA	[illegible]	[illegible]

CAROLINA POWER & LIGHT COMPANY
FOSSIL PLANT ENGINEERING & CONSTRUCTION DEPT.

L V SUTTON STEAM ELECTRIC PLANT
ASH POND EXPANSION (1983-1984)
SITE PLAN

SCALE 1" = 500'
APPROVED L B Wilson
DATE 1/21/83
UNIT / SECTION
DR. BDS
CH. A Huntley
DWG. NO. D-3235

OFFICIAL COPY
Oct 30 2019

NEW POND AREA
(SEE NOTES ON D-3252)

EXISTING POND AREA - NOTES

1. NO LINER THIS AREA
2. EXISTING OPERATING EL. +20
3. MAXIMUM OPERATING EL. +26
4. FINISHED DIKE TOP EL. +28

FILL AREA

SECTION D-323C-1
(H,14) N.T.S.

SECTION D-323C-2
(G,14) N.T.S.

SECTION D-323C-3
(J,16) N.T.S.

SECTION D-323C-4
(I,16) N.T.S.

TOPOGRAPHIC MAPPING NOTE

ALL TOPOGRAPHIC DATA SHOWN IS BASED ON AERIAL MAPPING PRIOR TO NEW ASH POND CONSTRUCTION OBTAINED MARCH, 1983.

ESTIMATED QUANTITIES
SEE D-3235

NOTES
SEE D-3252

REFERENCE DRAWINGS
SEE D-3235 (LIST)

SPECIFICATIONS
SEE D-3235

LAYOUT NOTE
1- ℄ LAY OUT DATA BY FIELD

PLAN
SCALE: 1"=100'

EXHIBIT 2

NO.	DATE	REVISION	BY	CH	APPROVED
7	10-14-85	...AS-BUILT.....	DSH	KAC	
6	10-29-84	REVISED PIPE ROUTING (L,G) 4 PENETRATIONS (G,16) 2(G,14) 2(G,12) ADDED MANHOLE (G,13) ADDED RIGHT DIKE TOE	KAC	KAC	
5	10-25-84	REVISED PIPE ROUTING (G,16) 4 PENETRATIONS (G,16) 2(G,14) 2 (H,16) ADDED MANHOLE (H,16)	DDB	KAC	
4	7-11-84	REVISED PIPE ROUTING (K,N) 1 PENETRATION (G,16) & 3 (H,16)	WDP	KAC	
3	4-18-84	REVISED DIKE ALIGNMENT (G,16) & (H,16) ADDED PENETRATIONS (G,16) & (H,16)	KAC	KAC	
2	2-29-84	REVISED PIPE ALIGNMENT (K,N) & (L,N) ADDED PENETRATIONS (K,N) & (L,N)	WDP	KAC	
1	4-1-83	ADDED (H,16) PENETRATION (H,16) & (H,14) ADDED PENETRATIONS (G,16) & (G,14) ADDED MANHOLE (G,15) REVISED PIPE ROUTING (F-H)	WDP	KAC	
0	JAN-21-83	ISSUED FOR CONSTRUCTION	KAC	KAC	
A	DEC. 1, '82	ISSUED FOR COMMENTS	KAC	KAC	

CAROLINA POWER & LIGHT COMPANY
FOSSIL PLANT ENGINEERING & CONSTRUCTION DEPT.

L.V. SUTTON STEAM ELECTRIC PLANT
ASH POND EXPANSION 1983-1984
PLAN - SHEET 1

SCALE 1" = 100'
UNIT/SECTION
DRAWING NO. D-3236

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Oct 30 2019

NEW ASH POND AREA NOTES

1- MINIMUM DEPTH FOR EXCAVATION EL. +13, ALL SUITABLE FILL TO BE OBTAINED INSIDE POND AREA.
2- AREA TO BE LINED WITH 12" LAYER OF CLAY. MINIMUM FINISHED LINER EL. +14.
3. LINE INSIDE DIKE SLOPES TO EL. +32 (SEE SECTIONS). PROVIDE 2'-0" SOIL COVER FOR LINER ON SLOPES.
4. INITIAL POND OPERATING EL. + 22.
5. MAXIMUM POND OPERATING EL. + 32.
6- FINISHED DIKE TOP EL. + 34.
7- PROVIDE RIP RAP SLOPE PROTECTION FOR DIKE SLOPES ALONG CANALS REFERENCE C, SEE SPECIFICATIONS NOTES 3 & 4, D-3237.

ESTIMATED QUANTITIES
SEE D-3235

GENERAL NOTES
SEE D-3237

REFERENCE DRAWINGS
SEE D-3235

SPECIFICATIONS
SEE D-3235

TOPOGRAPHIC MAPPING NOTE

ALL TOPOGRAPHIC DATA SHOWN IS BASED ON AERIAL MAPPING PRIOR TO NEW ASH POND CONSTRUCTION OBTAINED MARCH 1983.

LAYOUT NOTE

& LAYOUT DATA BY FIELD.

EXHIBIT 3

PLAN
SCALE 1"=100'

DETAIL D-3252-1
SCALE 16'-1"-0"

SECTION
SCALE 1"=10'

SECTION D-3252-1
SCALE: 1½" = 1'-0"

NO.	DATE	REVISION	BY	CH	APPROVED
4	10-14-85	AS-BUILT			
3	4-15-84	REVISED FOR CONSTRUCTION. ASH POND EXPANSION I WORK. ADDED RIP RAP TO PLAN (1,4) REVISED LAYOUT DATA, NOTES (6)	KW.	GM	
2	FEB. 19, '84	REVISED FOR CONSISTENCY / ENGINEERING. REVISED DIKE-PLANT AREA TOP ELEVATION. ADDED POND FILL	WDT	DSH	
1	1-1-83	ADD 1: PROVIDE NEW DIKE, SEDIMENTATION BASIN, DELETE TEMP DIKE, SEDIMENTATION BASIN, PROVIDE STOCKPILE (2,4)	GMH	MSG	
0	1/21/83	ISSUED FOR CONSTRUCTION	CLH		

CAROLINA POWER & LIGHT COMPANY
FOSSIL PLANT ENGINEERING & CONSTRUCTION DEPT.
L.V. SUTTON STEAM ELECTRIC PLANT
ASH POND EXPANSION 1983-1984
PLAN - SHEET 2

SCALE 1" = 100' | APPROVED | DATE 1/21/83
UNIT/ PROJ. SECTION CIVIL | DWG. NO. D-3252
DR. KDS, WH
CH.

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Oct 30 2019



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Oct 30 2019



INQUIRY #: 3961890.4

YEAR: 1958

= 750'

N

EDR

OFFICIAL COPY
Oct 30 2019



OFFICIAL COPY
Oct 30 2019



INQUIRY #: 3961890.4

YEAR: 1969

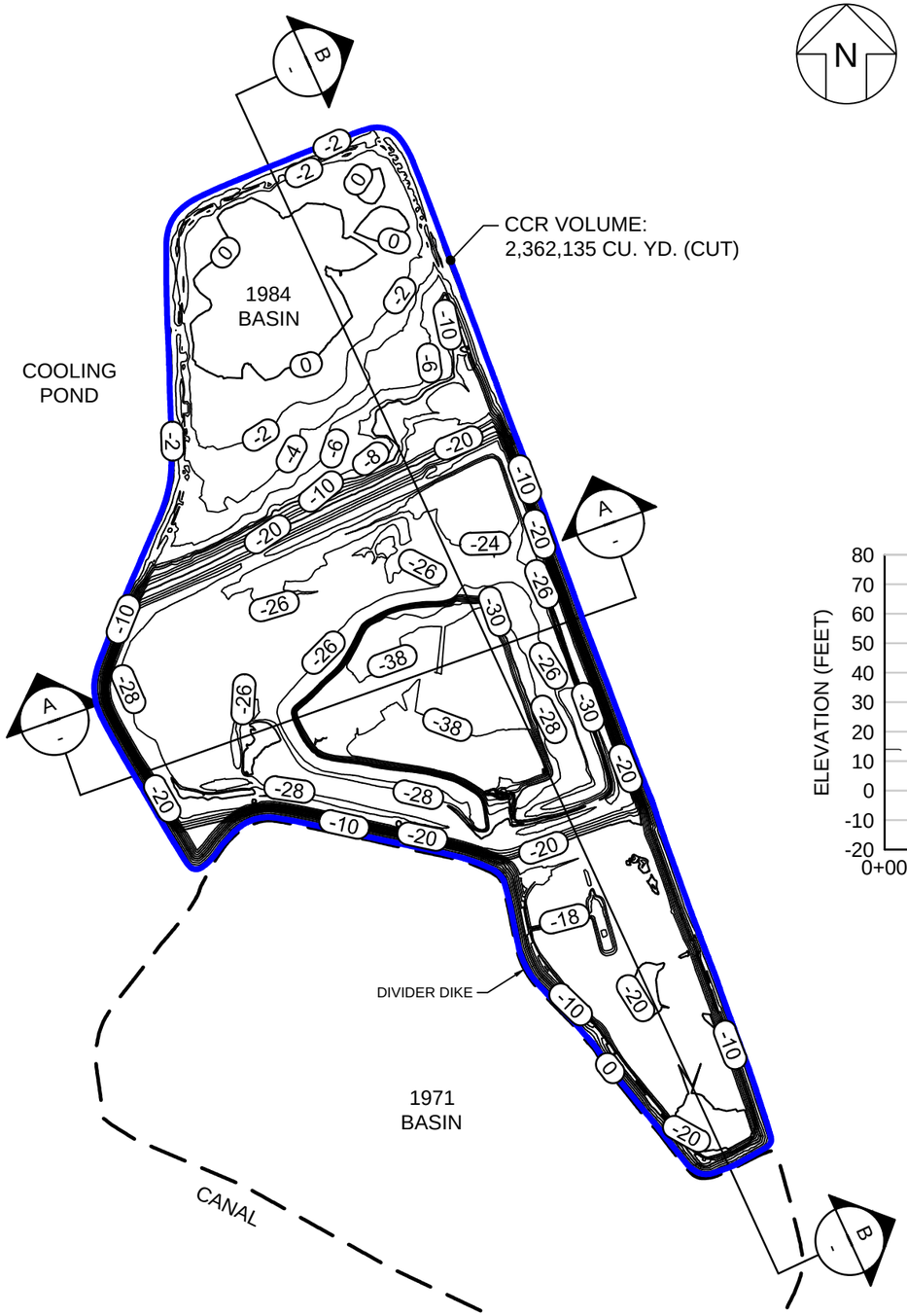
= 500'

N

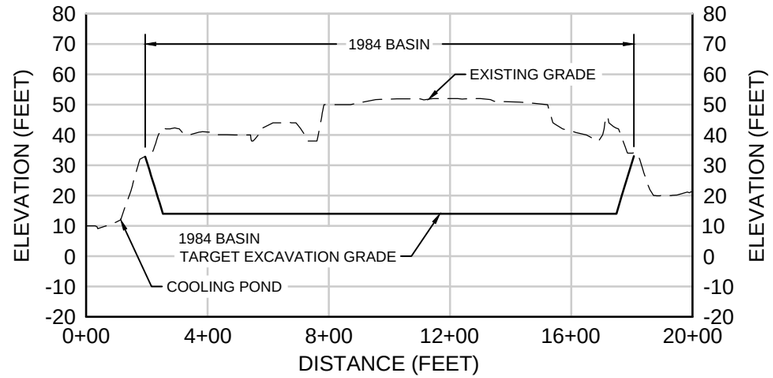
EDR


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Oct 30 2019
INQUIRY #: 3961890.4
YEAR: 1974
= 1000'
N
EDR

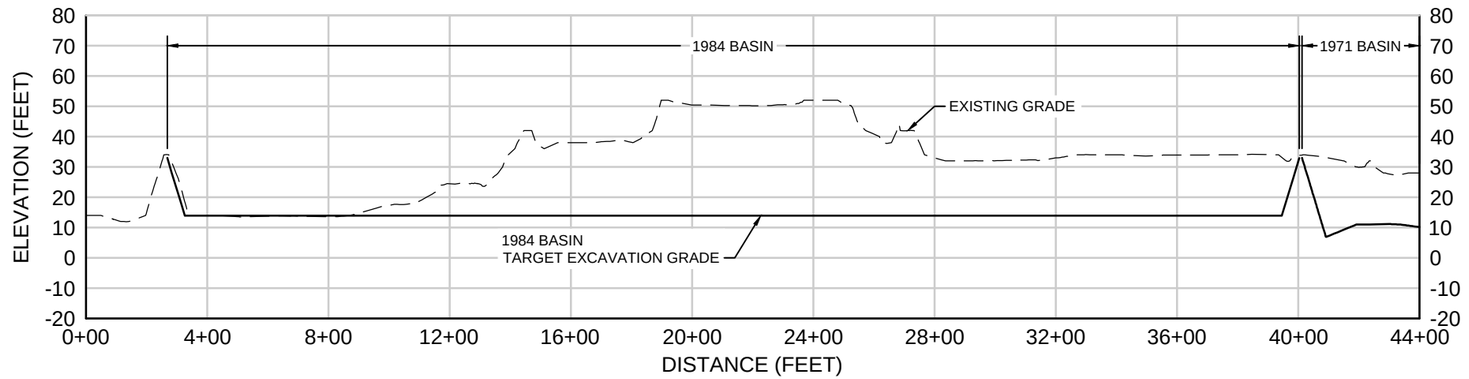
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1 / - PLAN
1984 BASIN ISOPACH
SCALE: 1"=500'



A / 1 SECTION
1984 BASIN



B / 1 SECTION
1984 BASIN

NOTE:

1. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (FEET, NAVD88).

LEGEND
- BASIN BOUNDARY
- CCR VOLUME ESTIMATION LIMIT
- EXISTING PROFILE GRADE
- -2 ISOPACH MAJOR CONTOUR

0 500'
HORIZONTAL
SCALE IN FEET

0 50'
VERTICAL
SCALE IN FEET

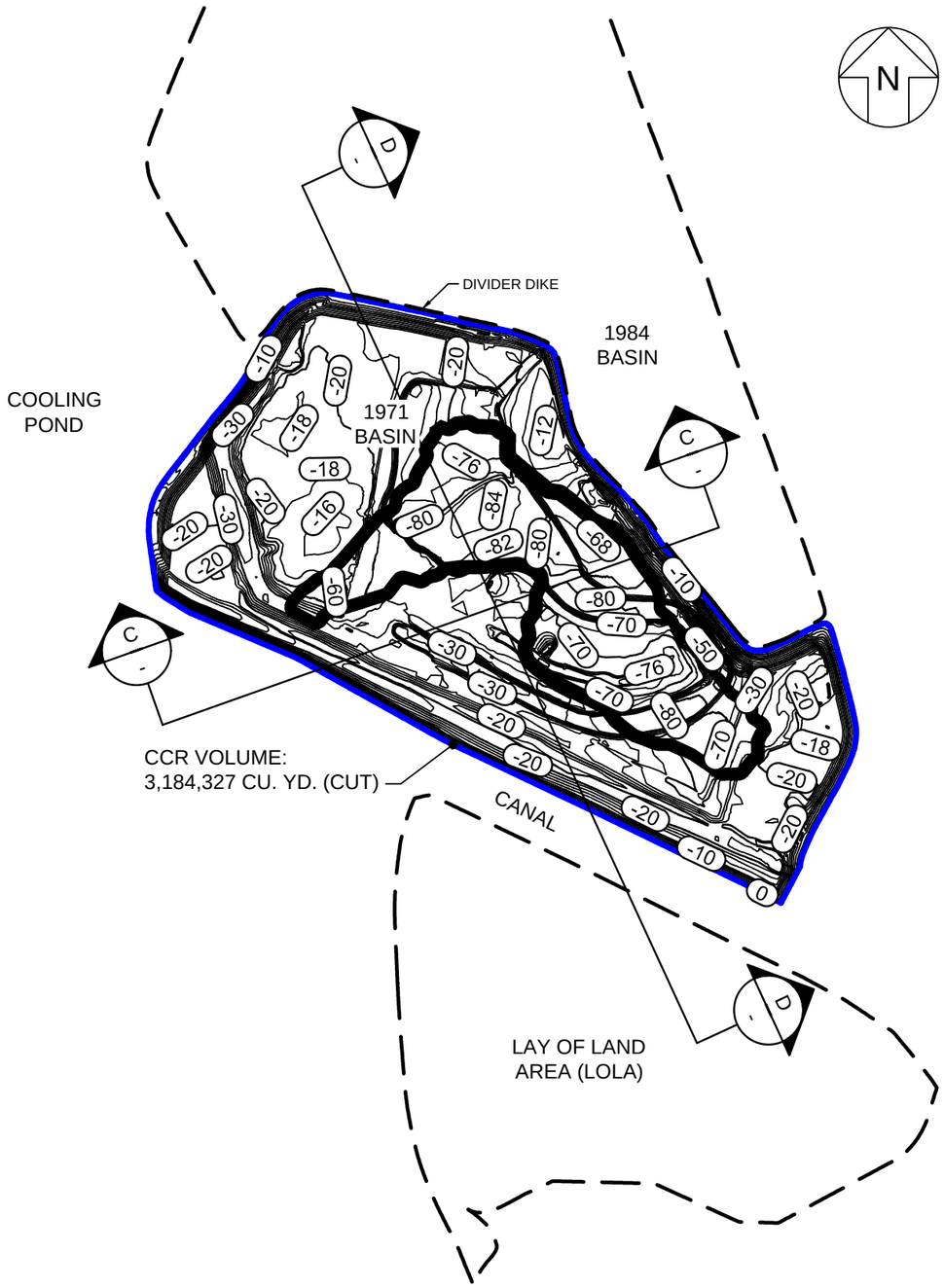
SUTTON ENERGY COMPLEX
1984 BASIN
CCR VOLUME

Geosyntec consultants

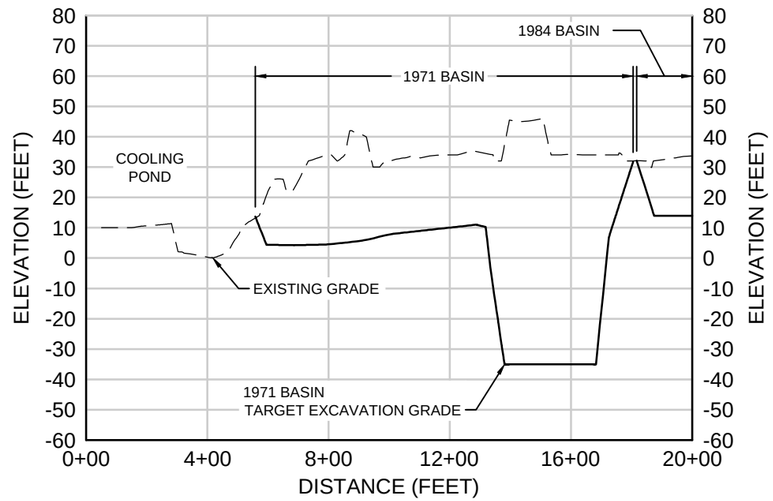
PROJECT NO: GC5770 | SEPTEMBER 2016 | FIGURE 1

K:\D_PROJECTS_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\CCR VOLUME FIGURES\GC5770.04 F001 1984 BASIN_GRADING ISOPACH

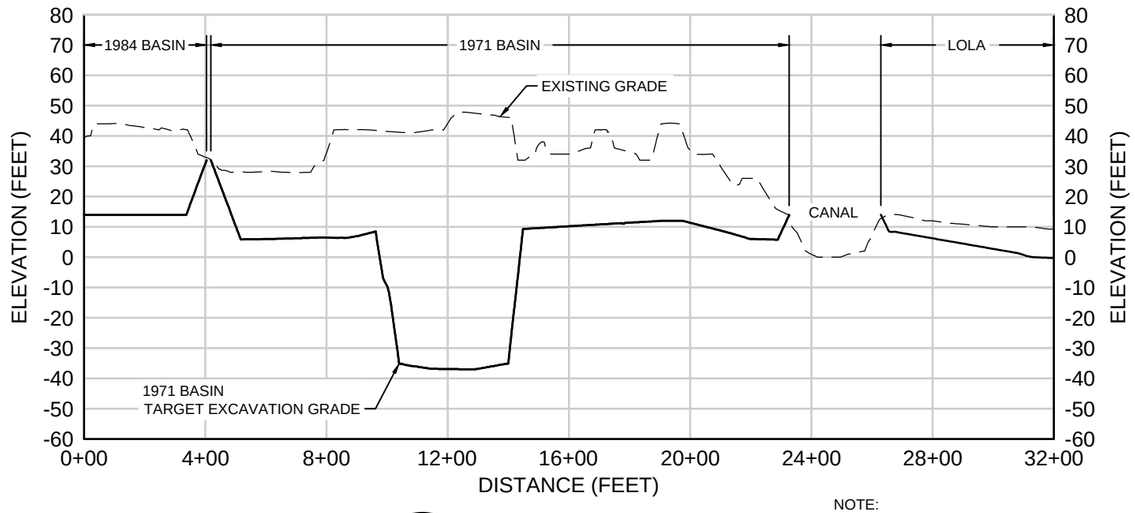
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Oct 30 2019



2 / - PLAN
1984 BASIN ISOPACH
SCALE: 1"=500'



C / 2 SECTION
1971 BASIN



D / 2 SECTION
1971 BASIN

NOTE:

1. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (FEET, NAVD88).

LEGEND

- BASIN BOUNDARY
- CCR VOLUME ESTIMATION LIMIT
- EXISTING PROFILE GRADE
- -10 ISOPACH MAJOR CONTOUR

0 500'
HORIZONTAL
SCALE IN FEET

0 50'
VERTICAL
SCALE IN FEET

SUTTON ENERGY COMPLEX
1971 BASIN
CCR VOLUME

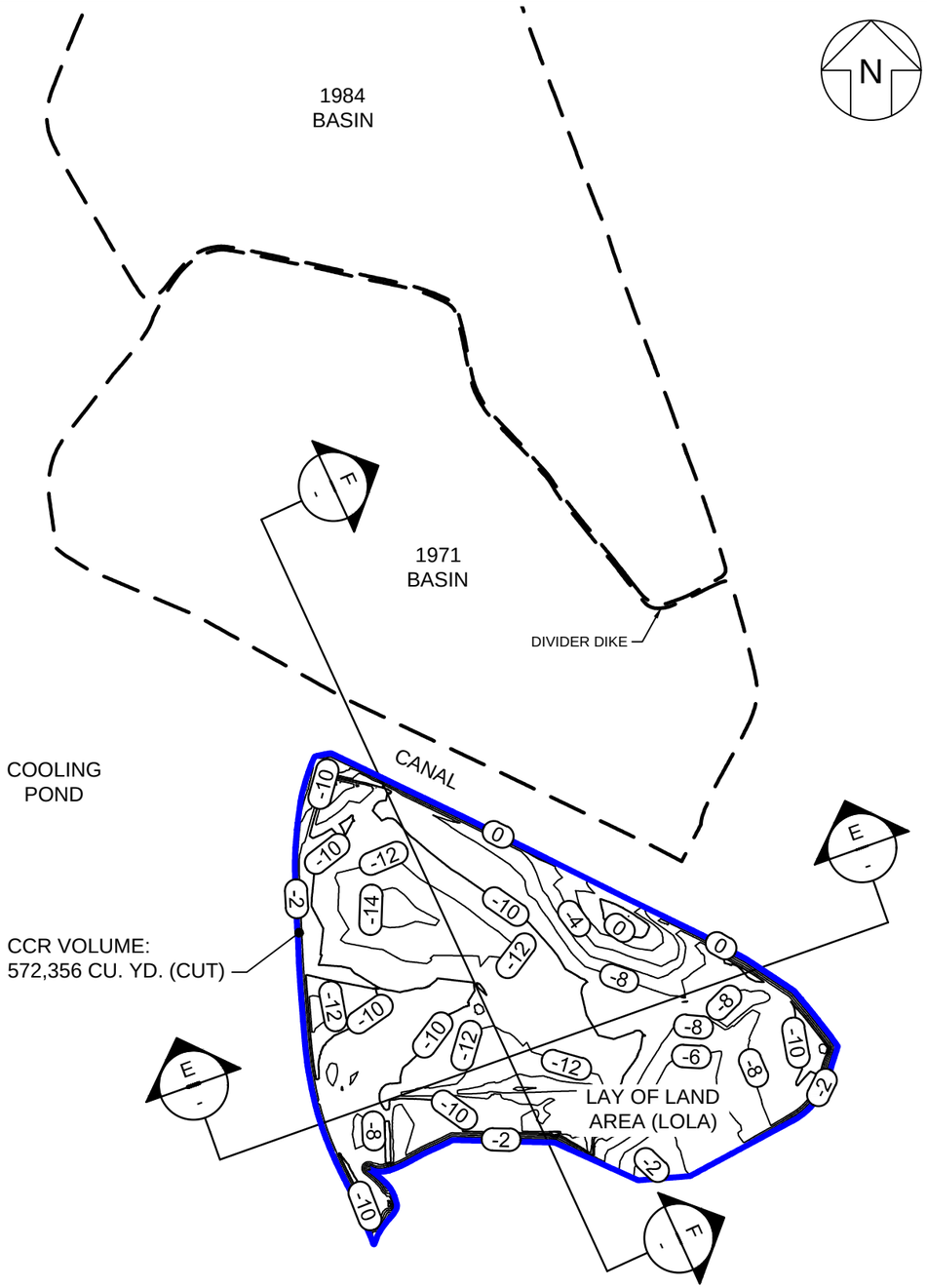
Geosyntec consultants

PROJECT NO: GC5770 | SEPTEMBER 2016 | FIGURE 2

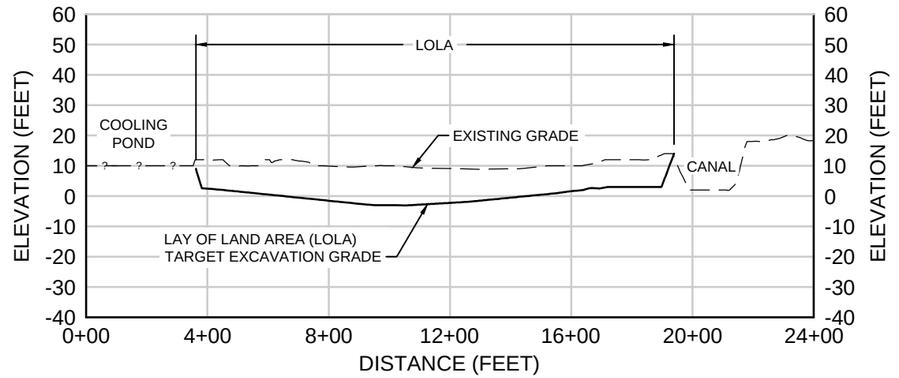
K:\D_PROJECTS_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\CCR VOLUME FIGURES\GC5770.04 F002 1971 BASIN_GRADING ISOPACH

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Oct 30 2019

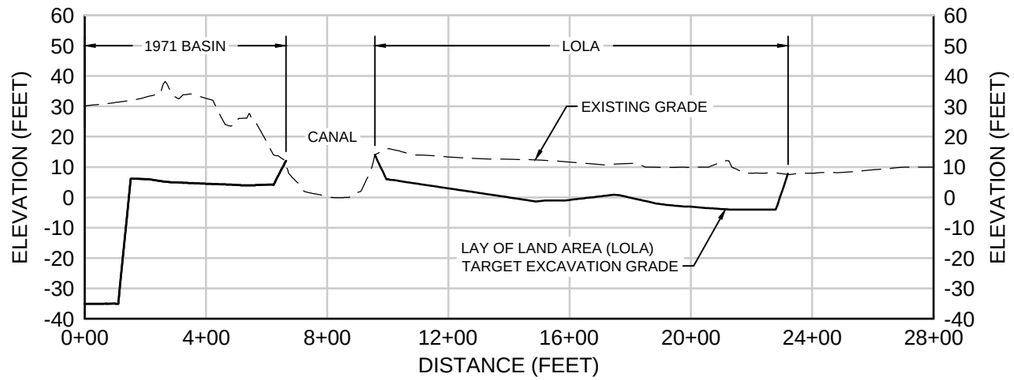
K:\D_PROJECTS_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\CCR VOLUME FIGURES\GC5770.04 F003 LOLA_GRADING ISOPACH



3 / - PLAN
LAY OF LAND AREA (LOLA) ISOPACH
SCALE: 1"=500'



E / 3 SECTION
LAY OF LAND AREA (LOLA)



F / 3 SECTION
LAY OF LAND AREA (LOLA)

NOTE:

1. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (FEET, NAVD88).

LEGEND

- BASIN BOUNDARY
- CCR VOLUME ESTIMATION LIMIT
- EXISTING PROFILE GRADE
- -2 ISOPACH MAJOR CONTOUR

0 500'
HORIZONTAL
SCALE IN FEET

0 50'
VERTICAL
SCALE IN FEET

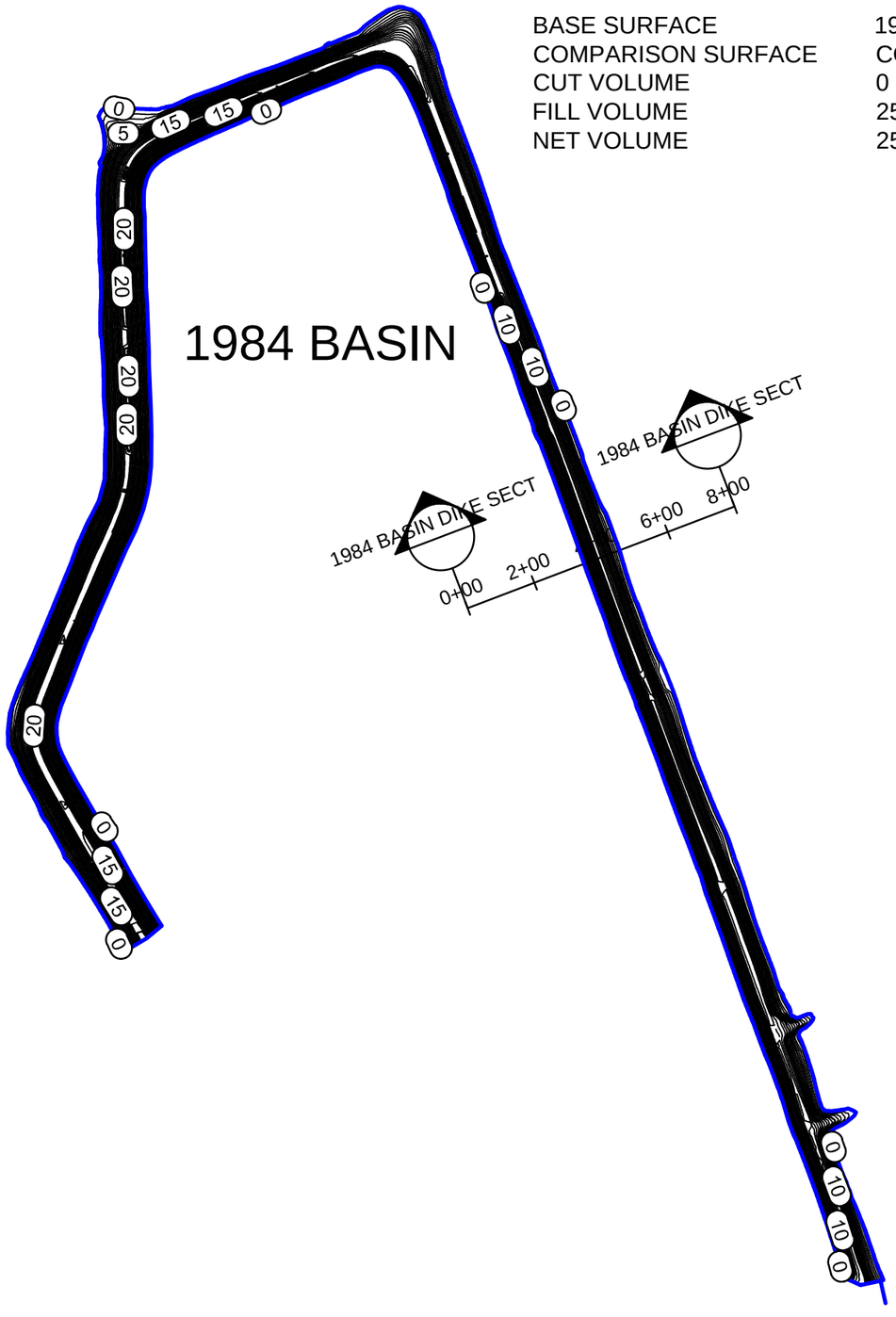
SUTTON ENERGY COMPLEX
LAY OF LAND AREA (LOLA)
CCR VOLUME

Geosyntec consultants

FIGURE
3

PROJECT NO: GC5770 | SEPTEMBER 2016

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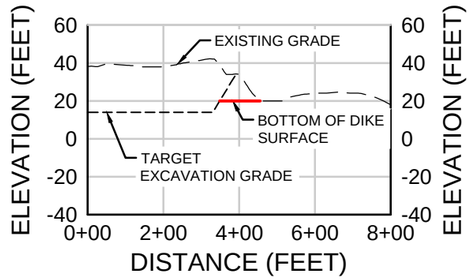


BASE SURFACE — 1984 BASIN BOTM OF DIKE
COMPARISON SURFACE — COMPOSITE EG_BOTM ASH
CUT VOLUME — 0 CU. YD.
FILL VOLUME — 255,028 CU. YD.
NET VOLUME — 255,028 CU. YD.<FILL>

N

LEGEND

- EXISTING TOPO GRADE
- DIKE/VOLUME BOUNDARY
- PROPOSED BOTTOM OF DIKE
- TARGET EXCAVATION GRADE



1984 BASIN DIKE SECT
HORIZONTAL: 1" =400'
VERTICAL: 1" =80'

0 400' 800'
SCALE IN FEET

1984 BASIN DIKE VOLUME -
AVAILABLE FILL
L.V. SUTTON ENERGY COMPLEX
WILMINGTON, NORTH CAROLINA 28401

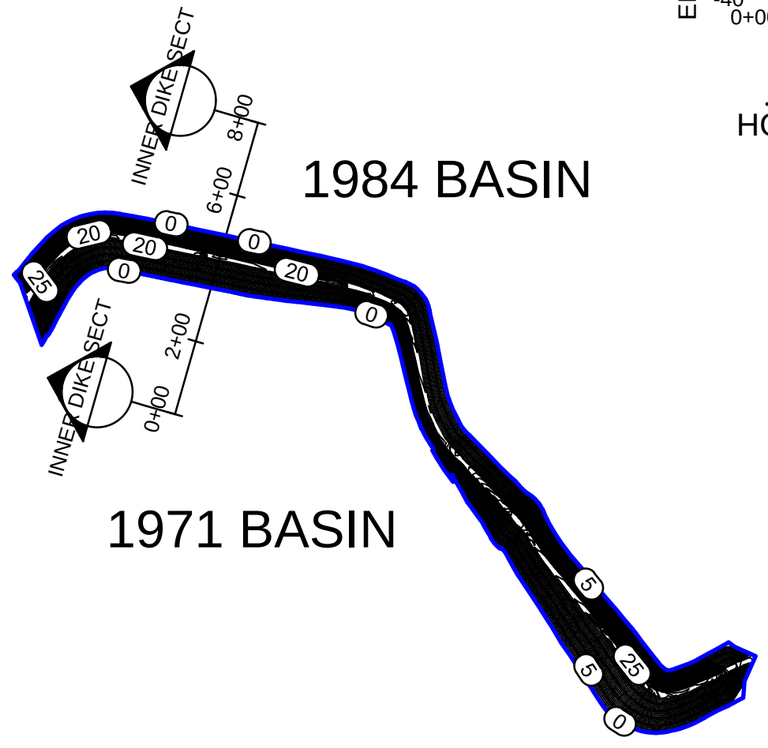
Geosyntec consultants

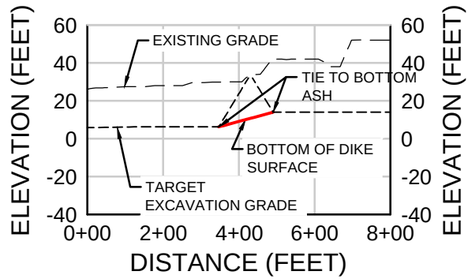
FIGURE 1

PROJECT NO: GC5770 | NOVEMBER 2015

K:_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\GC5770.04 F001

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INNER DIKE SECT
HORIZONTAL: 1" =400'
VERTICAL: 1" =80'



LEGEND

- EXISTING TOPO GRADE
- DIKE/VOLUME BOUNDARY
- PROPOSED BOTTOM OF DIKE
- TARGET EXCAVATION GRADE

BASE SURFACE	1984_1971 INNER DIKE BOTM
COMPARISON SURFACE	COMPOSITE EG_BOTM ASH
CUT VOLUME	4 CU. YD.
FILL VOLUME	149,280 CU. YD.
NET VOLUME	149,276 CU. YD.<FILL>

0 400' 800'
SCALE IN FEET

1971 BASIN INTERIOR DIKE VOLUME - AVAILABLE FILL
L.V. SUTTON ENERGY COMPLEX
WILMINGTON, NORTH CAROLINA 28401

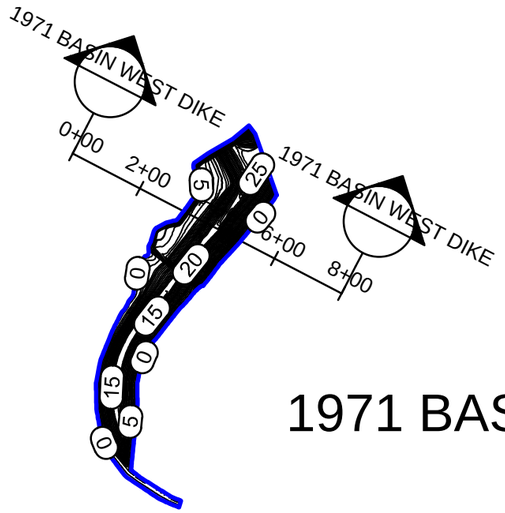
Geosyntec consultants

PROJECT NO: GC5770 | NOVEMBER 2015

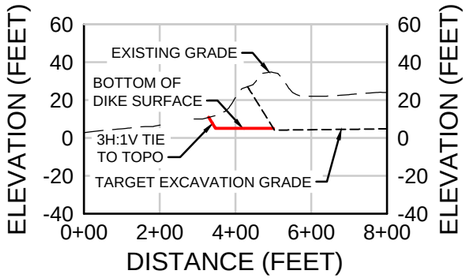
FIGURE 2

K:_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\GC5770.04 F001A

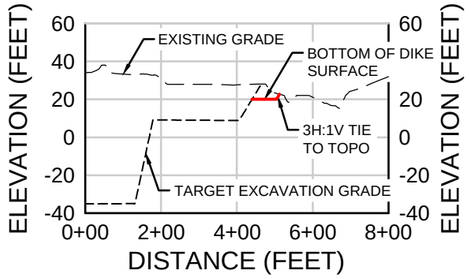
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1971 BASIN



1971 BASIN WEST DIKE
HORIZONTAL: 1" =400'
VERTICAL: 1" =80'

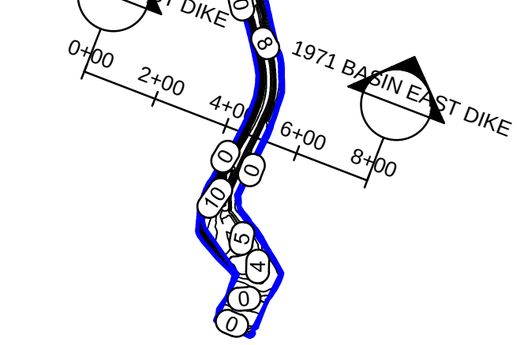


1971 BASIN EAST DIKE
HORIZONTAL: 1" =400'
VERTICAL: 1" =80'



LEGEND

- EXISTING TOPO GRADE
- DIKE/VOLUME BOUNDARY
- PROPOSED BOTTOM OF DIKE
- TARGET EXCAVATION GRADE



BASE SURFACE	1971 WEST BOTM DIKE
COMPARISON SURFACE	COMPOSITE EG_BOTM ASH
CUT VOLUME	1 CU. YD.
FILL VOLUME	53,859 CU. YD.
NET VOLUME	53,858 CU. YD.<FILL>

BASE SURFACE	1971 EAST BOTM DIKE
COMPARISON SURFACE	COMPOSITE EG_BOTM ASH
CUT VOLUME	268 CU. YD.
FILL VOLUME	15,839 CU. YD.
NET VOLUME	15,571 CU. YD.<FILL>

0 400' 800'
SCALE IN FEET

1971 BASIN DIKE VOLUME -
AVAILABLE FILL
L.V. SUTTON ENERGY COMPLEX
WILMINGTON, NORTH CAROLINA 28401

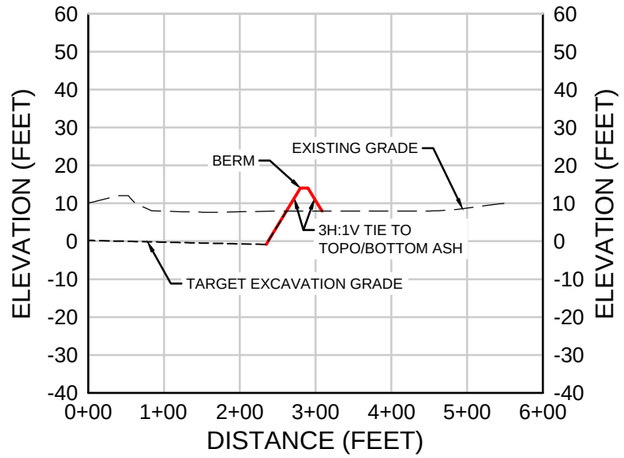
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PROJECT NO: GC5770 | NOVEMBER 2015

FIGURE
3

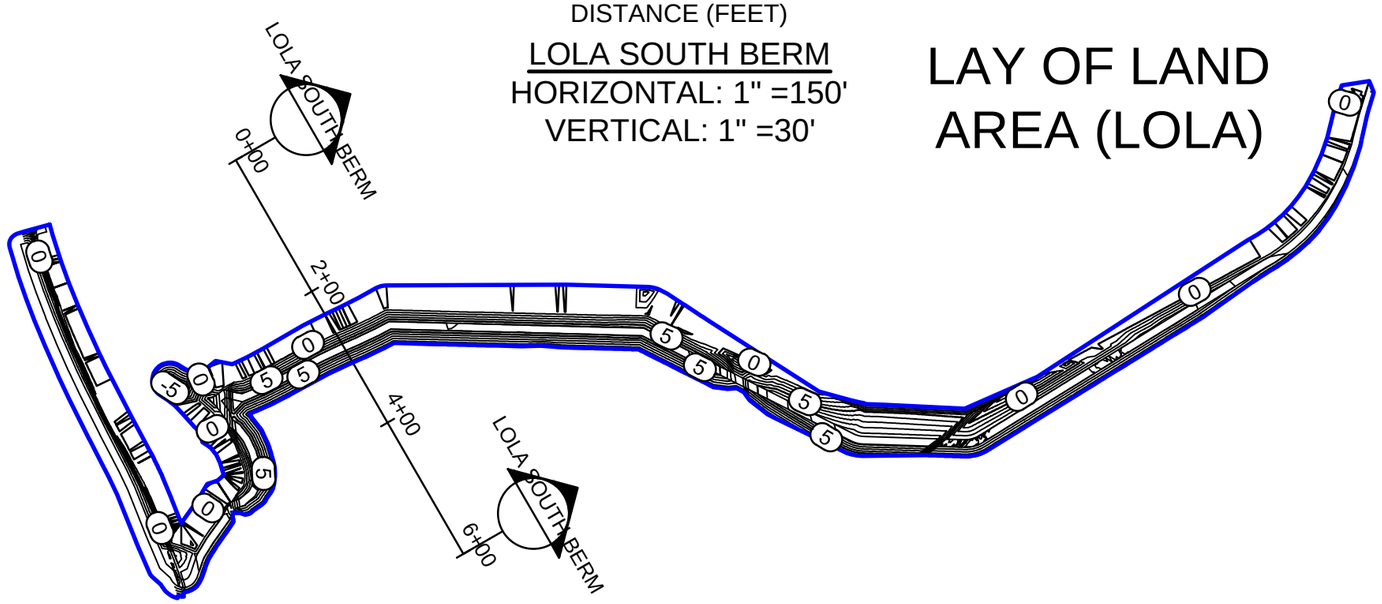
K:_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\GC5770.04 F001B

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LOLA SOUTH BERM
HORIZONTAL: 1" =150'
VERTICAL: 1" =30'

LAY OF LAND AREA (LOLA)



LEGEND
- EXISTING TOPO GRADE
- DIKE/VOLUME BOUNDARY
- PROPOSED BOTTOM OF DIKE
- TARGET EXCAVATION GRADE

BASE SURFACE	COMPOSITE EG_BOTM ASH
COMPARISON SURFACE	LOLA TOP OF BERM GRADE
CUT VOLUME	532 CU. YD.
FILL VOLUME	11,577 CU. YD.
NET VOLUME	11,045 CU. YD.<FILL>

0 200' 400'
SCALE IN FEET

LOLA BERM VOLUME - NEW FILL
L.V. SUTTON ENERGY COMPLEX
WILMINGTON, NORTH CAROLINA 28401

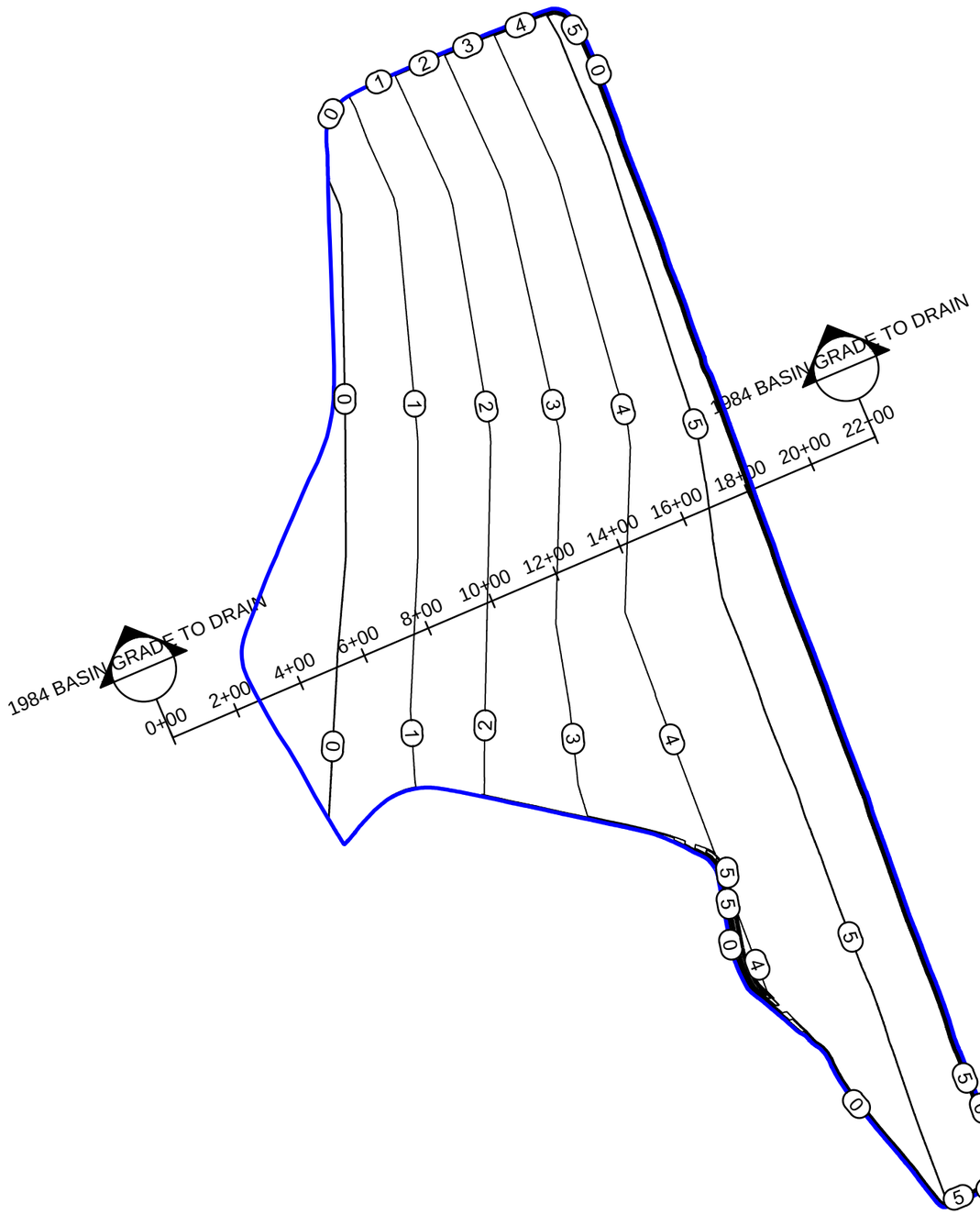
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FIGURE 4

PROJECT NO: GC5770 | NOVEMBER 2015

K:_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\GC5770.04 F001C

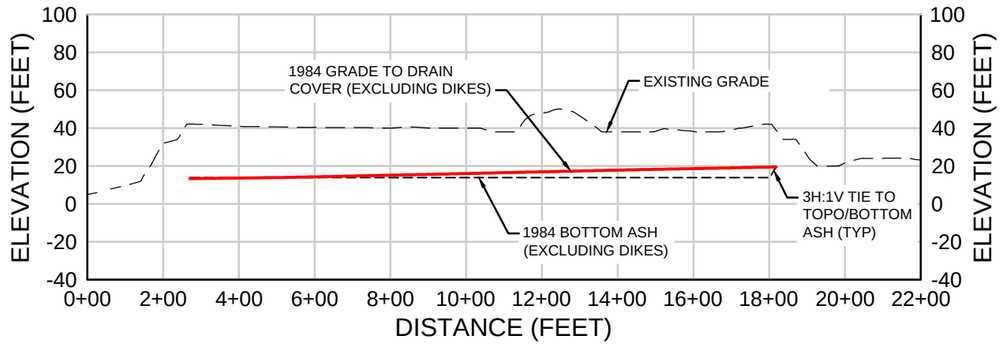
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LEGEND

- EXISTING TOPO GRADE
- DIKE/VOLUME BOUNDARY
- PROPOSED BOTTOM OF DIKE
- TARGET EXCAVATION GRADE



1984 BASIN GRADE TO DRAIN

HORIZONTAL: 1" =400'
VERTICAL: 1" =80'

BASE SURFACE	1984 BASIN GRADE TO DRAIN BOTM ASH_EXLUDES DIKES
COMPARISON SURFACE	1984 BASIN GRADE TO DRAIN COVER_EXLUDES DIKES
CUT VOLUME	2,110 CU. YD.
FILL VOLUME	352,941 CU. YD.
NET VOLUME	350,831 CU. YD.<FILL>

0 400' 800'

SCALE IN FEET

1984 BASIN DIKE VOLUME - NEW FILL
L.V. SUTTON ENERGY COMPLEX
WILMINGTON, NORTH CAROLINA 28401

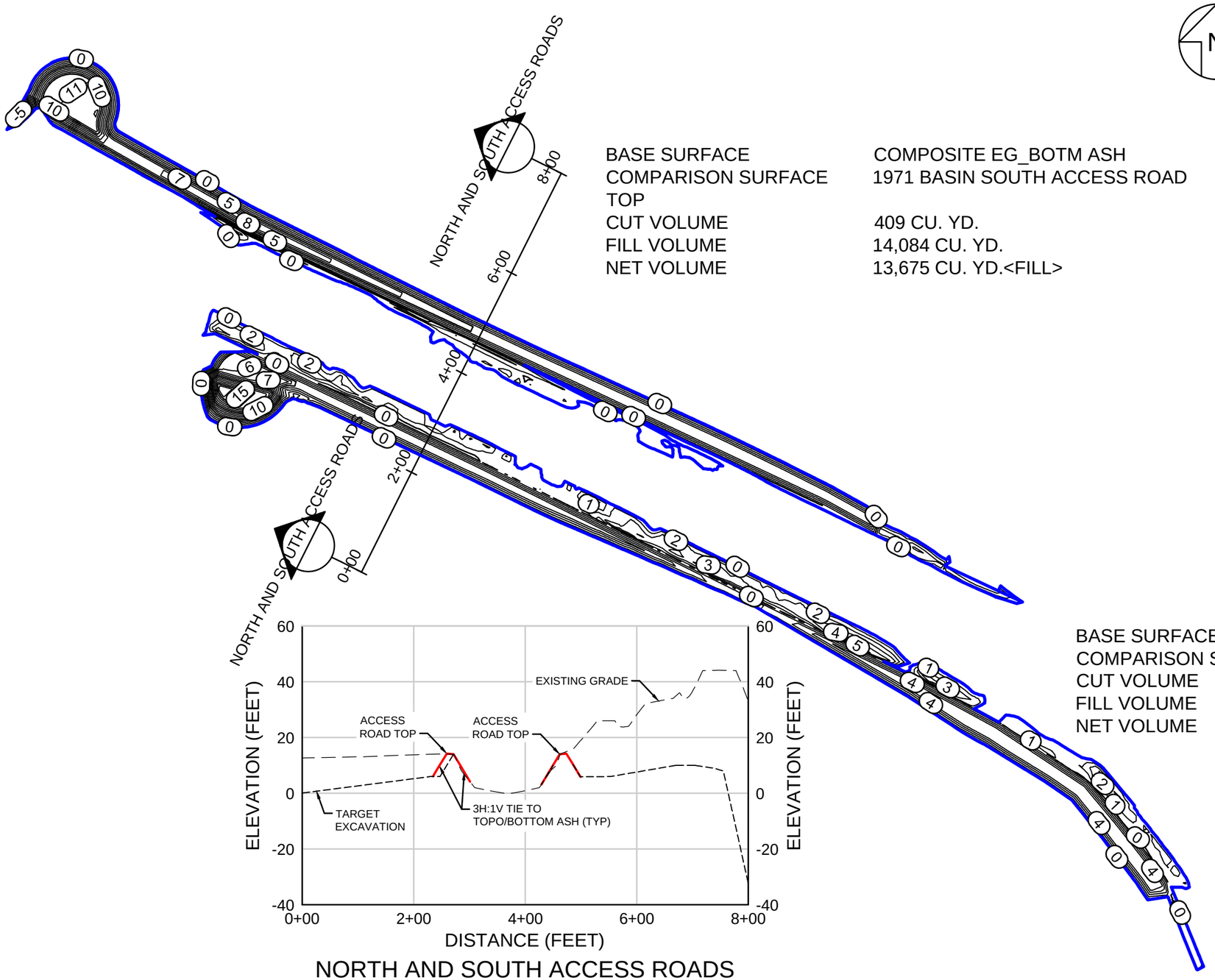
Geosyntec consultants

FIGURE 5

PROJECT NO: GC5770 | NOVEMBER 2015

K:_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\GC5770.04 F002

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LEGEND

- EXISTING TOPO GRADE
- DIKE/VOLUME BOUNDARY
- PROPOSED BOTTOM OF DIKE
- TARGET EXCAVATION GRADE

BASE SURFACE	COMPOSITE EG_BOTM ASH
COMPARISON SURFACE	1971 BASIN SOUTH ACCESS ROAD
TOP	
CUT VOLUME	409 CU. YD.
FILL VOLUME	14,084 CU. YD.
NET VOLUME	13,675 CU. YD.<FILL>

NORTH AND SOUTH ACCESS ROADS
HORIZONTAL: 1" =200'
VERTICAL: 1" =40'

BASE SURFACE	COMPOSITE EG_BOTM ASH
COMPARISON SURFACE	LOLA NORTH ACCESS ROAD TOP
CUT VOLUME	17 CU. YD.
FILL VOLUME	14,368 CU. YD.
NET VOLUME	14,351 CU. YD.<FILL>

0 200' 400'
SCALE IN FEET

1984 BASIN DIKE VOLUME - NEW FILL
L.V. SUTTON ENERGY COMPLEX
WILMINGTON, NORTH CAROLINA 28401

Geosyntec consultants

FIGURE 6

PROJECT NO: GC5770 | NOVEMBER 2015

K:_PROJECTS\D\DUKE ENERGY\SUTTON\DUKE-SUTTON PERMIT CLOSURE (GC5770.04)\FIGURES\GC5770.04 F002A

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I/A

Appendix G
Chemical Characterization Report

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CHEMICAL CHARACTERIZATION REPORT

L.V. SUTTON ENERGY COMPLEX
SITE ANALYSIS AND REMOVAL PLAN

December 2016
Revision 0

Prepared for



Duke Energy Progress, LLC
526 South Church Street
Charlotte, North Carolina 28202

Prepared by



Geosyntec Consultants of NC, PC
1300 South Mint Street, Suite 300
Charlotte, North Carolina 28203
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1. INTRODUCTION

1.1 Overview

Geosyntec Consultants of North Carolina PC (Geosyntec) has prepared this Chemical Characterization Report (Report) as part of the Site Analysis and Removal Plan (Removal Plan) in support of the proposed closure of the Coal Combustion Residuals (CCR) Basins at the L.V. Sutton Energy Complex (Sutton) located near Wilmington, North Carolina. Sutton is located on property owned by Duke Energy Progress, LLC (DEP). This Report is required in accordance with NC Senate Bill SB729 (§ 130A-309.212) and was prepared to fulfill the requirements outlined under § 130A-309.212 (c)(5 through 9).

During the review of historical information in the spring of 2014, Geosyntec identified certain data gaps and proposed a field program to fill these data gaps for the purpose of preparing this report. The field work was subsequently implemented between May and July 2014, and the results were presented in a number of submittals, including (i) the Preliminary Site Investigation Data Report [Geosyntec, 2014a], (ii) the Preliminary Site Investigation Data Report Addendum No. 1 [Geosyntec, 2014b], (iii) the Data Interpretation and Analysis Report [Geosyntec, 2014c], and (iv) the Data Interpretation and Analysis Report Addendum No. 1 [Geosyntec, 2014d].

The information presented and summarized in the current document has been extracted and edited from the above-referenced reports. Note that additional data were collected by SynTerra during 2015, which were summarized and interpreted in the Comprehensive Site Assessment (CSA) Report and CSA Supplement 1 [2015a, 2016b] and the Corrective Action Plan (CAP, Part 1) [2015b], but were not included in this data summary. These additional data were consistent with historical data and the data collected during Geosyntec's preliminary site investigation and did not change the overall conclusions presented in this Report and the Removal Plan.

1.2 Site Background

Sutton is located in New Hanover County, near Wilmington, North Carolina, situated between the Cape Fear River to the west and the Northeast Cape Fear River to the east. Sutton operated as a three-unit, 575-megawatt (MW) coal-fired power plant. Sutton operated from 1954 until the retirement of the coal-fired units in November 2013. Upon the retirement of the coal-fired units a new, 625-MW gas-fired unit began operating.

Notable features at Sutton related to the scope of this Report include two CCR basins and the Lay of Land Area (LOLA).

Sutton has two CCR basins, and they are referred to as: (i) the 1971 Basin; and (ii) the 1984 Basin. The 1971 Basin was operated from 1971 to 1985, and since then was used alternatively as needed to allow maintenance for the 1984 Basin until the coal units were shut down in November 2013. The 1984 Basin was operated from 1984 to November 2013. Both basins contain fly ash, bottom ash, boiler slag, storm water, ash sluice water, coal pile runoff, and low volume wastewater.

The LOLA is located between the discharge canal and the coal pile. Based on a previous investigation conducted by Geosyntec, the LOLA contains approximately 2 to 15 ft of CCR and

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soil mixtures [Geosyntec, 2014b and 2014d]. More details about this area and its characterization are summarized in Section 2 below.

1.3 Report Organization

The remaining sections of this Report are organized as follows:

- Section 2 summarizes the chemical characteristics of CCR and CCR/soil mixtures analyzed at Sutton;
- Section 3 presents the historical and current groundwater quality at Sutton; and
- Section 4 contains the cited references.

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2. CHEMICAL CHARACTERISTICS OF CCR AND SOIL

2.1 Overview

As part of the evaluation of closure options for the CCR basins at Sutton, Geosyntec performed hydrogeologic and environmental site assessment activities to supplement historical assessment data collected by other consultants. The supplemental field work to collect the data reported herein was implemented between May 5th and May 29th, 2014, with an additional investigation within the LOLA and the 1971 Basin conducted between June 30th and July 2nd, 2014.

Soil and CCR samples were collected to evaluate background concentrations of constituents of interest (COIs), COI concentrations within the CCR basins, and concentrations of COIs in vadose zone soils located outside of the CCR basins. Note that the term COI has been used in this Report to include all constituents analyzed during this investigation, while SynTerra [2015a and b] subsequently defined the term to only include constituents detected in CCR interstitial water in excess of a North Carolina Groundwater Quality Standard found in the North Carolina Administrative Code (NCAC) Title 15A, Subchapter 2L.0202 (2L or 2L Standards) and the Interim Maximum Allowable Concentrations (IMAC) established by the NCDEQ pursuant to 15A NCAC 02L.0202(c). CCR interstitial water within a basin may not be representative of groundwater conditions outside of a basin and the results were compared to 2L Standards solely to provide a frame of reference.

Soil and CCR samples were collected according to the EPA Region 4 Soil Sampling SOP [EPA 2011a]. The samples were properly preserved, labeled, logged onto a chain-of-custody form, and placed into an iced cooler prior to shipment. The samples were submitted to Lancaster Laboratories located in Lancaster, PA, for analysis of:

- The North Carolina (NC) Hazardous Substance List metals (antimony [Sb], arsenic [As], beryllium [Be], cadmium [Cd], chromium [Cr], copper [Cu], lead [Pb], manganese [Mn], mercury [Hg], nickel [Ni], selenium [Se], silver [Ag], thallium [Tl], zinc [Zn]) using Method SW 846-7471B (Hg) and Method SW 846-6010C (all other metals);
- Major cations (calcium [Ca], magnesium [Mg], sodium [Na], and potassium [K]) using Method SW 846-6010C;
- Major anions (chloride [Cl], bromide [Br], and sulfate [SO_4] using EPA Method 300.0;
- Strontium [Sr], boron [B], barium [Ba], molybdenum [Mo], and iron [Fe] using Method SW 846-6010C; and
- pH using Method SW 846-9045D modified.

Leachability of metals was also evaluated using the Synthetic Precipitation Leaching Procedure (SPLP; EPA Method 1312) for CCR and background soils.

In addition to investigating the CCR within and the soils around and below the CCR basins, the LOLA was investigated between June 30th and July 2nd, 2014 to supplement the historical

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investigation data, delineate the vertical boundaries of the CCR and collect groundwater quality information in the area. Note that groundwater data from this area are summarized in Section 3.

2.2 Coal Combustion Residuals

2.2.1 1984 Basin

Two CCR samples from representative locations and depth increments [SS-SPT9(12.0-14.0 feet) from PZ-Int, and SS-SPT7(4.0-6.0) from the southern portion of the 1984 Basin] were collected from geotechnical cores at a depth corresponding to high CCR content based on visual inspection and professional judgment. The referenced sections of borings were collected into a stainless steel bowl, mixed manually using a stainless steel spoon, and then filled into laboratory-supplied sample containers. The soil and CCR sampling locations are presented on Figure 1. Boring logs are included as an appendix in the Removal Plan.

2.2.2 1971 Basin

During the geotechnical investigation of the 1971 Basin, samples were collected at depths corresponding to high CCR content based on visual observation [SS-SPT3(10.0-12.0), which is the same location as PZ-1971, and SS-GP3(24.0-28.0)], and from soil below the CCR based on visual observations [SS-GP5(20.0-24.0) and SS-GP6(24.0-28.0)]. Furthermore, samples were collected from materials where uncertainty existed in the field whether they should be classified as CCR or soil [SS-GP3 (32.0-36.0), SS-G3 (76.0-80.0), SS-GP3 (80.0-84.0), SS-GP3(72.0-76.0), SS-GP2(72.0-76.0), and SS-GP2(52.0-56.0)]. The soil and CCR sampling locations are presented on Figure 1. Boring logs are included as an appendix in the Removal Plan.

Based on the uncertainty related to the bottom of the CCR within portions of the 1971 Basin, an additional investigation was implemented within the boundaries of the 1971 Basin, but below the design bottom elevation of the 1971 Basin between June 25th and July 2nd, 2014. This deeper area has been termed the 1971 Borrow Area. The additional investigation consisted of geoprobe borings and laboratory tests to delineate the horizontal and vertical extent of CCR within the Borrow Area. Samples were continuously collected during the geoprobe borings. Selected samples were transported for laboratory testing to characterize geotechnical and environmental properties. These laboratory testing results were used to verify the bottom of CCR estimated based on a visual assessment in the field.

Fourteen geoprobe borings were advanced within the 1971 Borrow Area and on the 1971 Basin dike. Two borings were located in a soft ground area covered by vegetation. Access to those two locations was facilitated by DEP by building a temporary access road. Mid-Atlantic Drilling of Wilmington, NC was subcontracted to conduct the geoprobe borings using a track-mounted 6600 rig. The locations of those borings are presented on Figure 2 together with other historical and current boring locations within the CCR basins. In the geoprobe borings, a hollow rod interior lined with a clear plastic sleeve was pushed into the ground. During the borings, samples were continuously collected in 4-ft-long increments. The collected samples were visually classified and logged. Boring logs are included as an appendix in the Removal Plan. Selected samples were then bagged or stored in laboratory-supplied containers, and sent under chain-of-custody protocol for laboratory testing of:

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- The North Carolina (NC) Hazardous Substance List metals (antimony [Sb], arsenic [As], beryllium [Be], cadmium [Cd], chromium [Cr], copper [Cu], lead [Pb], manganese [Mn], mercury [Hg], nickel [Ni], selenium [Se], silver [Ag], thallium [Tl], zinc [Zn]) using Method SW 846-7471B (Hg) and Method SW 846-6010C (all other metals);

- Strontium [Sr], boron [B], barium [Ba], molybdenum [Mo] and iron [Fe] using Method SW 846-6010C;

- pH using Method SW 846-9045D modified; and

- Leachability of metals using the Synthetic Precipitation Leaching Procedure (SPLP; EPA Method 1312).

Note that SynTerra collected additional samples for physical and chemical characterization during the 2015 investigation. Refer to the CSA [SynTerra, 2015a, 2016b] and CAP [SynTerra, 2015b, 2016a] for a summary of these results.

2.2.3 CCR Results

Table 1 summarizes the analytical results for CCR samples and soil samples, and the SPLP results are summarized in Table 2. Hard copies of the laboratory analytical reports are included in Appendix A1.

As can be seen in Table 1, with the exception of antimony, cadmium, mercury, molybdenum, silver, and thallium (which were all basically non-detect), all metallic COIs were higher in CCR compared to soil samples. Furthermore, sulfate and pH levels were also higher in CCR compared to levels in the soil. It is further noted that COI levels appeared to be higher in CCR samples from the 1971 Basin as compared to the 1984 Basin.

This apparent trend generally also holds true for leachable levels of COIs as measured using the SPLP approach. Arsenic still appeared to be leaching at elevated levels from CCR, while boron, iron, manganese, and selenium levels were low to non-detect (Table 2).

As summarized above, a follow-up investigation was conducted within the limits of the 1971 Basin. In order to supplement the visual and geotechnical characterization of the CCR within the 1971 Borrow Area, samples were collected for chemical analysis. Both total concentrations of COIs and SPLP concentrations were analyzed in nine CCR samples and the results are summarized in Table 3 (total concentrations) and Table 4 (SPLP). Hard copies of the laboratory analytical reports are included in Appendix A2.

Total concentrations of many COIs indicate that the tested samples are CCR and not soils, which is consistent with the visual and geotechnical characterization of these samples. Consistent with the results from the May 2014 investigation, the samples exhibited elevated concentrations of arsenic and iron, which appear to be the most important “CCR indicator parameters” of the materials found within the 1971 Borrow Area. Arsenic concentrations ranged up to 155 mg/kg, a result obtained from the deepest sample submitted (MB2 at 76-80 ft bgs), and iron concentrations ranged up to 43,400 mg/kg. In comparison, site-specific soil samples

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exhibited non-detect results for arsenic (i.e., <1 mg/kg), and iron concentrations that were generally below 1,000 mg/kg.

Leaching tests using the SPLP method indicated that the CCR located within the 1971 Borrow Area have the potential to leach arsenic at elevated concentrations. Arsenic concentrations of up to 316 µg/L were measured in SPLP extracts, and there was a good apparent correlation between total arsenic and SPLP arsenic concentrations. Other "typical" CCR indicator parameters such as boron, iron, chromium, manganese, and selenium did not leach at elevated concentrations from the CCR submitted for analysis.

2.3 Soils

2.3.1 Background Soils

Background soil samples were collected from locations on the property that have not received CCR to establish metals concentrations naturally occurring in Sutton soils. Two discrete background soil samples were collected using a hand auger from 2.5 ft to 3.0 ft below ground surface (bgs) to avoid sampling soils that could potentially be affected by surface deposition of CCR-related dust.

Table 1 summarizes the soil and CCR analytical data, including the results from the background soil samples, and Table 2 summarizes the SPLP leaching data.

Background soils indicated low to non-detect levels of most constituents analyzed. However, iron was detected at a slightly elevated level at location SB-2, which is located close to monitoring well MW-7. Both background soil samples exhibited acidic pH levels at around 4.6 and 4.7 standard units (s.u.), indicating naturally acidic soil conditions at Sutton.

SPLP results showed some leachable levels of iron and calcium, and to a lesser degree barium, silver, and thallium at background soil location SB-2. All other COIs were not detected above the practical quantitation limit (PQL).

2.3.2 Site Soils

Soil samples were collected during the installation of monitoring wells MW-34C and MW-36C and from the soil below the CCR in the 1971 Basin based on visual observations from borings GP-5 and GP-6. Boring logs are included as an appendix in the Removal Plan.

As can be seen in Table 1, results were generally consistent with background soil conditions, except for location GP-5, which exhibited elevated concentrations of most COIs that may indicate leaching from the overlying CCR and/or a mix of soil and CCR at the sampled depth (i.e., 20-24 ft bgs). Furthermore, pH levels were higher than background conditions (i.e., circumneutral to slightly alkaline), but lower than in CCR.

SPLP results summarized in Table 2 indicate leachable levels of barium, calcium, magnesium, and sodium above background levels in soil samples collected from below the CCR in the 1971 Basin. However, these levels were lower than leachable results from CCR (see Section 2.2).

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2.4 Soil and CCR Mixture at LOLA

2.4.1 Previous Investigation of LOLA

Environmental assessments were conducted periodically in the LOLA from 2001 through 2012 to assess potential CCR impacts. In June 2001, Law Environmental, subsequently Blasland, Bouck, and Lee, Inc (BBL), conducted soil and groundwater assessments following the release of white liquor from one of the above ground storage tanks leased to International Paper. The release was remediated, but additional investigations were conducted by BBL when Duke Energy entered the North Carolina Registered Environmental Consultant (REC) voluntary remediation program under the Inactive Hazardous Sites Branch of the North Carolina Department of Environmental Quality (NCDEQ) to assess potential impacts from CCR and petroleum in soil and groundwater. A Remedial Investigation report was submitted to NCDEQ in May 2005 [BBL, 2005]. Soil borings using hand augers and larger test pits were used to delineate the extent of CCR in soil within LOLA to determine the soil impacts. Groundwater monitoring wells were also installed as part of this investigation to assess groundwater quality in the LOLA. In many cases, the test pits and soil borings were terminated near the top of the water table, before reaching the native soil. A Remedial Action Plan was submitted by BBL in March 2006 [BBL, 2006]. The proposed remedy was monitored natural attenuation of arsenic in groundwater along with administrative controls and land use restrictions to address soil and CCR impacts above unrestricted use remedial goals. Limited groundwater sampling was performed within LOLA during the Phase II Groundwater Quality Assessment conducted by Catlin [2012].

2.4.2 Supplemental Investigation of LOLA

Geosyntec implemented a screening-level assessment of the soils and CCR in the LOLA was conducted using Geoprobe® investigation techniques to (i) visually assess materials to evaluate composition as either soil, CCR, or a mixture, (ii) verify native soil had been reached, and (iii) collect soil and/or CCR samples from impacted locations. Geosyntec subcontracted SAEDACCO of Fort Mill, SC, to provide direct push technology (DPT) boring services. The sample locations are shown on Figure 3. Boring logs are included as an appendix in the Removal Plan.

A subset of soil and/or CCR samples was collected from the borings. When CCR were present above the groundwater table, a sample was collected from the unsaturated zone approximately 1 ft above the water table. When CCR were present below the groundwater table, a sample was collected from an area of the saturated zone with the greatest visual impacts based on professional judgment. In cases where the transition to native soil was not visually evident, samples were collected in order to verify that native soil had been reached. The solid samples were mixed manually using a stainless steel spoon in a stainless steel bowl and packed into laboratory-supplied containers and zip lock bags. Following the assessment, 12 soil samples from six locations that were judged to be representative of CCR and CCR/soil mixtures were selected along with two additional samples for native soil verification and transferred to laboratory-supplied containers. The selected samples were sent under chain-of-custody protocol to Lancaster Laboratories located in Lancaster, PA, for analysis of:

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- The North Carolina (NC) Hazardous Substance List metals (antimony [Sb], arsenic [As], beryllium [Be], cadmium [Cd], chromium [Cr], copper [Cu], lead [Pb], manganese [Mn], mercury [Hg], nickel [Ni], selenium [Se], silver [Ag], thallium [Tl], zinc [Zn]) using Method SW 846-7471B (Hg) and Method SW 846-6010C (all other metals);

- Strontium [Sr], boron [B], barium [Ba], molybdenum [Mo], and iron [Fe] using Method SW 846-6010C;

- pH using Method SW 846-9045D modified, and

- Leachability of metals using the Synthetic Precipitation Leaching Procedure (SPLP; EPA Method 1312).

The samples were properly preserved, labeled, logged onto a chain-of-custody form, and placed into an iced cooler prior to shipment. Note that SynTerra collected additional samples from the LOLA for chemical characterization during the 2015 investigation. Refer to the CSA [SynTerra, 2015a, 2016b] and CAP [SynTerra, 2015b, 2016a] for a summary of these results.

The analytical results are presented in Table 5 (total metals, pH, and % moisture) and Table 6 (SPLP). Hard copies of the laboratory analytical reports are included in Appendix A2.

The analytical results were used to evaluate levels of constituents of interest (COI), assess the current leachability potential, and supplement the visual identification of CCR to confirm that the vertical extent of CCR has been reached.

Figure 3 includes descriptions of the depth increments that appeared to contain CCR. Based on visual identification, the observed CCR appeared to include a range of grain sizes, which might indicate a minor presence of fly ash mixed in with mostly bottom ash within the LOLA.

The main purpose of this investigation was to evaluate the vertical extent of CCR. The elevations (NAVD 88) for the bottom of CCR are presented on Figure 4, while Figure 5 depicts isopach contours of the thickness of CCR within the LOLA. Note that the horizontal extent of the LOLA has changed from previously depicted delineations, but may be subject to further adjustments pending additional investigations within this area. SynTerra's depiction of the waste boundary of the LOLA in the CSA Report [2015a, 2016b] accounts for the updated delineation based on Geosyntec's and SynTerra's 2014 and 2015 investigation results. As can be seen on Figure 5, the thickness of CCR varies considerably across the LOLA but appears to be thickest within the northwestern corner of the LOLA and thinnest within the southeastern corner.

The chemical characterization summarized in Table 5 indicated relatively low concentrations of arsenic (up to a maximum of 42 mg/kg), boron (up to 25 mg/kg), chromium (up to 25 mg/kg), and iron (up to 16,200 mg/kg) compared to the CCR characterized in the 1971 and 1984 Basins. The chemical signatures did indicate a contribution of CCR when arsenic, iron, and chromium were detected at elevated concentrations compared to native soils, but the levels were more consistent with a CCR/soil mixture than pure CCR.

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The SPLP data summarized in Table 6 indicated that this CCR/soil mixture within the LOLA did not leach COIs at elevated concentrations. Again, this is in contrast to the CCR characterized within the 1971 and 1984 Basins, and it may be another indication that the CCR present within the LOLA is mostly bottom ash.

3. GROUNDWATER AND CCR INTERSTITIAL WATER QUALITY

3.1 Overview

As part of the evaluation of closure options for the CCR basins, Geosyntec performed groundwater and CCR interstitial water investigation activities to supplement historical groundwater assessment data collected by other consultants and to fill certain data gaps. The field work was implemented between 5 May and 29 May 2014.

Prior to Geosyntec's involvement at Sutton, monitoring wells and piezometers were installed around Sutton beginning in 1984.

For this supplemental investigation, Geosyntec performed the following groundwater and CCR interstitial water investigation activities to fill data gaps identified during the review of historical information to evaluate potentially applicable CCR basin closure options:

- Piezometers were installed within the CCR basins and around the toe of the dike surrounding the CCR basins;

- Intermediate-depth (22-27 feet below ground surface [ft bgs]), and deeper depth monitoring wells (40-45 ft bgs), intervals consistent with the depths of existing monitoring wells designated as "B-" and "C-" wells, were installed to supplement existing information on potential impacts to ground water in the surficial aquifer at Sutton;

- Groundwater and CCR interstitial water samples were collected from certain existing and newly installed monitoring wells and piezometers located throughout Sutton, but not included in the National Pollutant Discharge Elimination System (NPDES) compliance sampling plan.

Note that SynTerra installed additional wells and collected additional groundwater samples during the 2015 investigation. Refer to the CSA [SynTerra, 2015a, 2016b] and CAP [SynTerra, 2015b, 2016a] for a summary of these results.

3.2 Historical Investigations and NPDES Sampling Results

Existing monitoring wells were installed by Blasland, Bouck & Lee [2004-2005], Catlin Engineers and Scientists [2011], and Synterra [2013]. Existing piezometers were installed by Golder Associates [2008]. Monitoring wells were also installed in 1984, 1986, and 1990, but either well logs were not available for these wells or well logs did not specify the entity who installed the wells. However, these wells were used during various investigations and some are still in use as part of the NPDES sampling program.

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Historical and current groundwater analytical data and field parameters are provided in Table 7 (metals) and Table 8 (non-metals and field parameters) for sampling events through June 2015. Note that these sampling events are conducted under the requirements of the NPDES permit for Sutton and that hard copies of laboratory analytical reports are being submitted under separate cover consistent with the requirements of the NPDES permit. Further note that there may be new permit parameters included for upcoming compliance sampling, some of which may already have been sampled for during June 2015. However, Tables 7 and 8 do not include any new parameters and the discussion in this Report is limited to the parameters routinely monitored until recently.

Background well MW-4B on the southeastern side of Sutton has exhibited consistent exceedances of the iron groundwater standard [NCDENR, 2013] of 300 µg/L (1,280 µg/L in June 2015) and occasional exceedances of the 50 µg/L manganese standard (59 µg/L in June 2015), while background well MW-5C on the northeastern side of the property has shown exceedances of the manganese standard (441 µg/L in June 2015) and naturally acidic pH conditions (pH 5.5 s.u. versus the pH groundwater standard of 6.5 s.u to 8.5 s.u.). This indicates that background geochemical conditions are likely contributing to the increased solubility of iron and manganese. The negative oxidation-reduction potential (ORP) measured in MW-4B likely contributes to the higher solubility of iron, while manganese is expected to be soluble under the acidic groundwater conditions in MW-5C.

Monitoring wells within the vicinity of the eastern and southeastern side of the 1971 Basin, including MW-2C, MW-17, and MW-18 have historically exhibited elevated concentrations of arsenic, boron, iron, and manganese. Occasionally, other metals and TDS were detected at slightly elevated concentrations and the groundwater pH was slightly acidic. While elevated manganese and iron concentrations and acidic groundwater conditions can be partially explained by background conditions, arsenic and boron concentrations are likely attributable to the presence of the CCR basins. Monitoring well MW-6C, which is located to the east of the Interior Containment Area within the 1984 Basin, has historically shown elevated concentrations of boron, iron, and manganese as well as acidic groundwater conditions, but only the boron levels appear to have been elevated when compared to background conditions. This suggests that the clay liner within the 1984 Basin may provide increased groundwater protection and that arsenic has either been contained within the 1984 Basin or quickly attenuates within a relatively short distance from the waste boundary.

Attenuation of arsenic has also been observed within the area outside of the 1971 Basin; MW-21C, which serves as a compliance monitoring well within this area, is the only well at or beyond the compliance boundary that has shown occasional exceedances of the 10 µg/L arsenic groundwater standard. However, arsenic concentrations appear to be increasing in this well with a current concentration of 53.8 µg/L measured during the June 2015 sampling event. Nevertheless, given that MW-21C is the only well in this area exceeding the arsenic standard, this suggests that arsenic is not very mobile in groundwater and is expected to be present as the less mobile arsenate (i.e., As^{5+}) form as opposed to the more mobile arsenite (i.e., As^{3+}) form in groundwater at a certain distance away from the basins. This has been confirmed using Eh-pH stability diagrams for arsenic under site-specific conditions presented in the Data Interpretation and Analysis Report [Geosyntec, 2014c]. Similarly, with the exception of

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monitoring well MW-27B along the northern side of the 1984 Basin, which had a detection of 28.4 µg/L during the June 2015 sampling event, selenium has not been consistently detected above its groundwater standard of 20 µg/L. Monitoring well MW-24B along the eastern compliance boundary outside of the Interior Containment Area within the 1984 Basin had historically shown detections above the selenium groundwater standard but has been non-detect during the past nine sampling events.

On the other hand, boron, which basically acts as a conservative ion that does not get attenuated via sorption or precipitation, has historically shown concentrations above its groundwater standard of 700 µg/L in multiple monitoring wells at or beyond the compliance boundary. This includes compliance boundary wells MW-21C (2,120 µg/L in June 2015), MW-22C (2,560 µg/L in June 2015), MW-23B (currently at 137 µg/L and therefore, below the standard), MW-23C (2,050 µg/L in June 2015), MW-24B (currently at 409 µg/L and therefore, below the standard), and MW-24C (1,040 µg/L in June 2015). Furthermore, several wells beyond the compliance boundary have historically shown exceedances of the boron groundwater standard. These wells include MW-12 (along the property boundary next to S.T. Wooten Corporation; 1,470 µg/L in June 2015), MW-19 (downgradient of MW-21C; 2,080 µg/L in June 2015), and MW-31C (along the property boundary next to S.T. Wooten Corporation; currently at 381 µg/L and therefore, below the standard).

Given that MW-12 and MW-31C are approximately 1,300 feet and 1,200 feet, respectively, east of the waste boundary suggests that groundwater extraction at the S.T. Wooten Site may influence groundwater flow pattern at Sutton. Furthermore, it is noted that the deeper C-wells (screened at about 40 ft to 45 ft bgs) generally exhibit higher concentrations of most COIs as compared to the B-wells, which are screened around 22 ft to 27 ft bgs.

During the Phase II Groundwater Quality Assessment [Catlin, 2012], two temporary piezometers were installed within the CCR along the western end of the 1971 Basin. Results indicated elevated levels of arsenic, iron, and manganese, and slightly elevated levels of boron. These levels were generally consistent with the results reported in groundwater immediately outside the eastern and southeastern side of the 1971 Basin discussed above.

3.3. Supplemental Monitoring Well and Piezometer Installations

3.3.1 Groundwater Monitoring Wells

Three intermediate-depth monitoring wells (MW-34B, MW-35B, and MW-36B) and four deep monitoring wells (MW-27C, MW-34C, MW-35C, and MW-36C) were installed at Sutton using hollow stem auger (HSA) drilling methods. The monitoring wells were constructed with 2-inch diameter, Schedule 40 PVC well casings and 5-ft screens with 0.010-inch slot openings. A filter pack of 20/30 silica sand was placed around each screen and extended to at least one foot above the top of the screen. A minimum one-foot thick seal of bentonite chips was placed directly above and in contact with the filter pack. The bentonite seal was allowed to hydrate for at least 30 minutes before bentonite grout was placed into the annular space between the casing and the borehole to ground surface.

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Furthermore, eight groundwater piezometers (GWPZ-1A/B through GWPZ-4A/B) were installed to monitor groundwater elevation at the toe of the dike around the CCR basins using HSA drilling methods. Piezometers were constructed with 1-inch diameter, Schedule 40 PVC well casings and 5-ft screens with 0.010-inch slot openings. Piezometers designated with an "A" suffix were installed from 10-15 ft bgs, and piezometers with a "B" suffix were installed from 22-27 ft bgs, which is consistent with the depths and the "A" and "B" designations of the previously installed wells and piezometers. These piezometers were not sampled for chemical characterization and are therefore not further discussed in this Report. However, some of the borings for these piezometers were used to construct cross-sections discussed below.

All wells and piezometers were completed with at least 12 inches of four-inch by four-inch above ground outer protective steel casing set in a two-foot by two-foot concrete pad. The wells were secured with DEP-provided locks. Figure 6 shows the locations of the monitoring wells. Boring logs are included as an appendix in the Removal Plan.

Monitoring wells were developed to establish a hydrologic connection with the surrounding aquifer and to remove residual solids from the wells prior to sampling. Well development was not initiated until the grout was allowed to set for a minimum of 24 hours following installation of the surface completion. Well development was performed by pumping with a submersible pump or peristaltic pump to remove turbid water and sediments. Well development was considered completed when (i) turbidity measured less than or equal to 10 Nephelometric Turbidity Units (NTUs), (ii) turbidity did not improve over the previous hour of well development or (iii) well was purged for three hours.

As indicated above, SynTerra installed additional wells and collected additional groundwater and CCR interstitial water samples during the 2015 investigation. Refer to the CSA [SynTerra, 2015a, 2016b] and CAP [SynTerra, 2015b, 2016a] for a summary of these results.

3.3.2. CCR Piezometers

Two CCR piezometers (PZ-1971 and PZ-Int) were installed using mud rotary drilling methods to monitor water elevations within the CCR basins and collect interstitial water samples for laboratory analyses. Piezometers were constructed with 2-inch diameter, Schedule 40 PVC well casings and 5-ft screens with 0.010-inch slot openings. Piezometers were installed such that the screened interval was located entirely within CCR; PZ-1971 was screened from 17-22 ft bgs, and PZ-Int was screened from 13-18 ft bgs.

A filter pack of 20/30 silica sand was placed around the screen and extended to at least one foot above the top of the screen of the piezometers. A seal of bentonite chips was placed directly above and in contact with the filter pack to the ground surface. The bentonite seal was allowed to hydrate for at least 30 minutes before the above ground completion was installed.

Piezometers were completed with at least 12 inches of outer protective steel casing set in a two-foot by the two-foot concrete pad. The piezometers were secured with DEP-provided locks. Figure 6 shows the locations of the piezometers. Boring logs are included as an appendix in the Removal Plan.

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CCR piezometer development was initiated after the grout was allowed to set for a minimum of 24 hours following the installation of the surface completion. CCR piezometer development in PZ-1971 was initiated using a peristaltic pump but was stopped immediately because the piezometer was pumped dry. CCR piezometer development in PZ-Int was conducted using a submersible pump for approximately two hours, after which turbidity readings were not improving and development was stopped.

3.4 Supplemental Groundwater Monitoring and CCR Interstitial Water Sampling

3.4.1 Overview

Depth-to-water measurements, CCR interstitial water samples, and groundwater samples were collected from the newly installed monitoring wells and piezometers after they had been allowed to stabilize for approximately one week after installation. Unfiltered groundwater samples were collected using low-flow sampling methods as described in EPA Region 4 Groundwater Sampling Standard Operating Procedure (SOP) [EPA, 2011b].

3.4.2 CCR Interstitial Water and Groundwater Sampling and Testing

A CCR interstitial water sample was collected from piezometer PZ-Int, but no sample could be collected from PZ-1971 since the piezometer was dry. Groundwater samples were collected from monitoring wells installed by Geosyntec and from select existing monitoring wells and piezometers (Figure 7). Sampled wells and piezometers were purged using a low-flow peristaltic pump with the tubing intake located in the middle portion of the screened interval of the wells and piezometers. To the extent practical, the purge rate was set to minimize drawdown and avoid agitation of the sample. The groundwater or CCR interstitial water was purged through a flow-through cell equipped with temperature, pH, conductivity, redox potential and dissolved oxygen (DO) sensors to monitor variations in these parameters. Turbidity was measured using a separate turbidity meter.

The wells were considered sufficiently purged when the following water quality parameters had stabilized for three consecutive readings as follows:

- pH: ±0.2 SU;
- Specific Conductance: ±5%; and
- Turbidity: <10 NTUs or stable within 10%

If the designated water quality parameters had not stabilized after five well volumes had been purged, then purging stopped at that time and a note of explanation was recorded in the field log forms. Table 9 presents the final measured field parameters.

Samples were sent under chain-of-custody protocol to Lancaster Laboratories located in Lancaster, PA, for analysis of:

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- The NC Hazardous Substance List metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, zinc) using Method SW 846-7471B (mercury) and Method SW 846-6010C (all other metals);

- Major cations (calcium [Ca], magnesium [Mg], sodium [Na], and potassium [K]) using Method SW 846-6010C;

- Major anions (chloride [Cl], bromide [Br], sulfate [SO_4], alkalinity [HCO_3], and nitrate/ nitrite [NO_3/NO_2]) using EPA Method 300.0 (Cl, Br, SO_4, NO_3/NO_2) and EPA Method 310.1 (HCO_3);

- Strontium [Sr], boron [B], barium [Ba], molybdenum [Mo], iron [Fe], vanadium [V] using Method SW 846-6010C; and

- Total dissolved solids [TDS] using Standard Method 2540 C-1997.

The samples were properly preserved, labeled, logged onto a chain-of-custody form, and placed into an iced cooler prior to shipment.

The analytical results are presented in Table 10. Hard copies of the laboratory analytical reports are included in Appendix A1.

3.4.2.1 CCR Interstitial Water

As can be seen from Table 9 and Table 10, CCR interstitial water conditions were anaerobic (ORP of -267 mV) and pH conditions were circumneutral (pH 7.43). In addition, elevated levels of arsenic, boron, iron, and manganese were detected in CCR interstitial water at this location (i.e., PZ-Int) compared to groundwater outside the basins. Note that the elevated concentrations of various constituents detected in groundwater well MW-2C are discussed in Section 3.4.2.2 below. In general, these interstitial water results were consistent with the interstitial water results from the 1971 Basin reported in the Phase II Groundwater Quality Assessment Report [Catlin, 2012], although PZ-Int exhibited higher boron concentrations and lower manganese concentrations compared to the two temporary piezometers sampled during the Phase II Groundwater Quality Assessment.

3.4.2.2 Site Groundwater

As discussed above, three intermediate-depth monitoring wells (MW-34B, MW-35B, and MW-36B) and four deep monitoring wells (MW-27C, MW-34C, MW-35C, and MW-36C) were installed as part of the additional site investigation. These wells were installed to supplement the existing monitoring network, especially with respect to the areas northeast and north of the 1984 Basin.

In addition, certain existing monitoring wells that do not serve as routine compliance monitoring wells were selected and sampled to evaluate groundwater quality conditions along several transects away from the CCR basins. These transects included MW-2B/2C and MW-3B (near the 1971 Basin), MW-6B/6C and PZ-25 (near the Interior Containment Area within the 1984

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Basin), MW-34B/34C and MW-35B/35C (northeast of the 1984 Basin), and MW-36B/36C and MW-27C to the north of the 1984 Basin. Well MW-5B was included as a background well. These wells and transects are shown on Figure 7 and the results are summarized in Table 9 (Field Parameters) and Table 10 (Analytical Results).

3.4.2.2.1 Background Conditions

Consistent with results from historical sampling events of other background wells (i.e., MW-4B and MW-5C), background well MW-5B indicated low to non-detect results for most COIs. However, iron was detected at 700 µg/L, which is above its groundwater standard (300 µg/L), indicating that geochemical background conditions contribute to elevated levels of iron in groundwater. Manganese was not detected above its groundwater standard of 50 µg/L despite fairly acidic conditions within this well (pH 3.94), while the deeper compliance background well (MW-5C) has historically exhibited elevated levels of manganese (but not iron).

Both the historical investigations including background wells MW-4B and MW-5C as well as the supplemental investigation including background well MW-5B have indicated that the groundwater at Sutton has exhibited naturally acidic conditions. Furthermore, the historical data for MW-4B and MW-5C have also established naturally elevated concentrations of iron and manganese above their respective groundwater standards. It is noted, however, that the shallower background well MW-5B sampled during the supplemental investigation did not exhibit elevated levels of these constituents above groundwater standards.

3.4.2.2.2 Site Groundwater Conditions

While well MW-2B exhibited low concentrations of COIs, the deeper well MW-2C indicated elevated concentrations of several COIs, including arsenic (278 µg/L), boron (3,020 µg/L), iron (9,510 µg/L), manganese (375 µg/L), and TDS (542 mg/L). The levels were consistent with historical results from this well. Well MW-3B downgradient of the MW-2B/2C well pair exhibited low COI concentrations. However, it is likely that this well is screened too shallow to evaluate whether the elevated concentrations found in MW-2C were attenuated along the groundwater flow path.

With the exception of boron and manganese, the well pair MW-6B/6C exhibited low concentrations of COIs. The boron levels were approximately consistent with each other, while manganese levels were higher in MW-6C as compared to MW-6B. Overall, these concentrations were lower than the levels detected in MW-2C, indicating that the clay liner within the 1984 Basin provides a level of groundwater protection that is not found within the unlined 1971 Basin. The downgradient piezometer PZ-25, which is screened at the same depth as MW-6B but is located beyond the compliance boundary, did exhibit low levels of COIs and indicated attenuation of these constituents away from the basins.

Similarly, the newly installed well pair MW-34B/34C indicated low levels of COIs. However, the deeper well MW-34C exhibited somewhat elevated levels of manganese (303 µg/L) and iron (613 µg/L), even though these levels were consistent with background conditions. The downgradient newly installed well pair MW-35B/35C (located approximately coinciding with the compliance boundary) exhibited similar concentrations of COIs as wells MW-34B/34C, even

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though iron (2,810 µg/L) and manganese (345 µg/L) concentrations were somewhat higher in MW-35C and were above their respective groundwater standards. Again, this can likely be attributed to background conditions, and other CCR indicator parameters such as arsenic and boron were non-detect or low at these locations. This is further evidence that the clay liner is fairly effective in protecting groundwater from CCR leaching. It is noted, however, that well MW-35C did exhibit a selenium detection of 55 µg/L, which is above its groundwater standard of 20 µg/L. The wells closer to the basin boundary (i.e., MW-34B/34C) exhibited levels below the PQL of 40 µg/L, suggesting that the 1984 Basin is unlikely to be a continuing source of selenium and that this elevated detection in MW-35C may be the result of historical leaching.

The northern transect formed by the newly installed well pair MW-36B/36C and the newly installed well MW-27C indicated a very similar pattern of generally low concentrations of COIs, but elevated levels of iron and manganese in the deeper wells MW-36C and MW-27C. Again, well MW-27C indicated an elevated selenium concentration of 55 µg/L, while the well pair closer to the basin boundary (i.e. MW-36B/36C) exhibited levels below the PQL.

One well (i.e., MW-31B) was sampled along the property boundary with the S.T. Wooten Corporation Site. Elevated levels of iron (1,390 µg/L) were detected in this well, but this is likely attributable to background conditions. The deeper compliance well MW-31C (not sampled for this investigation) has historically shown elevated levels of iron (about twice the levels found in MW-31B), manganese, and boron.

3.5 Groundwater Monitoring at LOLA

Unfiltered water samples were collected from the nine existing wells using low-flow sampling methods as described above. Samples were sent under chain-of-custody protocol to Lancaster Laboratories located in Lancaster, PA, for analysis of the same parameters as outlined above for the wells and piezometers around the CCR basins.

Figure 3 depicts the monitoring well locations (as well as the boring locations for the soil and CCR samples described in Section 2.4) within the LOLA.

Water quality samples were collected from all existing monitoring wells within the LOLA, including MW-13, MW-13D, MW-14, MW-15, MW-15D, MW-16, MW-16D, MW-20 and MW-20D. During purging of the wells, field parameters were collected and the readings are summarized in Table 11. As can be seen from this table, pH conditions were relatively uniform and circumneutral to slightly acidic and redox conditions were generally mildly reducing. This is consistent with other monitoring locations throughout Sutton (including background conditions), even though many locations across Sutton appear to have somewhat more oxidizing conditions. The difference might be related to the input from natural organic matter (e.g., decaying leaf litter within the densely vegetated areas in the northern part of the LOLA) and/or potential historical impacts of petroleum hydrocarbons around the former aboveground storage tank (AST) area within the southern part of the LOLA.

The analytical results are presented in Table 12 and hard copies of the laboratory analytical reports are included in Appendix A2. Consistent with historical sampling results, the arsenic concentration in MW-13 (shallow well) was elevated (218 µg/L), but the boron concentration

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was only slightly elevated (935 µg/L). On the other hand, the deep well at this location (MW-13D) indicated a low arsenic concentration (9.6 µg/L), but an elevated boron concentration (2,350 µg/L), which likely did not originate within the LOLA, but from the upgradient deeper zones within the 1971 Borrow Area. Note that the MW-13 well cluster is located within the compliance boundary. Shallow monitoring well MW-15, which appears to be located at the previously established compliance boundary around the LOLA, indicated an arsenic concentration of 31.2 µg/L, exceeding the groundwater standard of 10 µg/L. Manganese and iron concentrations were elevated throughout the LOLA, which is consistent with conditions across Sutton (including background conditions).

3.6 Summary of Groundwater Impacts

In order to summarize and graphically depict groundwater impacts at Sutton, cross-sections were developed. These cross-sections are depicted on Figures 8 through 10. Figure 8 depicts the locations of the cross-sections. Figure 9 depicts cross-section A-A', which was cut from west to east along the northern boundary of the 1984 Basin, and cross-section B-B', which was cut from west to east along the southern end of the 1971 Basin, including a small part of the northwestern corner of the LOLA and across the Discharge Canal. Figure 10 depicts cross-section C-C', which was cut from north to south across both the 1984 and 1971 Basins and towards the southern extent of the LOLA. Note that the cross-sections were limited to the areas within the compliance boundaries of the 1971 and 1984 Basins as well as the LOLA. Therefore, they do not delineate the horizontal or vertical extent of groundwater exceedances across Sutton, which would be impractical to do given the widespread occurrences of elevated levels of iron, manganese, and acidic pH conditions, much of which can be attributed to natural background conditions. Furthermore, boron concentrations are elevated at multiple monitoring locations outside the compliance boundary. Additional cross-sections, including monitoring wells showing exceedances of groundwater standards, can be found in the CSA [Synterra, 2015a, 2016b].

These cross-sections include the monitoring wells, piezometers, and other borings used to construct the cross-sections. Where applicable, wells and piezometers indicate groundwater detections found to be in excess of groundwater standards established by Subchapter L of Chapter 2 of Title 15A of the North Carolina Administrative Code. Note that CCR interstitial water concentrations are not depicted given that these results do not represent groundwater conditions.

As can be seen on cross-section A-A', the shallower (i.e., B-wells) do not indicate any exceedances of groundwater standards, while the deeper (i.e., C-wells) do indicate exceedances of groundwater standards for iron, manganese, and in the case of MW-35C, for selenium. Given the relative protectiveness of the clay liner within the 1984 Basin as well as the naturally elevated concentrations of iron and manganese, the iron and manganese exceedances are likely to mainly attributable to background conditions. The selenium exceedance is likely attributable to historical leaching from CCR.

Cross-section B-B' illustrates exceedances of the groundwater standards within the northwestern corner of the LOLA (i.e., the MW-13 well cluster) and outside the southeastern

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corner of the 1971 Basin. These exceedances include iron, manganese, boron, and arsenic. As previously discussed, the exceedances of iron and manganese are partially attributable to background conditions, while the boron and arsenic exceedances are linked to the CCR within the 1971 Basin.

Cross-section C-C' depicts conditions from the compliance boundary north of the 1984 Basin to the southern extent of the LOLA. As can be seen, groundwater standards for iron, manganese and arsenic are exceeded at the southern extent of the compliance boundary for the LOLA (i.e, MW-15 well cluster), while groundwater standards for manganese and selenium are exceeded within the shallow and deep wells of the MW-27 cluster and standards for iron are exceeded within the deeper well of the MW-27 well cluster at the northern compliance boundary.

3.7 Geochemical Conceptual Site Model

A geochemical evaluation was implemented during the conceptual closure investigation, which was presented in the Data Interpretation and Analysis Report [Geosyntec, 2014c]. Based on this evaluation, a geochemical Conceptual Site Model (CSM) was developed that can be summarized as follows:

- CCR within the basins contain most of the analyzed constituents at levels greater than the natural soil samples around and below the CCR basins. This is especially apparent for constituents that are typically indicative of CCR, including arsenic, boron, and iron, and to a lesser degree, manganese, chromium, and selenium. Furthermore, the major cations calcium, magnesium, potassium, and sodium also exhibit concentrations above the surrounding soil concentrations.

- Leaching tests using the SPLP procedure indicate that arsenic and most of the major cations still leach from CCR at elevated levels. However, boron, chromium, iron, and manganese do not leach at elevated levels, which indicates that these constituents are either already leached out of CCR (e.g., boron) and/or are more affected by redox reactions (e.g., iron and manganese) than by desorption and/or dissolution.

- Groundwater in the immediate vicinity of the 1971 Basin appears to show an impact from CCR contained within this basin. This is likely further pronounced due to the presence of CCR at considerable depths (i.e., in the 1971 Borrow Area) within the boundaries of the 1971 Basin. Monitoring points further away (i.e., north) show a diminishing impact, suggesting that the clay liner within the 1984 Basin provides some protection of the surrounding groundwater.

- The ionic compositions indicate that groundwater in the vicinity of the 1971 Basin has a geochemical signature consistent with the CCR interstitial water sample. However, groundwater further to the north and outside of the 1984 Basin indicates a geochemical signature different from CCR interstitial water, which also suggests that the clay liner within the 1984 Basin provides some protection of the surrounding groundwater not found within the unlined 1971 Basin.

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- Elevated boron concentrations in groundwater are likely a historical artifact of leaching of the CCR since the SPLP results indicate only minor leaching potential for boron from recently obtained samples. Boron is not attenuated by sorption or precipitation reactions; therefore, it has the potential to migrate over longer distances, and its distribution may also be somewhat affected by groundwater pumping activities along the eastern property boundary.

- The Eh-pH conditions in groundwater affect the distribution of iron, manganese, arsenic, and selenium. Iron and manganese are found at elevated concentrations across much of Sutton, including background locations. Based on their respective Eh-pH diagrams and using site-specific data, arsenic and selenium are likely present in their less mobile forms in Sutton groundwater at certain distances away from the basins, which is consistent with their low-level to non-detect results along the compliance boundary. Furthermore, the conditions within CCR interstitial water are conducive to precipitating selenium with iron, as predicted in the Eh-pH diagram, which appears to immobilize selenium within the CCR basins. However, the selenium detections in wells MW-27C and MW-35C are not consistent with this explanation, and the elevated detections at these locations remain unclear at this point. Note that the Eh-pH diagrams are included and discussed in the Data Interpretation and Analysis Report.

- Excavation of the CCR will remove the source for potential additional groundwater impacts. However, some residual impacts from historical leaching are expected to remain, especially with respect to boron as well as the elevated levels of iron and manganese and the naturally acidic groundwater conditions across Sutton (including background conditions). Some of these residual impacts are expected to decrease over time through natural attenuation (e.g., boron), but elevated levels of iron, manganese, and acidic groundwater conditions will likely remain due to background conditions, even though levels may also slightly decrease over time due to source removal efforts.

3.8 Conclusions

The geochemical conceptual site model presented above, and the supporting information presented in this Report and other referenced reports fulfill the requirements outlined under § 130A-309.212 (c)(5 through 9) for Sutton. Additional horizontal and vertical delineation results for constituents exceeding groundwater standards are presented in SynTerra's CSA Report [2015a, 2016b] and CAP [2015b].

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TABLES

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Table 1. Soil and CCR Analytical Data

Location	Sample Interval (ft BGS)	Sample Date	Concentration (mg/kg)														
			Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Total Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel
CCR SAMPLES																		
GP2	52-56	5/16/2014	< 5.45	119	954	6.99	54.3	0.103 U	3,710	54.2	72.7	33,900	34.9	2,890	127	< 0.267	< 2.72	40.8
	72-76	5/19/2014	< 5.5	136	632	5.28	66.4	0.105 U	5,210	62.5	74.9	36,300	32.2	2,580	126	< 0.282	27.3	85.2
GP3	24-28	5/20/2014	< 5.49	60.4	384	7.55	36.4	0.104 U	2,890	41.3	74.7	15,300	32.4	1,700	64.7	< 0.261	5.92	39.7
	72-76	5/20/2014	< 5.64	104	785	5.68	58.5	0.107 U	3,670	44.3	68.5	23,700	28.4	2,350	103	< 0.272	< 2.82	49.1
	76-80	5/20/2014	< 5.64	115	599	5.28	57.1	0.107 U	3,270	49.9	76.4	23,500	32.8	2,260	107	< 0.285	< 2.82	46
	80-84	5/20/2014	< 4.9	58.9	477	3.62	41.1	0.0931 U	3,000	38.7	49.6	30,800	20.1	1,650	105	< 0.235	< 2.45	33.1
SPT-3	10-12	5/9/2014	0.955 U	19.6	214	2.71	< 12.9	< 1.29	1,700	27.4	38.8	20,100	16.8	842	88.3	< 0.247	< 2.58	26.4
SPT-7	4-6	5/7/2014	0.959 U	49.1	430	5.81	31.3	< 1.3	3,560	42.3	58.1	13,900	28.6	1,510	67.4	< 0.266	< 2.59	30.5
PZ-INT	12-14	5/7/2014	1.27 U	38.1	304	4.15	31	< 1.71	2,390	19.3	70.7	7,610	21.2	809	40.8	< 0.337	< 3.42	28.5
SOIL SAMPLES																		
MW34C	4-6	5/13/2014	0.749 U	0.709 U	1.29	0.0679 U	0.851 U	0.077 U	< 40.5	< 3.04	< 2.03	342	< 3.04	< 20.3	2.42	0.0099 U	< 2.03	< 2.03
MW36C	4-6	5/9/2014	0.778 U	0.736 U	1.42	0.0705 U	0.884 U	0.0799 U	224	< 3.16	< 2.1	835	< 3.16	36.1	5.05	0.0106 U	0.179 U	< 2.1
SB1	2.5-3	5/13/2014	0.783 U	0.74 U	< 1.06	0.0709 U	0.888 U	0.0804 U	< 42.3	< 3.17	0.307 U	< 42.3	0.529 U	1.77 U	1.22	0.0106 U	0.18 U	< 2.12
SB2	2.5-3	5/13/2014	0.729 U	0.69 U	1.5	0.066 U	0.828 U	0.0749 U	< 39.4	< 2.96	< 1.97	1,620	< 2.96	32.2	1.93	0.0099 U	0.167 U	< 1.97
GP5	20-24	5/21/2014	0.868 U	50.2	18	2.97	25.1	< 1.17	242	24.6	27.7	216	14.1	1,290	56.1	0.0113 U	< 2.35	17.3
GP6	24-28	5/21/2014	0.837 U	< 4.52	1.92	0.0758 U	< 11.3	0.0859 U	65	< 3.39	0.328 U	424	-	37.1	2.45	0.0115 U	0.192 U	< 2.26

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] mg/kg indicates milligrams per kilogram.
[3] ft BGS indicates feet below ground surface.
[4] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-MW-24C(4-6)-20140513
[5] Geotechnical boring SPT9 was collected during installation of PZ-INT. The CCR sample was collected from SPT-9.
[6] * indicates moisture is reported as a percent.
[7] ** indicates pH is reported in standard units.

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Table 1. Soil and CCR Analytical Data (Continued)

Location	Sample Interval (ft BGS)	Sample Date	Concentration (mg/kg)												
			Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Vanadium	Zinc	Bromide	Chloride	Sulfate	Moisture*	pH (Lab)**
CCR SAMPLES															
GP2	52-56	5/16/2014	7,690	7.99	0.231 U	920	493	< 8.17	-	57.9	5.5 U	27.7	41.5	28.7	8.23
	72-76	5/19/2014	5,720	6.44	0.234 U	822	564	0.715 U	-	66.3	5.6 U	18.4	85.5	29.4	7.56
GP3	24-28	5/20/2014	3,610	14.6	0.233 U	551	327	0.714 U	-	51.9	5.6 U	< 13.9	39.1	27.9	7.81
	72-76	5/20/2014	6,410	8.73	0.24 U	765	426	< 8.46	-	48.2	5.7 U	< 14.3	34.5	29.8	8.5
	76-80	5/20/2014	5,720	7.34	0.24 U	699	418	< 8.47	-	55.9	5.8 U	15.4	53.4	31.2	8.58
	80-84	5/20/2014	3,860	< 4.9	0.208 U	475	317	< 7.35	-	35.9	5 U	< 12.6	22.3	20	8.49
SPT-3	10-12	5/9/2014	1,370	14.9	0.219 U	< 258	148	0.671 U	-	24.1	5.2 U	6.5 U	< 19.6	23.3	6.53
SPT-7	4-6	5/7/2014	2,820	5.39	0.22 U	499	420	< 7.77	-	58	5.4 U	6.8 U	24.6	26.5	8.35
PZ-INT	12-14	5/7/2014	1,890	< 6.84	0.291 U	< 342	290	0.889 U	-	29.2	6.8 U	32.5	74.8	42.1	8.02
SOIL SAMPLES															
MW34C	4-6	5/13/2014	< 101	0.81 U	0.172 U	16.9 U	< 1.01	0.527 U	-	< 4.05	4.1 U	< 10.2	74.4	3.2	6.27
MW36C	4-6	5/9/2014	< 105	0.842 U	0.179 U	17.6 U	1.26	0.547 U	-	< 4.21	4.3 U	5.3 U	5.3 U	6.8	7.9
SB1	2.5-3	5/13/2014	8.82 U	0.846 U	0.18 U	17.7 U	< 1.06	0.55 U	< 1.06	< 4.23	4.3 U	5.4 U	< 16.1	8.2	4.68
SB2	2.5-3	5/13/2014	< 98.5	0.788 U	0.167 U	16.5 U	< 0.985	0.512 U	3.95	< 3.94	4 U	5 U	< 15.1	2.4	4.55
GP5	20-24	5/21/2014	< 117	0.938 U	< 1.17	415	11.3	< 7.04	-	25.8	4.8 U	35.6	< 17.8	15.6	7.58
GP6	24-28	5/21/2014	< 113	0.905 U	0.192 U	18.9 U	2.12	0.588 U	-	< 4.52	4.7 U	17	18.2	13.3	7.87

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] mg/kg indicates milligrams per kilogram.
[3] ft BGS indicates feet below ground surface.
[4] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-MW-24C(4-6)-20140513
[5] Geotechnical boring SPT9 was collected during installation of PZ-INT. The CCR sample was collected from SPT-9.
[6] * indicates moisture is reported as a percent.
[7] ** indicates pH is reported in standard units.

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Table 2. SPLP Analytical Data

Location	Sample Interval (ft BGS)	Sample Date	Concentration (µg/L)														
			Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Total Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel
CCR SAMPLES																		
GP2	52-56	5/16/2014	5.3 U	188	172	0.67 U	< 100	0.76 U	4,690	< 30	2.7 U	< 400	4.7 U	584	< 10	0.06 U	< 20	1.5 U
	72-76	5/19/2014	< 40	258	146	0.67 U	340	0.76 U	8,240	< 30	< 20	4,950	< 30	1,660	17.7	0.06 U	688	< 20
GP3	24-28	5/20/2014	< 40	56.1	95.7	0.67 U	< 100	0.76 U	5,870	1.6 U	2.7 U	43 U	4.7 U	836	< 10	0.06 U	153	1.5 U
	72-76	5/20/2014	< 40	208	76.6	0.67 U	120	0.76 U	4,100	< 30	2.7 U	< 400	4.7 U	1,020	< 10	0.06 U	< 20	1.5 U
	76-80	5/20/2014	< 40	192	44.4	0.67 U	113	0.76 U	3,970	< 30	< 20	< 400	4.7 U	1,330	< 10	0.06 U	< 20	1.5 U
	80-84	5/20/2014	5.3 U	151	54.7	0.67 U	125	0.76 U	3,550	< 30	< 20	546	4.7 U	1,170	< 10	0.06 U	< 20	< 20
SPT3	10-12	5/9/2014	5.3 U	6.8 U	64.2	0.67 U	< 100	0.76 U	1,870	1.6 U	2.7 U	< 400	4.7 U	582	< 10	0.06 U	< 20	< 20
SPT7	4-6	5/7/2014	5.3 U	73.4	72.7	0.67 U	< 100	0.76 U	6,380	< 30	2.7 U	43 U	4.7 U	1,460	0.83 U	0.06 U	< 20	1.5 U
SPT9	12-14	5/7/2014	5.3 U	69.9	143	0.67 U	< 100	0.76 U	4,870	< 30	< 20	< 400	4.7 U	531	< 10	0.06 U	< 20	< 20
SOIL SAMPLES																		
GP5	20-24	5/21/2014	5.3 U	< 40	36.6	0.67 U	< 100	0.76 U	1,880	< 30	2.7 U	< 400	4.7 U	536	< 10	0.06 U	< 20	1.5 U
GP6	24-28	5/21/2014	5.3 U	< 40	32.7	0.67 U	< 100	0.76 U	1,230	1.6 U	2.7 U	552	4.7 U	487	< 10	0.06 U	1.7 U	1.5 U
SB1	2.5-3	5/13/2014	5.3 U	6.8 U	< 10	0.67 U	< 100	0.76 U	< 400	1.6 U	2.7 U	43 U	4.7 U	< 200	< 10	0.06 U	1.7 U	1.5 U
SB2	2.5-3	5/13/2014	5.3 U	6.8 U	16.4	0.67 U	< 100	0.76 U	496	< 30	2.7 U	3,870	4.7 U	< 200	< 10	0.06 U	1.7 U	1.5 U

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] SPLP indicates synthetic precipitation leaching procedure.
[4] ft BGS indicates feet below ground surface.
[5] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-GP2(52-56)-20140516

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Table 2. SPLP Analytical Data (Continued)

Location	Sample Interval (ft BGS)	Sample Date	Concentration (µg/L)							
			Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Vanadium	Zinc
CCR SAMPLES										
GP2	52-56	5/16/2014	<1,000	< 40	2.1 U	3,020	194	5.4 U	-	< 40
	72-76	5/19/2014	<1,000	8.4 U	2.1 U	15,100	228	5.4 U	-	< 40
GP3	24-28	5/20/2014	<1,000	< 40	2.1 U	3,620	179	5.4 U	-	< 40
	72-76	5/20/2014	<1,000	< 40	2.1 U	4,650	277	5.4 U	-	< 40
	76-80	5/20/2014	<1,000	< 40	2.1 U	4,640	241	5.4 U	-	< 40
	80-84	5/20/2014	<1,000	< 40	2.1 U	5,560	175	5.4 U	-	< 40
SPT3	10-12	5/9/2014	<1,000	< 40	2.1 U	2,590	81.1	5.4 U	-	2 U
SPT7	4-6	5/7/2014	98 U	42.8	2.1 U	< 2,000	224	5.4 U	-	2 U
SPT9	12-14	5/7/2014	<1,000	8.4 U	2.1 U	< 2,000	265	5.4 U	-	2 U
SOIL SAMPLES										
GP5	20-24	5/21/2014	<1,000	8.4 U	2.1 U	6,620	32.3	5.4 U	-	< 40
GP6	24-28	5/21/2014	<1,000	8.4 U	2.1 U	3,400	25.5	5.4 U	-	< 40
SB1	2.5-3	5/13/2014	98 U	8.4 U	2.1 U	< 2,000	< 10	5.4 U	< 10	< 40
SB2	2.5-3	5/13/2014	<1,000	8.4 U	2.1 U	5,170	< 10	5.4 U	10.6	< 40

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] SPLP indicates synthetic precipitation leaching procedure.
[4] ft BGS indicates feet below ground surface.
[5] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-GP2(52-56)-20140516

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Table 3. 1971 Borrow Area Investigation – CCR Analytical Data

Location	Sample Interval (ft BGS)	Sample Date	Concentration (mg/kg)												
			Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Total Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel
GP12	28-32	7/2/2014	< 6.17	67.6	467	5.99	41.2	< 1.54	46.8	76.8	13200	30.8	64.1	< 0.31	4.39	35.9
GP13	64-68	7/1/2014	0.464 U	129	865	6.56	52.2	< 1.41	49	64	19,600	32.9	95.1	< 0.274	< 2.81	34.3
	68-72		0.45 U	127	591	5.1	52.3	< 1.36	47.4	64.8	19,500	31.4	101	< 0.269	2.91	40.8
GP14	60-62	7/2/2014	0.502 U	137	562	3.82	34.3	< 1.52	31.9	58.8	13,500	24.2	72.8	< 0.289	< 3.04	26.5
	68-72		0.459 U	144	661	5.45	45.5	< 1.39	55.8	66.5	29,500	29.6	114	< 0.269	< 2.78	41
GP15	60-64	7/1/2014	0.432 U	125	493	4.89	66.7	0.0432 U	65.1	64.5	43,400	24.6	160	< 0.249	2.68	47.3
	68.7-70.7		0.453 U	35.6	265	3	30.2	0.0453 U	22.3	28.9	22,400	15.2	63.4	< 0.28	< 2.75	112
MB2	64-68	6/25/2014	0.452 U	87.3	502	3.92	42.3	0.0452 U	43.8	59.1	14,500	26.1	87.6	< 0.255	< 2.74	29.8
	76-80		0.457 U	155	735	5.7	55.3	0.0457 U	54.5	83.8	31,500	28.9	128	< 0.275	3.01	43.6

Note(s):

[1] U indicates results below the method detection limit (MDL).
[2] < indicates results below the practical quantitation limit (PQL).
[3] mg/kg represents milligrams per kilogram.
[4] ft BGS indicates feet below ground surface.
[5] S.U. represents standard units.

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Table 3. 1971 Borrow Area Investigation – CCR Analytical Data (Continued)

Location	Sample Interval (ft BGS)	Sample Date	Concentration (mg/kg)					Moisture (%)	pH (Lab) (S.U.)
			Selenium	Silver	Strontium	Thallium	Zinc		
GP12	28-32	7/2/2014	< 6.17	0.293 U	322	< 9.26	51.4	37.7	7.62
GP13	64-68	7/1/2014	6.68	0.267 U	491	< 8.44	53.3	32.3	8.69
	68-72		5.71	0.259 U	388	< 8.17	53.4	30.1	8.61
GP14	60-62	7/2/2014	< 6.08	0.289 U	295	< 9.12	36.3	34.2	8.65
	68-72		6.04	0.264 U	598	< 8.34	55.4	29.5	8.63
GP15	60-64	7/1/2014	< 5.24	0.249 U	561	9.28	55.8	25.9	8.28
	68.7-70.7		< 5.49	0.261 U	237	62.5	27.5	29.3	7.89
MB2	64-68	6/25/2014	< 5.48	0.26 U	318	1.1 U	43.6	27	8.23
	76-80		6.74	0.263 U	587	1.11 U	57.6	27.8	8.41

Note(s):

[1] U indicates results below the method detection limit (MDL).
[2] < indicates results below the practical quantitation limit (PQL).
[3] mg/kg represents milligrams per kilogram.
[4] ft BGS indicates feet below ground surface.
[5] S.U. represents standard units.

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Table 4. 1971 Borrow Area Investigation – SPLP Analytical Data

Location	Sample Interval (ft BGS)	Sample Date	Concentration (µg/L)											
			Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Total Chromium	Copper	Iron	Lead	Magnesium	Manganese
GP12	28-32	7/2/2014	< 40	71.6	135	0.67 U	< 100	0.33 U	3,240	1.3 U	28.1	33.4 U	4.7 U	529	< 10
GP13	64-68	7/1/2014	5.1 U	251	67.6	0.67 U	137	0.33 U	4,420	< 30	2.8 U	< 400	4.7 U	1230	< 10
	68-72		< 40	254	32.1	0.67 U	177	0.33 U	3,730	< 30	2.8 U	< 400	4.7 U	1180	< 10
GP14	60-62	7/2/2014	5.1 U	247	90.1	0.67 U	< 100	0.33 U	2,990	< 30	2.8 U	< 400	4.7 U	603	< 10
	68-72		< 40	263	28.1	0.67 U	< 100	0.33 U	4,830	< 30	2.8 U	< 400	4.7 U	560	< 10
GP15	60-64	7/1/2014	5.1 U	208	17.8	0.67 U	100	0.33 U	6,350	< 30	2.8 U	< 400	4.7 U	678	< 10
	68.7-70.7		5.1 U	91.4	33.2	0.67 U	< 100	0.33 U	6,440	1.3 U	2.8 U	< 400	4.7 U	960	< 10
MB2	64-68	6/25/2014	5.1 U	184	124	0.67 U	< 100	0.33 U	4,320	< 30	2.8 U	< 400	4.7 U	751	< 10
	76-80		5.1 U	316	54.3	0.67 U	105	0.33 U	4,900	< 30	2.8 U	< 400	4.7 U	849	< 10

Note(s):

[1] U indicates results below the method detection limit (MDL).
[2] < indicates results below the practical quantitation limit (PQL).
[3] µg/L represents micrograms per liter.
[4] SPLP represents synthetic precipitation leaching procedure.
[5] ft BGS indicates feet below ground surface.

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Table 4. 1971 Borrow Area Investigation – SPLP Analytical Data (Continued)

Location	Sample Interval (ft BGS)	Sample Date	Concentration (µg/L)									
			Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Zinc
GP12	28-32	7/2/2014	0.06 U	141	< 20	<1,000	< 40	18 U	2,200	191	5.1 U	< 40
GP13	64-68	7/1/2014	0.06 U	< 20	1.6 U	<1,000	< 40	18 U	3060	249	5.1 U	< 40
	68-72		0.06 U	< 20	1.6 U	133 U	< 40	< 100	3,950	183	5.1 U	< 40
GP14	60-62	7/2/2014	0.06 U	< 20	< 20	<1,000	< 40	18 U	3,870	102	5.1 U	< 40
	68-72		0.06 U	< 20	1.6 U	133 U	< 40	18 U	3,240	163	5.1 U	< 40
GP15	60-64	7/1/2014	0.06 U	< 20	1.6 U	133 U	< 40	18 U	9,010	197	5.1 U	< 40
	68.7-70.7		0.06 U	< 20	< 20	<1,000	< 40	18 U	3450	240	5.1 U	< 40
MB2	64-68	6/25/2014	0.06 U	< 20	1.6 U	<1,000	< 40	1.8 U	<2,000	281	5.1 U	2 U
	76-80		0.06 U	< 20	1.6 U	<1,000	< 40	1.8 U	2,060	185	5.1 U	< 40

Note(s):

[1] U indicates results below the method detection limit (MDL).
[2] < indicates results below the practical quantitation limit (PQL).
[3] µg/L represents micrograms per liter.
[4] SPLP represents synthetic precipitation leaching procedure.
[5] ft BGS indicates feet below ground surface.

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Table 5. LOLA Investigation – CCR Analytical Data

Location	Sample Interval (ft BGS)	Sample Date	Concentration (mg/kg)												
			Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Total Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel
F-DPT1	3-4	6/30/2014	0.317 U	< 3.84	3.28	0.0643 U	< 9.59	0.0317 U	< 2.88	< 1.92	348	< 2.88	3.12	0.0096 U	< 1.92	< 1.92
	7-8		0.47 U	26.5	452	3.54	24.6	0.047 U	18.8	42.8	12,600	13.9	44.9	< 0.296	< 2.85	54.8
F-DPT3	1.5-2.5	6/30/2014	0.337 U	< 4.09	5.57	0.0685 U	< 10.2	0.0337 U	< 3.07	< 2.04	833	< 3.07	7.45	0.0103 U	0.174 U	2.1
	5-6		0.567 U	28.1	314	2.73	22.8	0.0567 U	20.4	34.8	11,700	9.56	58.6	< 0.341	< 3.43	17.4
F-DPT4	18-20*	7/1/2014	< 8.47	< 8.47	34.2	0.142 U	< 21.2	< 2.12	6.51	< 4.24	1,610	< 6.36	15.6	0.0209 U	< 4.24	< 4.24
F-DPT5	2-4	7/1/2014	0.41 U	18.5	340	2.76	< 12.4	0.041 U	11.8	27	11,400	8.63	81.1	< 0.251	< 2.48	18.6
	6-8		0.517 U	42.2	708	7.84	19	0.0517 U	25.4	66.4	13,500	18.8	85.7	< 0.311	< 3.13	34.9
F-DPT7	3-4	7/1/2014	0.394 U	< 4.78	31.8	< 1.19	< 11.9	0.0394 U	< 3.58	5.03	2,180	< 3.58	8.22	0.0117 U	< 2.39	3.27
	7-8		0.546 U	31.1	543	5.79	< 16.5	0.0546 U	22.2	58.2	8,130	17.7	43.5	< 0.315	< 3.31	27
	15-16*		0.377 U	< 4.57	7.41	0.0766 U	< 11.4	0.0377 U	< 3.43	0.377 U	267	< 3.43	2.52	0.0118 U	0.194 U	< 2.29
F-DPT11	7-8	7/2/2014	0.345 U	6.44	38.8	< 1.04	< 10.4	0.0345 U	4.16	7.55	2,080	3.52	10.9	0.0108 U	< 2.09	3.93
	11-12		0.383 U	7.54	261	1.59	< 11.6	0.0383 U	6.59	14.7	9,420	3.6	46.9	0.0117 U	< 2.32	8.38
F-DPT14	3-4	7/2/2014	0.537 U	35.1	447	5.15	< 16.3	0.0537 U	21.1	56.1	13,400	14.6	152	< 0.312	< 3.25	29.9
	7-8		0.526 U	39	443	2.64	< 15.9	0.0526 U	17.1	34.9	16,200	9.93	72.7	< 0.308	< 3.19	16.6

Note(s):

[1] DPT locations were surveyed by WSP on July 7-8, 2014.
[2] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[3] mg/kg indicates milligrams per kilogram.
[4] ft BGS indicates feet below ground surface.
[5] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-F-DPT-1(3-4)-20140630.
[6] * indicates sample was collected to verify that native soil had been reached.
[7] S.U. indicates standard units.

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Table 5. LOLA Investigation – CCR Analytical Data (Continued)

Location	Sample Interval (ft BGS)	Sample Date	Concentration (mg/kg)					Moisture (%)	pH (Lab) (S.U.)
			Selenium	Silver	Strontium	Thallium	Zinc		
F-DPT1	3-4	6/30/2014	0.422 U	0.182 U	1.74	0.767 U	< 3.84	0.7	6.65
	7-8		< 5.7	0.271 U	337	1.14 U	31.3	33.2	6.55
F-DPT3	1.5-2.5	6/30/2014	0.45 U	0.194 U	11.4	0.818 U	< 4.09	5	8.28
	5-6		< 6.87	0.326 U	201	1.37 U	14	44	7.71
F-DPT4	18-20*	7/1/2014	0.932 U	0.403 U	21	1.69 U	9.63	52.8	5.54
F-DPT5	2-4	7/1/2014	< 4.96	0.236 U	184	0.993 U	16.6	21	7.53
	6-8		6.86	0.298 U	475	1.25 U	28	37.4	7.8
F-DPT7	3-4	7/1/2014	0.525 U	0.227 U	11.8	0.955 U	5.99	18.7	6.1
	7-8		< 6.61	0.314 U	336	1.32 U	22.4	40.7	7.21
	15-16*		0.503 U	0.217 U	3.43	0.915 U	< 4.57	16.7	7.16
F-DPT11	7-8	7/2/2014	0.459 U	0.198 U	21.3	0.835 U	< 4.18	8.8	6.43
	11-12		< 4.65	0.221 U	83.7	0.929 U	6.3	16.4	6.69
F-DPT14	3-4	7/2/2014	< 6.5	0.309 U	235	1.3 U	20.5	38.5	6.32
	7-8		< 6.38	0.303 U	195	1.28 U	15	39.1	5.9

Note(s):

[1] DPT locations were surveyed by WSP on July 7-8, 2014.
[2] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[3] mg/kg indicates milligrams per kilogram.
[4] ft BGS indicates feet below ground surface.
[5] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-F-DPT-1(3-4)-20140630.
[6] * indicates sample was collected to verify that native soil had been reached.
[7] S.U. indicates standard units.

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Table 6. LOLA Investigation – SPLP Analytical Data

Location	Sample Interval (ft BGS)	Sample Date	Concentration (µg/L)											
			Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Total Chromium	Copper	Iron	Lead	Magnesium	Manganese
F-DPT1	3-4	6/30/2014	5.1 U	7.2 U	29.9	0.67 U	< 100	0.33 U	1,840	1.3 U	2.8 U	< 400	4.7 U	259	< 10
	7-8		5.1 U	< 40	104	0.67 U	< 100	0.33 U	1,550	< 30	2.8 U	< 400	4.7 U	< 200	< 10
F-DPT3	1.5-2.5	6/30/2014	5.1 U	7.2 U	61.2	0.67 U	< 100	0.33 U	10,200	< 30	2.8 U	473	4.7 U	391	< 10
	5-6		5.1 U	< 40	22.3	0.67 U	< 100	0.33 U	4,340	1.3 U	2.8 U	33.4 U	4.7 U	204	< 10
F-DPT4	18-20*	7/1/2014	5.1 U	7.2 U	42.4	0.67 U	< 100	0.33 U	1,080	1.3 U	< 20	< 400	4.7 U	< 200	< 10
F-DPT5	2-4	7/1/2014	< 40	< 40	105	0.67 U	< 100	0.33 U	5,400	< 30	< 20	< 400	4.7 U	323	< 10
	6-8		< 40	41.5	221	0.67 U	< 100	0.33 U	12,000	1.3 U	2.8 U	33.4 U	4.7 U	214	< 10
F-DPT7	3-4	7/1/2014	5.1 U	7.2 U	17.3	0.67 U	< 100	0.33 U	1,470	1.3 U	2.8 U	< 400	4.7 U	211	< 10
	7-8		< 40	< 40	295	0.67 U	< 100	0.33 U	5,600	1.3 U	2.8 U	33.4 U	4.7 U	306	< 10
	15-16*		5.1 U	7.2 U	44.7	0.67 U	< 100	0.33 U	1,860	< 30	2.8 U	821	4.7 U	364	< 10
F-DPT11	7-8	7/2/2014	5.1 U	7.2 U	< 10	0.67 U	< 100	0.33 U	791	1.3 U	2.8 U	< 400	4.7 U	278	0.83 U
	11-12		5.1 U	7.2 U	57.1	0.67 U	< 100	0.33 U	1,300	< 30	2.8 U	426	4.7 U	500	< 10
F-DPT14	3-4	7/2/2014	5.1 U	7.2 U	35.2	0.67 U	< 100	0.33 U	1,110	1.3 U	2.8 U	< 400	4.7 U	515	< 10
	7-8		5.1 U	7.2 U	87	0.67 U	< 100	0.33 U	1,710	1.3 U	2.8 U	33.4 U	4.7 U	320	0.83 U

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] SPLP indicates synthetic precipitation leaching procedure.
[4] ft BGS indicates feet below ground surface.
[5] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-F-DPT-1(3-4)-20140630.
[6] * indicates sample was collected to verify that native soil had been reached.

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Table 6. LOLA Investigation – SPLP Analytical Data (Continued)

Location	Sample Interval (ft BGS)	Sample Date	Concentration (µg/L)									
			Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Zinc
F-DPT1	3-4	6/30/2014	0.06 U	< 20	< 20	133 U	4.8 U	1.8 U	4,810	< 10	5.1 U	< 40
	7-8		0.06 U	< 20	< 20	<1,000	< 40	1.8 U	<2,000	79.4	5.1 U	< 40
F-DPT3	1.5-2.5	6/30/2014	0.06 U	1.7 U	< 20	133 U	4.8 U	1.8 U	6,220	20.1	5.1 U	< 40
	5-6		0.06 U	< 20	1.6 U	133 U	< 40	1.8 U	2,760	43.6	5.1 U	2 U
F-DPT4	18-20*	7/1/2014	0.06 U	1.7 U	1.6 U	133 U	4.8 U	1.8 U	12,600	< 10	5.1 U	< 40
F-DPT5	2-4	7/1/2014	0.06 U	< 20	1.6 U	133 U	4.8 U	1.8 U	3,580	122	5.1 U	< 40
	6-8		0.06 U	< 20	1.6 U	<1,000	< 40	1.8 U	<2,000	247	5.1 U	< 40
F-DPT7	3-4	7/1/2014	0.06 U	1.7 U	1.6 U	133 U	4.8 U	1.8 U	6,090	10.1	5.1 U	< 40
	7-8		0.06 U	26.1	1.6 U	133 U	< 40	1.8 U	2,710	139	5.1 U	2 U
	15-16*		0.06 U	< 20	1.6 U	<1,000	4.8 U	1.8 U	5,740	25	5.1 U	< 40
F-DPT11	7-8	7/2/2014	0.06 U	1.7 U	1.6 U	133 U	4.8 U	1.8 U	2,550	20.2	5.1 U	2 U
	11-12		0.06 U	< 20	1.6 U	133 U	4.8 U	1.8 U	4,410	37.5	5.1 U	< 40
F-DPT14	3-4	7/2/2014	0.06 U	< 20	1.6 U	133 U	4.8 U	1.8 U	5,530	21	5.1 U	< 40
	7-8		0.06 U	< 20	< 20	<1,000	< 40	1.8 U	2,760	129	5.1 U	2 U

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] SPLP indicates synthetic precipitation leaching procedure.
[4] ft BGS indicates feet below ground surface.
[5] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-F-DPT-1(3-4)-20140630.
[6] * indicates sample was collected to verify that native soil had been reached.

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Table 7. Historical Groundwater Analytical Results – Metals

Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
MW-2-C	40-45	3/1/1990	-	<1	-	-	-	-	-	120	-	-	-	-	1	-	-	-
		7/1/1990	-	<1	-	-	-	-	-	130	-	-	-	-	2	-	-	-
		11/13/1990	-	<1	-	-	-	-	-	50	-	-	-	-	1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	130	-	-	-	-	1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	90	-	-	-	-	<1	-	-	-
		11/6/1991	-	<1	-	-	-	-	-	2,200	-	-	-	-	18	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	1,000	-	-	-	-	2	-	-	-
		7/15/1992	-	<1	-	-	-	-	-	900	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	1,700	-	-	-	-	<1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	2,300	-	-	-	-	10	-	-	-
		7/19/1993	-	<1	-	-	-	-	-	1,800	-	-	-	-	1	-	-	-
		11/4/1993	-	<1	-	-	-	-	-	900	-	-	-	-	1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	930	-	-	-	-	2	-	-	-
		7/11/1994	-	<1	-	-	-	-	-	770	-	-	-	-	<1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	730	-	-	-	-	5	-	-	-
		3/8/1995	-	<1	-	-	-	-	-	1,200	-	-	-	-	3	-	-	-
		3/6/1996	-	<1	-	-	-	-	-	430	-	-	-	-	<1	-	-	-
		3/17/1997	-	5.5	-	-	-	-	-	1,500	-	-	-	-	3	-	-	-
		3/16/1998	-	55	-	-	-	-	-	3,360	-	-	-	-	<5	-	-	-
		3/17/1999	-	66	-	-	-	-	-	3,970	-	-	-	-	35	-	-	-
		3/6/2000	-	35	-	-	-	-	-	1,870	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	2,810	-	-	-	-	<5	-	-	-
		3/6/2002	-	104	-	-	-	-	-	3,230	-	-	-	-	<5	-	-	-
		3/18/2003	-	102	-	-	-	-	-	5,310	-	-	-	-	<5	-	-	-
		3/9/2004	-	47	-	-	-	-	-	3,330	-	-	-	-	<5	-	-	-
		3/7/2005	-	104	-	-	-	-	-	4,600	-	-	-	-	<5	-	-	-
		3/2/2006	-	126	-	-	-	-	-	3,220	-	-	-	-	<5	-	-	-
		12/12/2006	0.75	280	41.9	2,100	0.068	0.18	0.0038	4,750	0.33	159	<0.1	0.58	0.58	<0.017	0.71	0.036
		3/6/2007	<3	290	42	2,690	<1	<5	0.006	3,420	<3	146	<0.2	<5	<5	<5	<1	0.015
		11/7/2007	<2.5	239	50	2,160	<1	<5	<0.005	3,460	<5	255	<0.2	<5	<5	<5	<1	0.009
		3/11/2008	<2.5	134	46	2,200	23	<5	<0.005	3,060	<5	154	<0.2	<5	<5	<5	<1	0.006
		11/6/2008	<2	186	44	2,160	<1	<5	<0.005	3,320	<5	65	<0.2	<5	<5	<5	<1	0.044
		3/10/2009	<40	193	<100	1,600	<10	11	<0.01	2,880	<10	90	<0.2	39	<20	<10	<10	0.038
		10/6/2009	<5	114	45	1,670	<5	<5	<0.005	3,910	<5	153	<0.2	<5	<5	<5	<5	0.006
		3/10/2010	<1	148	41	1,910	<1	3	0.001	2,550	<1	141	<0.2	3	4	<1	<1	0.003

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
MW-4-B*	22-27	11/11/2010	<0.5	196	45	2,150	<0.08	<5	<0.005	3,750	<5	120	<0.2	<5	<10	<5	0.58	<0.010
		3/2/2011	<0.5	267	48.1 B	1,990	<0.08	<5	<0.005	5,740	<5	203	<0.2	<5	<10	-	0.56	<0.01
		10/4/2011	<0.5	85.6	33.7	2,270	<0.08	<5	<0.005	3,140	<5	259	<0.2	<5	<10	-	0.57	0.0143
		3/6/2012	<0.5	232	74.6	2,790	<0.08	<5	<0.005	7,170	<5	350	<0.2	<5	<10	-	0.6	<0.010
		6/5/2012	<0.5	260	76.7	2,640	<0.08	<5	<0.005	8,050	<5	265	<0.2	<5	<10	-	0.11	<0.010
		3/1/1990	-	7	-	-	-	-	-	**6,500**	-	-	-	-	3	-	-	-
		7/1/1990	-	7	-	-	-	-	-	**4,800**	-	-	-	-	2	-	-	-
		11/13/1990	-	1	-	-	-	-	-	**810**	-	-	-	-	<1	-	-	-
		3/6/1991	-	1	-	-	-	-	-	**700**	-	-	-	-	<1	-	-	-
		7/22/1991	-	1	-	-	-	-	-	**890**	-	-	-	-	<1	-	-	-
		11/6/1991	-	1	-	-	-	-	-	**720**	-	-	-	-	<1	-	-	-
		3/25/1992	-	1	-	-	-	-	-	**840**	-	-	-	-	1	-	-	-
		7/15/1992	-	1	-	-	-	-	-	**650**	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	**50**	-	-	-	-	<1	-	-	-
		3/22/1993	-	1	-	-	-	-	-	**610**	-	-	-	-	<1	-	-	-
		7/19/1993	-	1	-	-	-	-	-	**620**	-	-	-	-	<1	-	-	-
		11/4/1993	-	1	-	-	-	-	-	**610**	-	-	-	-	<1	-	-	-
		3/7/1994	-	1	-	-	-	-	-	**550**	-	-	-	-	<1	-	-	-
		7/11/1994	-	1	-	-	-	-	-	**500**	-	-	-	-	<1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	**600**	-	-	-	-	<1	-	-	-
		3/8/1995	-	9.8	-	-	-	-	-	**9,700**	-	-	-	-	8	-	-	-
		3/6/1996	-	4.2	-	-	-	-	-	**5,700**	-	-	-	-	<1	-	-	-
		3/17/1997	-	3.4	-	-	-	-	-	**3,200**	-	-	-	-	2	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	**907**	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	**1,470**	-	-	-	-	17	-	-	-
		3/6/2000	-	<5	-	-	-	-	-	**1,070**	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	**536**	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	**755**	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	**989**	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	**627**	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	**741**	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	**588**	-	-	-	-	<5	-	-	-
		12/12/2006	0.14	0.28	28.7	12.5	<0.24	0.61	0.0276	**597**	0.24	23	<0.1	1.3	<0.14	<0.017	<0.014	0.0033
		3/6/2007	<3	2	30	10	<1	<5	<0.005	**607**	<3	22	<0.2	<5	<5	<5	<1	0.007
		11/7/2007	<2.5	<1	34	17	<1	<5	<0.005	**623**	<5	18	<0.2	<5	<5	<5	<1	0.011
		3/11/2008	<2.5	2	24	19	<1	<5	<0.005	**486**	<5	16	<0.2	<5	<5	<5	<1	<0.005
		11/6/2008	<2	<2	26	<5	<1	<5	<0.005	**405**	<5	14	<0.2	<5	<5	<5	<1	0.019

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
		Groundwater Standards	NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
		IMAC	1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		3/10/2009	<40	<2	<100	30	<10	<10	<0.01	**751**	<10	29	<0.2	<10	<20	<10	<10	<0.02
		10/6/2009	<5	<5	32	<20	<5	<5	<0.005	**517**	<5	20	<0.2	<5	<5	<5	<5	0.008
		3/10/2010	<1	<1	25	10	<1	3	<0.001	**516**	<1	18	0.2	2	<1	4	<1	0.002
		11/11/2010	<0.5	<5	27.7	<50	<0.080	<5	<0.005	**417**	<5	25.6	<0.2	<5	<10	<5	<0.1	<0.010
		3/2/2011	<0.5	<5	35.4 B	<50	<0.08	<5	<0.005	**763**	<5	33	<0.2	<5	<10	-	<0.1	<0.010
		10/4/2011	<0.5	<5	42.7	<50	<0.08	<5	<0.005	**1,250**	<5	42.5	<0.2	<5	<10	-	<0.1	<0.010
		3/6/2012	<0.5	<5	51.8	<50	<0.08	<5	<0.005	**1,460**	<5	44.3	<0.2	<5	<10	-	<0.1	<0.010
		6/5/2012	<0.5	<5	44.2	<50	<0.08	<5	<0.005	**1,100**	<5	**52.3**	<0.2	<5	<10	-	<0.1	<0.010
		10/2/2012	<0.5	<5	47.4	<50	<0.08	<5	<0.005	**1,470**	<5	49.1	<0.2	<5	<10	-	<0.1	<0.010
		3/12/2013	<1	<1	47	<50	<1	<5	<0.005	**1,650**	<1	46	<0.05	<5	<1	-	<0.2	<0.005
		6/12/2013	<1	<1	47	<50	<1	<5	<0.005	**570**	<1	16	<0.05	<5	<1	-	<0.2	0.006
		10/2/2013	<1	<1	53	<50	<1	<5	<0.005	**1,720**	<1	**62**	<0.05	<5	<1	-	<0.2	<0.005
		3/4/2014	<1	<1	61	<50	<1	<5	<0.005	**2,020**	<1	**62**	<0.05	<5	<1	-	<0.2	0.005
		6/2/2014	<1	<1	59	<50	<1	<5	<0.005	**891**	<1	29	<0.05	<5	<1	-	<0.2	<0.005
		10/1/2014	<1	<1	70	<50	<1	<5	<0.005	**2840**	<1	**80**	<0.05	<5	<1	-	<0.2	<0.005
		3/11/2015	<1	<1	80	<50	<1	<5	<0.005	**2940**	<1	**81**	<0.05	<5	<1	-	<0.2	<0.005
		6/1/2015	<1	<1	68	<50	<1	<5	<0.005	**1280**	<1	**59**	<0.05	<5	<1	-	<0.2	<0.005
MW-5-C*	40-45	3/1/1990	-	1	-	-	-	-	-	**630**	-	-	-	-	<1	-	-	-
		7/1/1990	-	1	-	-	-	-	-	**430**	-	-	-	-	<1	-	-	-
		11/13/1990	-	<1	-	-	-	-	-	110	-	-	-	-	<1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	<50	-	-	-	-	<1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	90	-	-	-	-	<1	-	-	-
		11/6/1991	-	1	-	-	-	-	-	120	-	-	-	-	<1	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	50	-	-	-	-	<1	-	-	-
		7/15/1992	-	<1	-	-	-	-	-	110	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	50	-	-	-	-	<1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	70	-	-	-	-	<1	-	-	-
		7/19/1993	-	<1	-	-	-	-	-	110	-	-	-	-	<1	-	-	-
		11/4/1993	-	<1	-	-	-	-	-	90	-	-	-	-	<1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	70	-	-	-	-	<1	-	-	-
		7/11/1994	-	<1	-	-	-	-	-	60	-	-	-	-	<1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	90	-	-	-	-	<1	-	-	-
		3/8/1995	-	<1	-	-	-	-	-	**1,200**	-	-	-	-	<1	-	-	-
		3/6/1996	-	<1	-	-	-	-	-	<100	-	-	-	-	<1	-	-	-
		3/17/1997	-	<1	-	-	-	-	-	**350**	-	-	-	-	<1	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	11	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	159	-	-	-	-	<5	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		3/6/2000	-	<5	-	-	-	-	-	46	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	285	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	127	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	14	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	**373**	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	122	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	115	-	-	-	-	<5	-	-	-
		3/6/2007	-	<1	-	-	-	-	-	129	-	-	-	-	<5	-	-	-
		3/11/2008	-	<2	-	-	-	-	-	**2,210**	-	-	-	-	<5	-	-	-
		3/10/2009	-	<2	-	-	-	-	-	<100	-	-	-	-	<20	-	-	-
		3/10/2010	-	<5	-	-	-	-	-	12	-	-	-	-	<10	-	-	-
		3/2/2011	-	<5	-	-	-	-	-	72	-	-	-	-	<10	-	-	-
		3/7/2012	<0.5	<5	39.8	<50	<0.08	<5	<0.005	57	<5	**336**	<0.2	<5	<10	-	<0.1	<0.010
		6/6/2012	<0.5	<5	34.3	<50	<0.08	<5	<0.005	<50	<5	**193**	<0.2	<5	<10	-	<0.1	<0.010
		10/2/2012	<0.5	<5	42.1	<50	0.1	<5	<0.005	<50	<5	**447**	<0.2	<5	<10	-	<0.1	<0.010
		3/13/2013	<1	<1	28	<50	<1	<5	<0.005	26	<1	**222**	<0.05	<5	<1	-	<0.2	<0.005
		6/13/2013	<1	<1	32	<50	<1	<5	<0.005	28	<1	**130**	<0.05	<5	<1	-	<0.2	<0.005
		10/3/2013	<1	<1	33	<50	<1	<5	<0.005	26	<1	**602**	<0.05	<5	<1	-	<0.2	<0.005
		3/5/2014	<1	<1	17	<50	<1	<5	<0.005	21	<1	**111**	<0.05	<5	<1	-	<0.2	0.01
		6/3/2014	<1	<1	28	<50	<1	<5	<0.005	34	<1	**441**	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2014	<1	<1	27	<50	<1	<5	<0.005	23	<1	**554**	<0.05	<5	<1	-	<0.2	<0.005
		3/10/2015	<1	<1	29	<50	<1	<5	<0.005	13	<1	**535**	<0.05	<5	<1	-	<0.2	<0.005
		6/1/2015	<1	<1	27	<50	<1	<5	<0.005	<10	<1	**441**	<0.05	<5	<1	-	<0.2	<0.005
MW-6-C	40-45	3/1/1990	-	<1	-	-	-	-	-	7,140	-	-	-	-	<1	-	-	-
		7/1/1990	-	<1	-	-	-	-	-	610	-	-	-	-	<1	-	-	-
		11/13/1990	-	<1	-	-	-	-	-	170	-	-	-	-	<1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	150	-	-	-	-	<1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	130	-	-	-	-	<1	-	-	-
		11/6/1991	-	<1	-	-	-	-	-	170	-	-	-	-	<1	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	160	-	-	-	-	<1	-	-	-
		7/15/1992	-	<1	-	-	-	-	-	200	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	300	-	-	-	-	<1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	180	-	-	-	-	<1	-	-	-
		7/19/1993	-	<1	-	-	-	-	-	190	-	-	-	-	<1	-	-	-
		11/4/1993	-	1	-	-	-	-	-	210	-	-	-	-	<1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	180	-	-	-	-	<1	-	-	-
		7/11/1994	-	<1	-	-	-	-	-	180	-	-	-	-	<1	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		11/2/1994	-	<1	-	-	-	-	-	230	-	-	-	-	<1	-	-	-
		3/8/1995	-	<1	-	-	-	-	-	1,500	-	-	-	-	<1	-	-	-
		3/6/1996	-	<1	-	-	-	-	-	2,500	-	-	-	-	<1	-	-	-
		3/17/1997	-	<1	-	-	-	-	-	1,200	-	-	-	-	<1	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	102	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	193	-	-	-	-	25	-	-	-
		3/6/2000	-	<5	-	-	-	-	-	106	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	150	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	120	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	489	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	1,340	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	284	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	195	-	-	-	-	<5	-	-	-
		12/12/2006	3	0.22	45.5	739	0.46	0.18	2	157	0.54	930	<0.1	1.3	1.2	<0.017	0.1	0.0098
		3/6/2007	<3	<1	37	770	<1	<5	<5	331	<3	711	<0.2	<5	<5	<5	<1	0.013
		11/7/2007	<2.5	<1	41	1,140	<1	<5	<5	1,040	6	1,090	<0.2	<5	<5	<5	<1	0.044
		3/11/2008	<2.5	<2	34	925	<1	7	<5	275	<5	889	<0.2	<5	<5	<5	<1	0.045
		11/6/2008	<2	<2	35	940	<1	<5	<5	236	<5	644	<0.2	<5	<5	<5	<1	0.042
		3/10/2009	<40	<2	<100	896	<10	<10	<10	138	<10	929	<0.2	<10	<20	<10	<10	0.026
		10/6/2009	<5	<5	47	1,510	<5	<5	<5	153	<5	1,260	<0.2	<5	<5	<5	<5	0.014
		3/10/2010	<1	<1	35	1,490	<1	3	2	424	<1	1,130	<0.2	3	5	<1	<1	0.014
		11/11/2010	<0.5	<5	33.4	1,350	0.26	<5	<0.005	219	<5	1,060	<0.2	<5	<10	<5	<0.1	<0.01
		3/2/2011	<0.5	<5	30 B	943	0.17	<5	<0.005	636	<5	301	<0.2	<5	<10	-	<0.1	0.0154 B
		10/4/2011	<0.5	<5	41.6	1,690	0.3	<5	<0.005	780	<5	1,180	<0.2	<5	<10	-	<0.1	0.016
		3/6/2012	<0.5	<5	42.4	1,680	0.23	<5	<0.005	407	<5	1,280	<0.2	<5	<10	-	<0.1	0.0193
		6/5/2012	<0.5	<5	41.1	1,320	0.2	<5	<0.005	591	<5	1,150	<0.2	<5	<10	-	0.1	0.0169
MW-7-C*	40-45	3/1/1990	-	<1	-	-	-	-	-	**3,400**	-	-	-	-	<1	-	-	-
		7/1/1990	-	<1	-	-	-	-	-	**1,600**	-	-	-	-	<1	-	-	-
		11/13/1990	-	<1	-	-	-	-	-	250	-	-	-	-	<1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	160	-	-	-	-	1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	120	-	-	-	-	<1	-	-	-
		11/6/1991	-	<1	-	-	-	-	-	90	-	-	-	-	1	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	60	-	-	-	-	<1	-	-	-
		7/15/1992	-	<1	-	-	-	-	-	110	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	110	-	-	-	-	<1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	120	-	-	-	-	<1	-	-	-
		7/19/1993	-	1	-	-	-	-	-	170	-	-	-	-	<1	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		11/4/1993	-	<1	-	-	-	-	-	90	-	-	-	-	<1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	<50	-	-	-	-	2	-	-	-
		7/11/1994	-	<1	-	-	-	-	-	70	-	-	-	-	1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	60	-	-	-	-	1	-	-	-
		3/8/1995	-	1.4	-	-	-	-	-	**2,800**	-	-	-	-	2	-	-	-
		3/6/1996	-	2.5	-	-	-	-	-	**4,900**	-	-	-	-	<1	-	-	-
		3/17/1997	-	2	-	-	-	-	-	**5,200**	-	-	-	-	<1	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	117	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	**696**	-	-	-	-	**27**	-	-	-
		3/6/2000	-	<5	-	-	-	-	-	**464**	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	**914**	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	**1,330**	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	**861**	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	**502**	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	103	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	<5	-	-	-	-	<5	-	-	-
		3/6/2007	-	<1	-	-	-	-	-	72	-	-	-	-	<5	-	-	-
		3/11/2008	-	<2	-	-	-	-	-	123	-	-	-	-	<5	-	-	-
		3/10/2009	-	<2	-	-	-	-	-	<100	-	-	-	-	<20	-	-	-
		3/10/2010	-	<5	-	-	-	-	-	45	-	-	-	-	<10	-	-	-
		3/2/2011	-	<5	-	-	-	-	-	190	-	-	-	-	<10	-	-	-
		3/6/2012	<0.5	<5	134	**709**	0.083	<5	<0.005	**561**	<5	**320**	<0.2	<5	<10	-	<0.1	<0.010
		6/5/2012	<0.5	<5	126	**767**	0.1	<5	<0.005	**707**	<5	**458**	<0.2	<5	<10	-	<0.1	<0.010
		10/2/2012	<0.5	<5	97.7	157	<0.08	<5	<0.005	273	<5	**60**	<0.2	<5	<10	-	<0.1	<0.010
		3/12/2013	<1	<1	68	164	<1	<5	<0.005	222	<1	**108**	<0.05	<5	<1	-	<0.2	0.006
		6/12/2013	<1	<1	67	185	**3.34**	<5	<0.005	282	<1	**148**	<0.05	<5	<1	-	<0.2	<0.005
		10/3/2013	<1	<1	103	312	<1	<5	<0.005	266	<1	**101**	<0.05	<5	<1	-	<0.2	<0.005
		3/4/2014	<1	<1	70	330	<1	<5	<0.005	128	<1	**142**	<0.05	<5	<1	-	<0.2	0.008
		6/2/2014	<1	<1	84	391	<1	<5	<0.005	**316**	<1	**131**	<0.05	<5	<1	-	<0.2	0.006
		10/2/2014	<1	<1	48	386	<1	<5	<0.005	**381**	<1	**136**	<0.05	<5	<1	-	<0.2	<0.005
		3/10/2015	<1	<1	58	490	<1	<5	<0.005	50	<1	**202**	<0.05	<5	<1	-	<0.2	<0.005
		6/2/2015	<1	<1	75	560	<1	<5	<0.005	166	<1	**368**	<0.05	<5	<1	-	**0.405**	<0.005
MW-8	40-50	3/1/1990	-	<1	-	-	-	-	-	**4,800**	-	-	-	-	<1	-	-	-
		7/1/1990	-	<1	-	-	-	-	-	**3,200**	-	-	-	-	<1	-	-	-
		11/13/1990	-	<1	-	-	-	-	-	300	-	-	-	-	<1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	150	-	-	-	-	<1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	**320**	-	-	-	-	<1	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		11/6/1991	-	<1	-	-	-	-	-	180	-	-	-	-	<1	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	80	-	-	-	-	<1	-	-	-
		7/15/1992	-	<1	-	-	-	-	-	**380**	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	50	-	-	-	-	<1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	**620**	-	-	-	-	<1	-	-	-
		7/19/1993	-	<1	-	-	-	-	-	**500**	-	-	-	-	<1	-	-	-
		11/4/1993	-	<1	-	-	-	-	-	**360**	-	-	-	-	<1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	280	-	-	-	-	<1	-	-	-
		7/11/1994	-	<1	-	-	-	-	-	100	-	-	-	-	<1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	**510**	-	-	-	-	<1	-	-	-
		3/8/1995	-	2.4	-	-	-	-	-	**13,000**	-	-	-	-	<1	-	-	-
		3/6/1996	-	<1	-	-	-	-	-	250	-	-	-	-	<1	-	-	-
		3/17/1997	-	<1	-	-	-	-	-	190	-	-	-	-	<1	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	60	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	175	-	-	-	-	19	-	-	-
		3/6/2000	-	<5	-	-	-	-	-	147	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	298	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	81	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	64	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	**671**	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	**450**	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	97	-	-	-	-	<5	-	-	-
		3/6/2007	-	<1	-	-	-	-	-	103	-	-	-	-	<5	-	-	-
		3/11/2008	-	<2	-	-	-	-	-	64	-	-	-	-	<5	-	-	-
		3/10/2009	-	<2	-	-	-	-	-	196	-	-	-	-	<20	-	-	-
		3/10/2010	-	<5	-	-	-	-	-	<10	-	-	-	-	<10	-	-	-
		3/2/2011	-	<5	-	-	-	-	-	<50	-	-	-	-	<10	-	-	-
		3/7/2012	<0.5	<5	60.4	<50	<0.08	<5	<0.005	64	<5	**376**	<0.2	<5	<10	-	<0.1	<0.010
		6/6/2012	<0.5	<5	68.1	<50	<0.08	<5	<0.005	<50	<5	**344**	<0.2	<5	<10	-	<0.1	<0.010
		3/5/2014	<1	<1	47	<50	<1	<5	<0.005	<10	<1	**270**	-	<5	<1	-	<0.2	0.006
MW-9	40-50	3/1/1990	-	<1	-	-	-	-	-	**360**	-	-	-	-	<1	-	-	-
		7/1/1990	-	<1	-	-	-	-	-	**320**	-	-	-	-	<1	-	-	-
		11/13/1990	-	<1	-	-	-	-	-	220	-	-	-	-	<1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	90	-	-	-	-	<1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	150	-	-	-	-	<1	-	-	-
		11/6/1991	-	1	-	-	-	-	-	100	-	-	-	-	<1	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	60	-	-	-	-	<1	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		7/15/1992	-	<1	-	-	-	-	-	90	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	120	-	-	-	-	<1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	140	-	-	-	-	<1	-	-	-
		7/19/1993	-	<1	-	-	-	-	-	280	-	-	-	-	<1	-	-	-
		11/4/1993	-	<1	-	-	-	-	-	180	-	-	-	-	<1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	110	-	-	-	-	<1	-	-	-
		7/11/1994	-	<1	-	-	-	-	-	60	-	-	-	-	<1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	160	-	-	-	-	<1	-	-	-
		3/8/1995	-	<1	-	-	-	-	-	**1,400**	-	-	-	-	<1	-	-	-
		3/6/1996	-	3	-	-	-	-	-	**4,300**	-	-	-	-	<1	-	-	-
		3/17/1997	-	<1	-	-	-	-	-	**600**	-	-	-	-	<1	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	35	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	**489**	-	-	-	-	10	-	-	-
		3/6/2000	-	<5	-	-	-	-	-	203	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	**586**	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	**316**	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	**471**	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	**398**	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	127	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	58	-	-	-	-	<5	-	-	-
		3/6/2007	-	<1	-	-	-	-	-	88	-	-	-	-	<5	-	-	-
		3/11/2008	-	<2	-	-	-	-	-	39	-	-	-	-	<5	-	-	-
		3/10/2009	-	<2	-	-	-	-	-	207	-	-	-	-	<20	-	-	-
		3/10/2010	-	<5	-	-	-	-	-	16	-	-	-	-	<10	-	-	-
		3/2/2011	-	<5	-	-	-	-	-	133	-	-	-	-	<10	-	-	-
		3/7/2012	<0.5	<5	20.2	<50	<0.08	<5	<0.005	<50	<5	6.8	<0.2	<5	<10	-	<0.1	<0.010
		6/6/2012	<0.5	<5	21.2	<50	<0.08	<5	<0.005	<50	<5	6.6	<0.2	<5	<10	-	<0.1	<0.010
MW-10	40-50	3/1/1990	-	2	-	-	-	-	-	**3,800**	-	-	-	-	<1	-	-	-
		7/1/1990	-	<1	-	-	-	-	-	**770**	-	-	-	-	<1	-	-	-
		11/13/1990	-	<1	-	-	-	-	-	210	-	-	-	-	<1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	80	-	-	-	-	<1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	120	-	-	-	-	<1	-	-	-
		11/6/1991	-	<1	-	-	-	-	-	80	-	-	-	-	<1	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	90	-	-	-	-	<1	-	-	-
		7/15/1992	-	<1	-	-	-	-	-	80	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	120	-	-	-	-	<1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	150	-	-	-	-	<1	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		7/19/1993	-	<1	-	-	-	-	-	**490**	-	-	-	-	<1	-	-	-
		11/4/1993	-	<1	-	-	-	-	-	120	-	-	-	-	<1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	100	-	-	-	-	<1	-	-	-
		7/11/1994	-	<1	-	-	-	-	-	100	-	-	-	-	<1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	140	-	-	-	-	<1	-	-	-
		3/8/1995	-	<1	-	-	-	-	-	**1,300**	-	-	-	-	<1	-	-	-
		3/6/1996	-	<1	-	-	-	-	-	230	-	-	-	-	<1	-	-	-
		3/17/1997	-	<1	-	-	-	-	-	200	-	-	-	-	<1	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	63	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	**556**	-	-	-	-	11	-	-	-
		3/6/2000	-	<5	-	-	-	-	-	75	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	222	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	168	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	234	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	**485**	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	188	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	123	-	-	-	-	<5	-	-	-
		3/6/2007	-	1	-	-	-	-	-	106	-	-	-	-	<5	-	-	-
		3/11/2008	-	2	-	-	-	-	-	174	-	-	-	-	<5	-	-	-
		3/10/2009	-	<2	-	-	-	-	-	<100	-	-	-	-	<20	-	-	-
		3/10/2010	-	<5	-	-	-	-	-	41	-	-	-	-	<10	-	-	-
		3/2/2011	-	<5	-	-	-	-	-	<50	-	-	-	-	<10	-	-	-
		3/7/2012	<0.5	<5	65.2	53.3	<0.08	<5	<0.005	105	<5	**86.7**	<0.2	<5	<10	-	<0.1	<0.010
		6/5/2012	<0.5	<5	53.5	73	<0.08	<5	<0.005	156	<5	**84**	<0.2	<5	<10	-	<0.1	<0.010
MW-11*	40-50	3/1/1990	-	<1	-	-	-	-	-	**4,900**	-	-	-	-	<1	-	-	-
		7/1/1990	-	<1	-	-	-	-	-	**3,400**	-	-	-	-	<1	-	-	-
		11/13/1990	-	<1	-	-	-	-	-	**4,800**	-	-	-	-	<1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	**1,800**	-	-	-	-	<1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	**1,400**	-	-	-	-	<1	-	-	-
		11/6/1991	-	<1	-	-	-	-	-	**890**	-	-	-	-	<1	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	**1,000**	-	-	-	-	<1	-	-	-
		7/15/1992	-	<1	-	-	-	-	-	**640**	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	110	-	-	-	-	<1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	250	-	-	-	-	1	-	-	-
		7/19/1993	-	<1	-	-	-	-	-	**490**	-	-	-	-	<1	-	-	-
		11/4/1993	-	<1	-	-	-	-	-	**440**	-	-	-	-	<1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	210	-	-	-	-	<1	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		7/11/1994	-	<1	-	-	-	-	-	230	-	-	-	-	<1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	230	-	-	-	-	<1	-	-	-
		3/8/1995	-	<1	-	-	-	-	-	150	-	-	-	-	<1	-	-	-
		3/6/1996	-	<1	-	-	-	-	-	250	-	-	-	-	<1	-	-	-
		3/17/1997	-	<1	-	-	-	-	-	<100	-	-	-	-	<1	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	17	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	**379**	-	-	-	-	11	-	-	-
		3/6/2000	-	<5	-	-	-	-	-	138	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	106	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	107	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	**1,010**	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	138	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	<5	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	<5	-	-	-	-	<5	-	-	-
		3/6/2007	-	1	-	-	-	-	-	50	-	-	-	-	<5	-	-	-
		3/11/2008	-	<2	-	-	-	-	-	**330**	-	-	-	-	<5	-	-	-
		3/10/2009	-	<2	-	-	-	-	-	<100	-	-	-	-	<20	-	-	-
		3/10/2010	-	<5	-	-	-	-	-	<10	-	-	-	-	<10	-	-	-
		3/2/2011	-	<5	-	-	-	-	-	**420**	-	-	-	-	<10	-	-	-
		3/7/2012	<0.5	<5	79.6	<50	<0.08	<5	<0.005	174	<5	**91.4**	<0.2	<5	<10	-	<0.1	<0.010
		6/6/2012	<0.5	<5	78.8	<50	0.081	<5	<0.005	245	<5	**88.3**	<0.2	<5	<10	-	<0.1	<0.010
		10/2/2012	<0.5	<5	75.8	<50	0.11	<5	<0.005	181	<5	**99.6**	<0.2	<5	<10	-	<0.1	<0.010
		3/13/2013	<1	<1	85	<50	<1	<5	<0.005	142	<1	**90**	<0.05	<5	<1	-	<0.2	<0.005
		6/13/2013	<1	<1	83	<50	<1	<5	<0.005	219	<1	**115**	<0.05	<5	<1	-	<0.2	<0.005
		10/3/2013	<1	<1	96	<50	<1	<5	<0.005	130	<1	**117**	<0.05	<5	<1	-	<0.2	<0.005
		3/5/2014	<1	<1	82	<50	<1	<5	<0.005	295	<1	**86**	<0.05	<5	<1	-	<0.2	<0.005
		6/3/2014	<1	<1	93	<50	<1	<5	<0.005	140	<1	**60**	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2014	<1	<1	87	<50	<1	<5	<0.005	124	<1	49	<0.05	<5	<1	-	<0.2	<0.005
		3/10/2015	<1	<1	85	<50	<1	<5	<0.005	119	<1	33	<0.05	<5	<1	-	<0.2	<0.005
		6/1/2015	<1	<1	82	<50	<1	<5	<0.005	48	<1	30	<0.05	<5	<1	-	<0.2	<0.005
MW-12*	40-50	3/1/1990	-	<1	-	-	-	-	-	**8,000**	-	-	-	-	<1	-	-	-
		7/1/1990	-	4	-	-	-	-	-	**4,000**	-	-	-	-	<1	-	-	-
		11/13/1990	-	1	-	-	-	-	-	**1,400**	-	-	-	-	1	-	-	-
		3/6/1991	-	<1	-	-	-	-	-	**370**	-	-	-	-	1	-	-	-
		7/22/1991	-	<1	-	-	-	-	-	**440**	-	-	-	-	<1	-	-	-
		11/6/1991	-	<1	-	-	-	-	-	290	-	-	-	-	1	-	-	-
		3/25/1992	-	<1	-	-	-	-	-	240	-	-	-	-	1	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		7/15/1992	-	<1	-	-	-	-	-	**380**	-	-	-	-	<1	-	-	-
		11/24/1992	-	<1	-	-	-	-	-	280	-	-	-	-	1	-	-	-
		3/22/1993	-	<1	-	-	-	-	-	**440**	-	-	-	-	1	-	-	-
		7/19/1993	-	<1	-	-	-	-	-	**420**	-	-	-	-	<1	-	-	-
		11/4/1993	-	<1	-	-	-	-	-	**410**	-	-	-	-	<1	-	-	-
		3/7/1994	-	<1	-	-	-	-	-	**340**	-	-	-	-	1	-	-	-
		7/11/1994	-	1	-	-	-	-	-	**310**	-	-	-	-	<1	-	-	-
		11/2/1994	-	<1	-	-	-	-	-	**370**	-	-	-	-	<1	-	-	-
		3/8/1995	-	<1	-	-	-	-	-	**1,300**	-	-	-	-	<1	-	-	-
		3/6/1996	-	2.6	-	-	-	-	-	**3,900**	-	-	-	-	<1	-	-	-
		3/17/1997	-	<1	-	-	-	-	-	**1,000**	-	-	-	-	<1	-	-	-
		3/16/1998	-	<5	-	-	-	-	-	**896**	-	-	-	-	<5	-	-	-
		3/17/1999	-	<5	-	-	-	-	-	**988**	-	-	-	-	**34**	-	-	-
		3/6/2000	-	<5	-	-	-	-	-	**1,020**	-	-	-	-	<5	-	-	-
		3/16/2001	-	<5	-	-	-	-	-	**552**	-	-	-	-	<5	-	-	-
		3/6/2002	-	<5	-	-	-	-	-	**1,570**	-	-	-	-	<5	-	-	-
		3/18/2003	-	<5	-	-	-	-	-	**1,480**	-	-	-	-	<5	-	-	-
		3/9/2004	-	<5	-	-	-	-	-	**649**	-	-	-	-	<5	-	-	-
		3/7/2005	-	<5	-	-	-	-	-	**581**	-	-	-	-	<5	-	-	-
		3/2/2006	-	<5	-	-	-	-	-	**733**	-	-	-	-	<5	-	-	-
		3/6/2007	-	1	-	-	-	-	-	**3,560**	-	-	-	-	<5	-	-	-
		3/11/2008	-	<5	-	-	-	-	-	78	-	-	-	-	<5	-	-	-
		3/10/2009	-	<2	-	-	-	-	-	194	-	-	-	-	<20	-	-	-
		3/10/2010	-	<5	-	-	-	-	-	47	-	-	-	-	<10	-	-	-
		3/2/2011	-	<5	-	-	-	-	-	**316**	-	-	-	-	<10	-	-	-
		3/7/2012	<0.5	<5	39.6	**1,450**	0.092	<5	<0.005	**1,490**	**17.3**	**281**	<0.2	<5	<10	-	<0.1	<0.010
		6/6/2012	<0.5	<5	53.1	**1,260**	<0.08	<5	<0.005	**317**	<5	**221**	<0.2	<5	<10	-	<0.1	<0.010
		10/2/2012	<0.5	<5	54.8	**1,290**	<0.08	<5	<0.005	**753**	5.3	**204**	<0.2	<5	<10	-	<0.1	<0.010
		3/13/2013	<1	<1	30	**1,510**	<1	<5	<0.005	255	3.17	**280**	<0.05	<5	<1	-	<0.2	<0.005
		6/13/2013	<1	<1	27	**1,360**	<1	<5	<0.005	**411**	4.82	**211**	<0.05	<5	<1	-	<0.2	<0.005
		10/3/2013	<1	<1	26	**1,560**	<1	<5	<0.005	110	1.32	**236**	<0.05	<5	<1	-	<0.2	<0.005
		3/5/2014	<1	<1	19	**928**	<1	<5	<0.005	97	<1	**55**	<0.05	<5	<1	-	<0.2	<0.005
		6/3/2014	<1	<1	21	**1,050**	<1	<5	<0.005	79	<1	**142**	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2014	<1	<1	25	**1,300**	<1	<5	<0.005	93	<1	**196**	<0.05	<5	<1	-	<0.2	<0.005
		3/10/2015	<1	<1	36	**1,500**	<1	<5	<0.005	112	<1	**316**	<0.05	<5	<1	-	<0.2	<0.005
		6/2/2015	<1	<1	29	**1,470**	<1	<5	<0.005	**5,690**	<1	**691**	<0.05	<5	<1	-	<0.2	<0.005
MW-17	45-50	3/2/2006	-	41	-	-	-	-	-	2,450	-	-	-	-	<5	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
MW-18	45-50	12/12/2006	0.33	18.8	162	2,180	0.046	0.19	0.0018	2,240	0.2	455	<0.1	3.7	0.68	<0.017	0.21	0.0133
		3/6/2007	4	22	161	2,900	<1	6	0.009	2,840	<3	441	<0.2	<5	<5	<5	<1	0.022
		11/7/2007	<2.5	25	143	2,720	<1	<5	<0.005	1,220	<5	353	<0.2	<5	<5	<5	<1	0.023
		3/11/2008	<2.5	20	119	2,440	<1	<5	<0.005	886	<5	276	<0.2	<5	<5	<5	<1	0.02
		11/6/2008	<2	29	87	3,060	<1	<5	<0.005	982	<5	162	<0.2	<5	<5	<5	<1	0.025
		3/10/2009	<40	27	120	2,000	<10	<10	<0.01	1,110	<10	274	<0.2	<10	<20	<10	<10	0.03
		10/6/2009	<5	34	140	2,110	<5	<5	<0.005	1,200	<5	259	0.2	<5	<5	<5	<5	0.019
		3/10/2010	<1	29	112	2,140	<1	3	<0.001	1,560	<1	262	<0.2	4	4	<1	<1	0.009
		11/11/2010	<0.5	35.2	102	2,140	<0.08	<5	<0.005	1,570	<5	284	<0.2	<5	<10	<5	<0.1	<0.010
		3/2/2011	<0.5	7.1	126	2,220	<0.08	<5	<0.005	386	<5	386	<0.2	<5	<10	-	0.11	0.0102 B
		10/4/2011	<0.5	7.1	135	2,090	<0.08	<5	<0.005	636	<5	305	<0.2	<5	<10	-	0.14	<0.01
		3/6/2012	<0.5	17	153	2,230	<0.08	<5	<0.005	2,040	<5	401	<0.2	<5	<10	-	<0.1	0.012
		6/5/2012	<0.5	16.1	162	2,120	<0.08	<5	<0.005	1,890	<5	382	<0.2	<5	<10	-	0.38	0.012
		3/2/2006	-	39	-	-	-	-	-	2,940	-	-	-	-	<5	-	-	-
		3/6/2007	-	113	-	-	-	-	-	2,000	-	-	-	-	<5	-	-	-
		3/11/2008	-	67	-	-	-	-	-	4,140	-	-	-	-	<5	-	-	-
		3/10/2009	-	110	-	-	-	-	-	6,160	-	-	-	-	<20	-	-	-
		3/10/2010	-	80	-	-	-	-	-	6,910	-	-	-	-	10	-	-	-
		3/2/2011	-	26.9	-	-	-	-	-	420	-	-	-	-	<10	-	-	-
		3/6/2012	<0.5	169	126	1,550	<0.08	<5	<0.005	6,510	<5	266	<0.2	<5	<10	-	<0.1	<0.010
		6/5/2012	<0.5	159	88.3	1,150	<0.08	<5	<0.005	4,920	<5	215	<0.2	<5	<10	-	<0.1	<0.010
MW-19*	45-50	3/2/2006	-	10	-	-	-	-	-	150	-	-	-	-	<5	-	-	-
		12/12/2006	0.49	0.63	101	**850**	0.19	0.2	0.0046	25	0.18	**356**	<0.1	3.6	1	<0.017	**0.33**	0.0541
		3/6/2007	<3	1	87	**1,180**	<1	<5	0.006	84	<3	**358**	<0.2	<5	<5	<5	<1	0.031
		11/7/2007	<2.5	<1	96	**1,280**	<1	<5	<0.005	74	<5	**339**	<0.2	<5	<5	<5	<1	0.022
		3/11/2008	<2.5	<2	99	**1,620**	<1	<5	<0.005	121	<5	**354**	<0.2	<5	<5	<5	<1	0.025
		11/6/2008	<2	<2	60	**1,760**	<1	<5	<0.005	142	<5	**182**	<0.2	<5	<5	<5	<1	0.036
		3/10/2009	<40	2	<100	**2,020**	<10	<10	<0.01	200	<10	**311**	<0.2	<10	<20	<10	**11**	0.023
		10/6/2009	<5	<5	87	**1,960**	<5	<5	<0.005	215	<5	**337**	<0.2	<5	<5	<5	<5	0.015
		3/10/2010	<1	<1	61	**1,920**	<1	5	0.001	**322**	<1	**267**	<0.2	4	3	<1	<1	0.013
		11/11/2010	<0.5	<5	61	**1,830**	<0.08	<5	<0.005	296	<5	**249**	<0.2	<5	<10	<5	**0.31**	<0.010
		3/2/2011	<0.5	<5	71.6 B	**1,960**	<0.08	<5	<0.005	61	<5	**347**	<0.2	<5	<10	-	**0.3**	0.0159
		10/4/2011	<0.5	<5	69.6	**1,710**	<0.08	<5	<0.005	113	<5	**366**	<0.2	<5	<10	-	**0.28**	0.0114
		3/6/2012	<0.5	<5	64.6	**1,920**	<0.08	<5	<0.005	<50	<5	14.6	<0.2	<5	<10	-	**0.23**	<0.010
		6/5/2012	<0.5	<5	77.1	**1,940**	<0.08	<5	<0.005	74	<5	**436**	<0.2	<5	<10	-	**0.38**	0.0111
		10/3/2012	<0.5	<5	55.1	**1,680**	<0.08	<5	<0.005	<50	<5	14.3	<0.2	<5	<10	-	<0.1	<0.010
		3/12/2013	<1	<1	98	**1,830**	<1	<5	<0.005	117	<1	**508**	<0.05	<5	<1	-	**0.62**	0.022
		6/12/2013	<1	<1	98	**1,710**	<1	<5	<0.005	**504**	<1	**539**	<0.05	<5	<1	-	**0.311**	0.013

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		10/2/2013	<1	<1	103	**1,990**	<1	<5	<0.005	**528**	<1	**531**	<0.05	<5	<1	-	**0.43**	0.013
		3/4/2014	<1	<1	94	**2,020**	<1	<5	<0.005	**646**	<1	**475**	<0.05	<5	<1	-	**0.32**	0.013
		6/3/2014	<1	<1	94	**2,110**	<1	<5	<0.005	**725**	<1	**497**	<0.05	<5	<1	-	**0.299**	0.015
		10/2/2014	<1	2.23	91	**2,190**	<1	<5	<0.005	**1,080**	<1	**489**	<0.05	<5	<1	-	**0.464**	0.014
		3/11/2015	<1	2.22	85	**2,270**	<1	<5	<0.005	**1,380**	<1	**444**	<0.05	<5	<1	-	**0.405**	0.013
		6/1/2015	<1	2.62	73	**2,080**	<1	<5	<0.005	**914**	<1	**386**	<0.05	<5	<1	-	**0.458**	0.009
MW-21-C*	40-45	10/3/2011	-	6.2	-	**1,640**	-	-	-	**947**	-	**1,200**	-	-	<10	-	-	-
		1/18/2012	-	<5	-	**1,490**	-	-	-	**1,730**	-	**1,520**	-	-	<10	-	-	-
		10/3/2012	<0.5	5.8	53.2	**1,720**	<0.08	<5	<0.005	**6,430**	<5	**1,460**	<0.2	14.6	<10	-	<0.1	<0.010
		3/12/2013	<1	**15**	65	**1,660**	<1	<5	<0.005	**7,680**	<1	**1,350**	<0.05	20	<1	-	<0.2	0.008
		6/12/2013	<1	1.25	51	**1,730**	<1	<5	<0.005	**727**	<1	**764**	<0.05	16	<1	-	<0.2	<0.005
		10/2/2013	<1	**22.8**	67	**1,510**	<1	<5	<0.005	**4,910**	<1	**874**	<0.05	13	<1	-	<0.2	<0.005
		3/4/2014	<1	**27.6**	66	**1,830**	<1	<5	<0.005	**6,600**	<1	**808**	<0.05	13	<1	-	<0.2	0.007
		6/3/2014	<1	**28.5**	69	**2,000**	<1	<5	<0.005	**5,310**	<1	**805**	<0.05	18	<1	-	<0.2	0.006
		10/2/2014	<1	**45**	70	**2,210**	<1	<5	<0.005	**6,160**	<1	**652**	<0.05	15	<1	-	<0.2	0.01
		3/11/2015	<1	**55.4**	66	**2,020**	<1	<5	<0.005	**5,550**	<1	**493**	<0.05	9	<1	-	<0.2	<0.005
		6/1/2015	<1	**53.8**	66	**2,120**	<1	<5	<0.005	**5,110**	<1	**430**	<0.05	9	<1	-	<0.2	<0.005
MW-22-B*	22-27	10/3/2011	-	<5	-	<50	-	-	-	<50	-	**88.7**	-	-	<10	-	-	-
		1/17/2012	-	<5	-	175	-	-	-	**460**	-	**85.5**	-	-	<10	-	-	-
		10/3/2012	<0.5	<5	44.1	180	<0.08	<5	<0.005	<50	<5	**116**	<0.2	<5	<10	-	<0.1	<0.010
		3/12/2013	<1	<1	36	106	<1	<5	<0.005	13	<1	29	<0.05	<5	<1	-	<0.2	<0.005
		6/12/2013	<1	<1	57	532	<1	<5	<0.005	<10	<1	48	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2013	<1	<1	22	<50	<1	<5	<0.005	<10	<1	16	<0.05	<5	<1	-	<0.2	0.01
		3/4/2014	<1	<1	24	<50	<1	<5	<0.005	68	<1	16	<0.05	<5	<1	-	<0.2	0.009
		6/2/2014	<1	<1	17	<50	<1	<5	<0.005	<10	<1	<5	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2014	<1	<1	13	<50	<1	<5	<0.005	17	<1	8	<0.05	<5	<1	-	<0.2	0.005
		3/11/2015	<1	<1	10	<50	<1	<5	<0.005	<10	<1	6	<0.05	<5	<1	-	<0.2	<0.005
		6/1/2015	<1	<1	9	<50	<1	<5	<0.005	<10	<1	<5	<0.05	<5	<1	-	<0.2	<0.005
MW-22-C*	39.5-44.5	10/3/2011	-	<5	-	**1,680**	-	-	-	171	-	**737**	-	-	<10	-	-	-
		1/17/2012	-	<5	-	**1,650**	-	-	-	256	-	**814**	-	-	<10	-	-	-
		10/3/2012	<0.5	<5	86.2	**2,100**	<0.08	<5	<0.005	286	<5	**780**	<0.2	<5	<10	-	**0.35**	<0.010
		3/12/2013	<1	<1	71	**1,840**	<1	<5	<0.005	**431**	<1	**798**	<0.05	<5	<1	-	**0.296**	<0.005
		6/12/2013	<1	<1	102	**2,250**	<1	<5	<0.005	262	<1	**828**	<0.05	<5	<1	-	**0.251**	<0.005
		10/2/2013	<1	<1	98	**2,290**	<1	<5	<0.005	230	<1	**1,330**	<0.05	<5	<1	-	**0.25**	0.017
		3/4/2014	<1	<1	63	**1,950**	<1	<5	<0.005	<10	<1	18	<0.05	<5	<1	-	<0.2	<0.005
		6/2/2014	<1	<1	108	**2,500**	<1	<5	<0.005	**628**	<1	**1,360**	<0.05	<5	<1	-	**0.226**	0.007
		10/2/2014	<1	<1	113	**2,660**	<1	<5	<0.005	**608**	<1	**1,710**	<0.05	<5	<1	-	**0.422**	0.006
		3/11/2015	<1	<1	108	**2,690**	<1	<5	<0.005	**499**	<1	**986**	<0.05	<5	<1	-	**0.506**	<0.005

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
		Groundwater Standards	NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
		IMAC	1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		6/1/2015	<1	<1	95	**2,560**	<1	<5	<0.005	**141**	<1	**732**	<0.05	<5	<1	-	**0.398**	<0.005
MW-23-B*	21.5-26.5	10/3/2011	-	<5	-	394	-	-	-	<50	-	**277**	-	-	<10	-	-	-
		1/16/2012	-	<5	-	468	-	-	-	168	-	**349**	-	-	<10	-	-	-
		10/2/2012	<0.5	<5	35.2	**1,330**	<0.4	<5	<0.005	<50	<5	**348**	<0.2	<5	<10	-	<0.1	<0.010
		3/12/2013	<1	<1	35	**1,100**	<1	<5	<0.005	16	<1	**157**	<0.05	<5	2.36	-	<0.2	<0.005
		6/12/2013	<1	<1	49	**1,830**	<1	<5	<0.005	15	<1	**133**	<0.05	<5	1.9	-	<0.2	<0.005
		10/2/2013	<1	<1	36	**1,140**	<1	<5	<0.005	<10	<1	**59**	<0.05	<5	3.13	-	<0.2	<0.005
		3/4/2014	<1	<1	32	**1,020**	<1	<5	<0.005	133	<1	49	<0.05	<5	5.84	-	<0.2	<0.005
		6/2/2014	<1	<1	28	**758**	<1	<5	<0.005	13	<1	13	<0.05	<5	7.98	-	<0.2	<0.005
		10/1/2014	<1	<1	31	403	<1	<5	<0.005	80	<1	35	<0.05	<5	10.1	-	<0.2	0.006
		3/10/2015	<1	<1	39	245	<1	<5	<0.005	26	<1	11	<0.05	<5	7.43	-	<0.2	<0.005
		6/3/2015	<1	<1	39	137	<1	<1	<0.001	20	<1	9	<0.05	<1	4.88	-	<0.2	<0.005
MW-23-C*	40-45	10/3/2011	-	<5	-	**1,640**	-	-	-	**311**	-	**970**	-	-	<10	-	-	-
		1/16/2012	-	<5	-	**1,780**	-	-	-	53	-	**1,190**	-	-	<10	-	-	-
		10/2/2012	<0.5	<5	45.1	**2,580**	<0.08	<5	<0.005	176	<5	**1,050**	<0.2	<5	<10	-	<0.1	<0.010
		3/12/2013	<1	<1	42	**2,400**	<1	<5	<0.005	187	<1	**1,150**	<0.05	<5	<1	-	<0.2	<0.005
		6/12/2013	<1	<1	49	**2,710**	<1	<5	<0.005	**370**	<1	**1,300**	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2013	<1	<1	52	**3,000**	<1	<5	<0.005	**395**	<1	**1,500**	<0.05	<5	<1	-	<0.2	<0.005
		3/4/2014	<1	<1	53	**3,000**	<1	<5	0.01	**364**	<1	**1,590**	<0.05	<5	<1	-	<0.2	0.008
		6/2/2014	<1	<1	50	**2,970**	<1	<5	<0.005	**340**	<1	**1,630**	<0.05	<5	<1	-	<0.2	<0.005
		10/1/2014	<1	<1	54	**3,600**	<1	<5	<0.005	**445**	<1	**1,520**	<0.05	<5	<1	-	**0.212**	<0.005
		3/10/2015	<1	<1	38	**3,060**	<1	<5	<0.005	147	<1	**384**	<0.05	<5	<1	-	<0.2	<0.005
		6/2/2015	<1	<1	36	**2,050**	<1	<5	<0.005	88	<1	**309**	<0.05	<5	<1	-	0.21	<0.005
MW-24-B*	22-27	10/4/2011	-	<5	-	**1,350**	-	-	-	<50	-	**377**	-	-	**43.3**	-	-	-
		1/17/2012	-	<5	-	**1,500**	-	-	-	<50	-	**725**	-	-	**21.6**	-	-	-
		10/3/2012	**1.1**	<5	43.4	**1,420**	<0.08	<5	<0.005	117	<5	**805**	<0.2	<5	<10	-	**0.42**	<0.010
		3/13/2013	**1.07**	<1	54	**1,270**	<1	<5	<0.005	11	<1	**396**	<0.05	<5	<1	-	**0.586**	0.005
		6/12/2013	<1	<1	42	**1,190**	<1	<5	<0.005	55	<1	**388**	<0.05	<5	<1	-	**0.468**	0.006
		10/2/2013	<1	<1	40	**1,130**	<1	<5	<0.005	38	<1	**464**	<0.05	<5	<1	-	**0.57**	<0.005
		3/5/2014	<1	<1	41	**1,180**	<1	<5	<0.005	11	<1	**55**	<0.05	<5	<1	-	**0.23**	<0.005
		6/3/2014	<1	<1	41	**1,140**	<1	<5	<0.005	12	<1	19	<0.05	<5	<1	-	<0.2	<0.005
		10/1/2014	<1	<1	37	**1,050**	<1	<5	<0.005	23	<1	**183**	<0.05	<5	<1	-	**0.445**	0.011
		3/10/2015	<1	<1	49	609	<1	<5	<0.005	16	<1	40	<0.05	<5	<1	-	<0.2	<0.005
		6/2/2015	<1	<1	47	409	<1	<5	<0.005	<10	<1	35	<0.05	<5	<1	-	<0.2	<0.005
MW-24-C*	40-45	10/4/2011	-	<5	-	**1,240**	-	-	-	**583**	-	**852**	-	-	<10	-	-	-
		1/17/2012	-	<5	-	**1,240**	-	-	-	**515**	-	**891**	-	-	<10	-	-	-
		10/3/2012	<0.5	<5	50.2	**1,160**	0.083	<5	<0.005	**2,860**	<5	**2,360**	<0.2	<5	<10	-	<0.1	0.0399
		3/13/2013	<1	7.37	46	**1,030**	<1	<5	<0.005	**6,230**	<1	**2,250**	<0.05	6	<1	-	<0.2	0.049

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
		Groundwater Standards	NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
		IMAC	1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		6/12/2013	<1	3.33	47	**999**	<1	<5	<0.005	**2,580**	<1	**2,280**	<0.05	6	<1	-	<0.2	0.046
		10/2/2013	<1	2.81	46	**988**	<1	<5	<0.005	**2,290**	<1	**2,150**	<0.05	7	<1	-	0.23	0.058
		3/5/2014	<1	5.81	47	**1,030**	<1	<5	<0.005	**7,450**	<1	**2,060**	<0.05	8	<1	-	<0.2	0.075
		6/3/2014	<1	3.02	42	**1,090**	<1	<5	<0.005	**3,600**	<1	**1,110**	<0.05	<5	<1	-	<0.2	0.051
		10/1/2014	<1	1.54	43	**1,130**	<1	<5	<0.005	**1,990**	<1	**1,180**	<0.05	7	<1	-	<0.2	0.068
		3/10/2015	<1	3.56	43	**1,150**	<1	<5	<0.005	**5,600**	<1	**1,470**	<0.05	6	<1	-	<0.2	0.068
		6/2/2015	<1	3.42	39	**1,040**	<1	<5	<0.005	**4,180**	<1	**1,120**	<0.05	5	<1	-	<0.2	0.06
MW-27-B*	22-27	10/3/2011	-	<5	-	404	-	-	-	<50	-	**391**	-	-	**22.7**	-	-	-
		1/18/2012	-	<5	-	412	-	-	-	<50	-	**406**	-	-	**25.3**	-	-	-
		10/2/2012	<0.5	<5	49.3	466	0.16	<5	<0.005	<50	<5	**229**	<0.2	<5	**27.3**	-	<0.1	0.0101
		3/13/2013	<1	<1	52	395	<1	<5	<0.005	10	<1	**219**	<0.05	<5	**37.1**	-	<0.2	0.011
		6/13/2013	<1	<1	49	403	<1	<5	<0.005	38	<1	**168**	<0.05	<5	**34.6**	-	<0.2	0.013
		10/2/2013	<1	<1	53	401	<1	<5	<0.005	21	<1	**261**	<0.05	<5	**48.2**	-	<0.2	0.037
		3/5/2014	<1	<1	48	414	<1	<5	<0.005	14	<1	**237**	<0.05	<5	**61.7**	-	<0.2	0.015
		6/2/2014	<1	<1	47	403	<1	<5	<0.005	23	<1	**153**	<0.05	<5	**56.7**	-	<0.2	0.01
		10/1/2014	<1	<1	44	388	<1	<5	<0.005	<10	<1	**150**	<0.05	<5	**59.9**	-	<0.2	0.009
		3/10/2015	<1	<1	38	241	<1	<5	<0.005	<10	<1	**78**	<0.05	<5	**36.2**	-	<0.2	<0.005
		6/2/2015	<1	<1	42	195	<1	<1	<0.001	<10	<1	**55**	<0.05	<1	**28.4**	-	<0.2	<0.005
MW-28-B*	25-30	10/3/2011	-	<5	-	<50	-	-	-	<50	-	**73.2**	-	-	<10	-	-	-
		1/17/2012	-	<5	-	<50	-	-	-	<50	-	**89.4**	-	-	<10	-	-	-
		10/3/2012	<0.5	<5	35.2	<50	<0.08	<5	<0.005	<50	<5	40.7	<0.2	<5	<10	-	<0.1	<0.010
		3/12/2013	<1	<1	41	<50	<1	<5	<0.005	<10	<1	18	<0.05	<5	<1	-	<0.2	<0.005
		6/12/2013	<1	<1	39	<50	<1	<5	<0.005	<10	<1	16	<0.05	<5	<1	-	<0.2	0.01
		10/2/2013	<1	<1	35	<50	<1	<5	<0.005	<10	<1	<5	<0.05	<5	<1	-	<0.2	<0.005
		3/4/2014	<1	<1	33	<50	<1	<5	<0.005	15	<1	14	<0.05	<5	<1	-	<0.2	0.008
		6/2/2014	<1	<1	32	<50	<1	<5	<0.005	<10	<1	<5	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2014	<1	<1	30	<50	<1	<5	<0.005	17	<1	13	<0.05	<5	<1	-	<0.2	0.005
		3/11/2015	<1	<1	32	<50	<1	<5	<0.005	<10	<1	10	<0.05	<5	<1	-	<0.2	<0.005
		6/1/2015	<1	<1	28	<50	<1	<5	<0.005	10	<1	10	<0.05	<5	<1	-	<0.2	<0.005
MW-28-C*	40-45	10/3/2011	-	<5	-	94.9	-	-	-	59	-	**58.1**	-	-	<10	-	-	-
		1/17/2012	-	<5	-	193	-	-	-	<50	-	**59.9**	-	-	<10	-	-	-
		10/3/2012	<0.5	<5	75.1	652	<0.08	<5	<0.005	<50	<5	**245**	<0.2	<5	<10	-	<0.1	0.082
		3/12/2013	<1	<1	91	**1,030**	<1	<5	<0.005	20	<1	**367**	<0.05	<5	<1	-	<0.2	<0.005
		6/12/2013	<1	<1	102	**1,260**	<1	<5	<0.005	32	<1	**409**	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2013	<1	<1	37	263	<1	<5	<0.005	11	<1	46	<0.05	<5	<1	-	<0.2	<0.005
		3/4/2014	<1	<1	70	**711**	<1	<5	<0.005	21	<1	**166**	<0.05	<5	1.51	-	<0.2	0.007
		6/2/2014	<1	<1	48	330	<1	<5	<0.005	26	<1	17	<0.05	<5	1.67	-	<0.2	<0.005
		10/2/2014	<1	<1	46	83	<1	<5	<0.005	12	<1	11	<0.05	<5	<1	-	<0.2	0.006

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration															
			Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l
Groundwater Standards			NC	10	700	700	2	10	1	300	15	50	1	100	20	20	NC	1
IMAC			1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	0.2	NC
		3/11/2015	<1	<1	52	<50	<1	<5	<0.005	15	<1	14	<0.05	<5	<1	-	<0.2	<0.005
		6/1/2015	<1	<1	51	<50	<1	<5	<0.005	<10	<1	8	<0.05	<5	<1	-	<0.2	<0.005
MW-31-C*	40-45	10/4/2011	-	<5	-	**1,020**	-	-	-	**1,220**	-	**1,470**	-	-	<10	-	-	-
		1/17/2012	-	<5	-	**1,130**	-	-	-	**2,330**	-	**2,000**	-	-	<10	-	-	-
		10/2/2012	<0.5	<5	48.6	**1,120**	<0.08	<5	<0.005	**2,700**	<5	**1,790**	<0.2	<5	<10	-	<0.1	0.0411
		3/13/2013	<1	1.55	45	**1,030**	<1	<5	<0.005	**2,820**	<1	**1,800**	<0.05	<5	<1	-	<0.2	0.044
		6/13/2013	<1	1.25	48	**985**	<1	<5	<0.005	**2,760**	<1	**1,760**	<0.05	<5	<1	-	<0.2	0.052
		10/3/2013	<1	<1	54	**1,020**	<1	<5	<0.005	**2,550**	<1	**1,910**	<0.05	<5	<1	-	<0.2	0.046
		3/5/2014	<1	<1	40	**1,030**	<1	<5	<0.005	232	<1	**220**	<0.05	<5	<1	-	<0.2	0.016
		6/3/2014	<1	<1	75	**1,410**	<1	<5	<0.005	**3,420**	<1	**2,390**	<0.05	<5	<1	-	<0.2	0.053
		10/2/2014	<1	<1	58	**1,200**	<1	<5	<0.005	**2,850**	<1	**1,870**	<0.05	<5	<1	-	<0.2	0.049
		3/10/2015	<1	<1	57	**1,190**	<1	<5	<0.005	**3,440**	<1	**1,840**	<0.05	<5	<1	-	<0.2	0.049
		6/2/2015	<1	<1	55	**1,180**	<1	<5	<0.005	**2,850**	<1	**1,680**	<0.05	<5	<1	-	<0.2	0.05
MW-32-C	45-50	11/20/2013	<1	<1	41	381	<1	<5	<0.005	89	<1	28	<0.05	<5	<1	-	<0.2	<0.005
		3/4/2014	<1	<1	28	115	<1	<5	<0.005	47	<1	12	<0.05	<5	<1	-	<0.2	0.008
		6/3/2014	<1	1.36	38	248	<1	<5	<0.005	**424**	<1	24	<0.05	<5	<1	-	<0.2	0.006
		10/2/2014	<1	<1	25	<50	<1	<5	<0.005	132	<1	32	<0.05	<5	<1	-	<0.2	<0.005
		3/11/2015	<1	<1	30	120	<1	<5	<0.005	74	<1	22	<0.05	<5	<1	-	<0.2	<0.005
		6/1/2015	<1	<1	27	115	<1	<5	<0.005	30	<1	30	<0.05	<5	<1	-	<0.2	0.011
MW-33-C	40-45	11/20/2013	<1	<1	32	60	<1	<5	<0.005	99	<1	29	<0.05	<5	<1	-	<0.2	<0.005
		3/4/2014	<1	<1	27	52	<1	<5	<0.005	35	<1	31	<0.05	<5	<1	-	<0.2	0.007
		6/3/2014	<1	<1	28	68	<1	<5	<0.005	109	<1	35	<0.05	<5	<1	-	<0.2	<0.005
		10/2/2014	<1	<1	36	106	<1	<5	<0.005	96	<1	18	<0.05	<5	<1	9.7	<0.2	<0.005
		3/11/2015	<1	<1	24	<50	<1	<5	<0.005	25	<1	33	<0.05	<5	<1	11	<0.2	<0.005
		6/1/2015	<1	<1	21	<50	<1	<5	<0.005	20	<1	30	<0.05	<5	<1	-	<0.2	<0.005

Note(s):

[1] µg/L indicates micrograms per liter.
[2] IMAC indicates Interim Maximum Allowable Concentrations
[3] Groundwater Standards and IMAC values are from Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina (NCDENR, Division of Water Quality, April 2013).
[4] NC indicates no criteria.
[5] Bold values indicate concentrations exceeding groundwater standards at or beyond compliance boundary.
[6] "<" indicates the sample was nondetect. The value right of the < symbol is the method detection limit (MDL).
[7] ft BGS indicates feet below ground surface.
[8] B indicates there was a detection in the field blank.
[9] NS indicates not sampled.
[10] Historical results are reported to the same significant figures reported in tables by previous consultants.
[11] * indicates monitoring well is part of the National Pollutant Discharge Elimination System sampling plan.
[12] - indicates analyte was not previously reported.
[13] Historical data received from Duke.

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Table 8. Historical Groundwater Analytical Results – Non-Metals

Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-2-C	40-45	3/1/1990	100	-	-	-	368	-	5.63	9.36	-	-	-	-	-
		7/1/1990	78.6	-	-	-	336	-	4.96	9.91	-	-	_	_	-
		11/13/1990	60	-	-	-	336	-	5.58	9.92	-	-	_	_	-
		3/6/1991	37	-	-	-	88	-	6.30	10.40	-	-	_	_	-
		7/22/1991	44.5	-	-	-	160	-	6.35	9.56	-	-	_	_	-
		11/6/1991	56.1	-	-	-	296	-	5.90	9.69	-	-	_	_	-
		3/25/1992	40.5	-	-	-	200	-	6.43	9.52	-	-	_	_	-
		7/15/1992	42	-	-	-	184	-	6.24	10.81	-	-	_	_	-
		11/24/1992	39.5	-	-	-	200	-	6.20	10.74	-	-	_	_	-
		3/22/1993	52.6	-	-	-	384	-	6.12	11.63	-	-	_	_	-
		7/19/1993	52.6	-	-	-	448	-	6.17	10.49	-	-	_	_	-
		11/4/1993	44	-	-	-	184	-	6.27	10.74	-	-	_	_	-
		3/7/1994	48.1	-	-	-	316	-	6.30	11.86	-	-	_	_	-
		7/11/1994	53.1	-	-	-	440	-	6.29	10.23	-	-	_	_	-
		11/2/1994	50	-	-	-	337	-	6.17	10.86	-	-	_	_	-
		3/8/1995	47	-	-	-	340	-	6.47	14.00	-	-	_	_	-
		3/6/1996	53	-	-	-	438	-	6.52	13.96	-	-	_	_	-
		3/17/1997	51	-	-	-	412	-	6.40	12.75	-	-	_	_	-
		3/16/1998	35.3	-	-	-	399	-	6.42	12.40	-	-	_	_	-
		3/17/1999	38.5	-	-	-	355	-	6.91	13.93	-	-	_	_	-
		3/6/2000	16.7	-	-	-	178	-	6.48	13.14	-	-	_	_	-
		3/16/2001	37.2	-	-	-	392	-	6.71	14.80	-	-	_	_	-
		3/6/2002	33.5	-	-	-	397	-	6.86	14.66	-	-	_	_	-
		3/18/2003	51	-	-	-	427	-	6.47	14.42	-	-	_	_	-
		3/9/2004	106	-	-	-	511	-	6.40	12.35	-	-	_	_	-
		3/7/2005	55.6	-	-	-	443	-	6.39	14.45	-	-	_	_	-
		3/2/2006	58.4	-	-	-	439	-	6.68	11.87	-	-	_	_	-
		12/12/2006	23.1	0.05	0.05	146	320	2.99	6.75	12.18	19.80	481	_	_	-
		3/6/2007	26.6	<0.02	<0.02	178	325	4.3	6.67	13.66	19.50		_	_	-
		11/7/2007	31	<0.02	<0.02	184	328	2.7	6.41	15.34		567	_	_	-
		3/11/2008	32	<0.04	<0.02	132	357	2.9	6.34	15.12	20.00	582	_	_	-
		11/6/2008	29	<0.02	<0.02	141	359	3.4	6.79	15.25	20.30	603	_	_	-
		3/10/2009	34	<0.02	<0.02	148	348	3	6.81	14.71	20.40	591	_	_	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-4-B*	22-27	10/6/2009	36	<0.02	<0.02	140	359	2.9	6.75	13.44	20.30	592	-	-	-
		3/10/2010	37	0.04	<0.02	162	413	3.2	6.84	13.21	19.30	618	-	-	-
		11/11/2010	30.7	<0.1	<0.1	142	376	6.1	6.85	12.33	19.80	631	-	-	-
		3/2/2011	31.1 B	<0.1	-	148	390 B	-	6.70	13.94	18.58	573	-	-	9.90
		10/4/2011	33.3	<0.2	-	144	352	-	6.44	13.69	21.06	607	-	-	5.73
		3/6/2012	36.3	<0.2	-	142	457	-	6.5	15.48	18.91	679	-	-	7.89
		6/5/2012	55.4	<0.02	-	143	526	-	6.6	15.09	20.54	855	-	-	6.97
		3/1/1990	4.91	-	-	-	140	-	7.00	7.03	-	-	-	-	-
		7/1/1990	3.7	-	-	-	76	-	6.76	6.82	-	-	-	-	-
		11/13/1990	3.8	-	-	-	128	-	6.77	6.37	-	-	-	-	-
		3/6/1991	5	-	-	-	8	-	6.80	8.01	-	-	-	-	-
		7/22/1991	3.6	-	-	-	82	-	**5.97**	6.26	-	-	-	-	-
		11/6/1991	4.1	-	-	-	86	-	6.58	7.17	-	-	-	-	-
		3/25/1992	3.9	-	-	-	172	-	7.10	6.01	-	-	-	-	-
		7/15/1992	3.9	-	-	-	78	-	6.70	7.59	-	-	-	-	-
		11/24/1992	3.7	-	-	-	68	-	6.74	7.62	-	-	-	-	-
		3/22/1993	3.8	-	-	-	70	-	**6.30**	8.57	-	-	-	-	-
		7/19/1993	3.8	-	-	-	80	-	6.62	6.69	-	-	-	-	-
		11/4/1993	3.55	-	-	-	46	-	6.57	7.86	-	-	-	-	-
		3/7/1994	3.75	-	-	-	80	-	6.66	9.18	-	-	-	-	-
		7/11/1994	3.55	-	-	-	64	-	6.62	5.93	-	-	-	-	-
		11/2/1994	3.3	-	-	-	65	-	**6.33**	8.00	-	-	-	-	-
		3/8/1995	3.2	-	-	-	86	-	7.06	8.29	-	-	-	-	-
		3/6/1996	4.5	-	-	-	115	-	7.42	9.76	-	-	-	-	-
		3/17/1997	3.8	-	-	-	94	-	**6.40**	7.98	-	-	-	-	-
		3/16/1998	4.42	-	-	-	70	-	6.79	6.93	-	-	-	-	-
		3/17/1999	7.6	-	-	-	81.5	-	6.70	9.75	-	-	-	-	-
		3/6/2000	6.75	-	-	-	78	-	6.55	8.77	-	-	-	-	-
		3/16/2001	11.8	-	-	-	75	-	6.70	9.73	-	-	-	-	-
		3/6/2002	6.65	-	-	-	67	-	7.22	10.78	-	-	-	-	-
		3/18/2003	8.68	-	-	-	70	-	**6.19**	10.20	-	-	-	-	-
		3/9/2004	4.8	-	-	-	77	-	6.80	8.15	-	-	-	-	-
		3/7/2005	5.2	-	-	-	72	-	6.91	10.06	-	-	-	-	-
		3/2/2006	5.7	-	-	-	74	-	**6.08**	8.00	-	-	-	-	-
		12/12/2006	3.28	0.05	0.05	7.75	53	5	7.07	8.10	18.30	124	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-5-C*	40-45	3/6/2007	5	<0.02	<0.02	8	80	2	6.68	8.59	18.90	-	-	-	-
		11/7/2007	7	<0.02	<0.02	12	62	<0.5	**6.36**	11.32	-	108	-	-	-
		3/11/2008	7	<0.04	<0.02	7	93	<0.5	**6.44**	10.80	19.50	117	-	-	-
		11/6/2008	5	<0.02	<0.02	<10.0	74	<0.5	6.74	10.16	19.60	115	-	-	-
		3/10/2009	5	<0.02	<0.02	8	61	<0.5	6.70	10.35	19.20	120	-	-	-
		10/6/2009	5	<0.02	<0.02	9	72	<0.5	6.63	9.05	19.70	122	-	-	-
		3/10/2010	6	<0.02	<0.02	9	87	<0.5	6.79	8.54	19.50	131.7	-	-	-
		11/11/2010	6.2	<0.1	<0.1	9.3	68	1.3	6.74	7.93	19.50	129.1	-	-	-
		3/2/2011	29.6 B	<0.1	-	7.9 B	116 B	-	7.01	9.10	14.99	197	0.3	-67.7	1.64
		10/4/2011	8.8	<0.2	-	7.1	105	-	6.94	10.81	19.00	224	0.51	-90.4	2.21
		3/6/2012	12.7	<0.2	-	6.9	168	-	6.8	13.96	17.66	246	1.43	-113.1	0.55
		6/5/2012	11.8	<0.02	-	8.9	153	-	6.8	12.33	18.80	274	1.16	-74.5	3.97
		10/2/2012	10.8	<0.02	-	8.5	145	-	7.20	11.40	21.10	286	0.6	-105.1	0.94
		3/12/2013	8.7	<0.023	-	8.1	140	-	7.00	10.74	17.90	235.6	0.36	-89.7	4.9
		6/12/2013	9	<0.023	-	8.8	130	-	6.90	10.23	20.40	244.3	1	40.4	2.6
		10/2/2013	11	<0.023	-	8.1	180	-	7.40	9.72	20.60	323.1	0.33	-147.6	1
		3/4/2014	11	<0.023	-	8.8	180	-	7.10	10.42	15.10	250.9	0.39	26.3	1.2
		6/2/2014	10	<0.023	-	8.6	170	-	7.30	9.62	22.00	309	-	12.1	6
		10/1/2014	12	<0.023	-	9.4	210	-	6.80	8.21	23.10	375.2	0.42	-122.3	2.7
		3/11/2015	12	<0.023	-	9.3	180	-	7.00	8.46	18.00	367.7	0.2	-85.9	5.3
		6/1/2015	13	0.05	-	10	210	-	6.80	8.79	22.00	385	0.6	-43	9.98
		3/1/1990	**295**	-	-	-	500	-	**5.64**	8.69	-	-	-	-	-
		7/1/1990	**270**	-	-	-	464	-	**5.44**	9.29	-	-	-	-	-
		11/13/1990	205	-	-	-	472	-	**5.56**	9.03	-	-	-	-	-
		3/6/1991	190	-	-	-	336	-	**5.7**	9.23	-	-	-	-	-
		7/22/1991	176.7	-	-	-	308	-	**5.37**	8.64	-	-	-	-	-
		11/6/1991	184.2	-	-	-	340	-	**5.44**	8.53	-	-	-	-	-
		3/25/1992	170.2	-	-	-	384	-	**5.62**	8.23	-	-	-	-	-
		7/15/1992	175	-	-	-	332	-	**5.3**	9.53	-	-	-	-	-
		11/24/1992	169.7	-	-	-	328	-	**5.36**	9.49	-	-	-	-	-
		3/22/1993	141.7	-	-	-	252	-	**5.42**	10.35	-	-	-	-	-
		7/19/1993	116.6	-	-	-	260	-	**5.35**	9.66	-	-	-	-	-
		11/4/1993	114.1	-	-	-	120	-	**5.51**	9.77	-	-	-	-	-
		3/7/1994	124.1	-	-	-	272	-	**5.47**	10.34	-	-	-	-	-
		7/11/1994	120.6	-	-	-	284	-	**5.5**	9.26	-	-	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
		11/2/1994	130	-	-	-	249	-	**5.46**	10.08	-	-	-	-	-
		3/8/1995	140	-	-	-	297	-	**5.65**	4.36	-	-	-	-	-
		3/6/1996	130	-	-	-	267	-	**5.74**	5.05	-	-	-	-	-
		3/17/1997	93	-	-	-	162	-	**5.82**	4.10	-	-	-	-	-
		3/16/1998	82	-	-	-	198	-	**5.73**	4.83	-	-	-	-	-
		3/17/1999	81.7	-	-	-	224	-	**5.75**	4.60	-	-	-	-	-
		3/6/2000	40.2	-	-	-	114	-	**5.86**	4.39	-	-	-	-	-
		3/16/2001	47.3	-	-	-	111	-	**5.9**	5.43	-	-	-	-	-
		3/6/2002	39.7	-	-	-	253	-	**5.82**	5.54	-	-	-	-	-
		3/18/2003	34.9	-	-	-	81	-	**5.83**	4.96	-	-	-	-	-
		3/9/2004	22.3	-	-	-	70	-	**5.76**	3.74	-	-	-	-	-
		3/7/2005	16.2	-	-	-	52	-	**5.65**	4.25	-	-	-	-	-
		3/2/2006	29.9	-	-	-	105	-	**5.73**	3.62	-	-	-	-	-
		3/6/2007	32	-	-	-	88	-	**5.57**	3.94	-	-	-	-	-
		3/11/2008	24	-	-	-	74	-	**5.08**	4.45	-	-	-	-	-
		3/10/2009	21	-	-	-	78	-	**5.44**	4.24	-	-	-	-	-
		3/10/2010	23	-	-	-	93	-	**5.67**	6.25	-	-	-	-	-
		3/2/2011	23 B	-	-	-	78 B	-	**5.13**	3.99	17.75	88	1.28	189	1.47
		3/7/2012	16.2	<0.2	-	7.8	59	-	**5.4**	4.19	19.00	156	0.96	-91.8	2.03
		6/6/2012	14.2	0.1 B	-	8.8	52	-	**5.5**	4.23	19.55	102	1.66	-71.9	1.13
		10/2/2012	22.4	0.037 B	-	11.9	59	-	**5.7**	4.43	22.4	158	0.63	169.3	0.77
		3/13/2013	12	0.11	-	9.6	47	-	**5.5**	4.42	16.7	80.1	0.87	195	1.18
		6/13/2013	74	0.02	-	74	56	-	**4.9**	4.16	21.9	85.3	0.74	252.6	0.8
		10/3/2013	18	<0.023	-	13	72	-	**5.7**	3.91	22.5	127	0.31	251	0.72
		3/5/2014	12	0.17	-	8.8	50	-	**6**	4.62	14.5	85.2	6.06	236	1.08
		6/3/2014	16	0.05	-	11	65	-	**5.8**	4.4	21	114.7	-	211.2	3
		10/2/2014	18	0.03	-	12	63	-	**5.5**	3.66	24	123.7	0.41	237.3	0.93
		3/10/2015	18	0.03	-	12	57	-	**5.6**	3.69	18.1	130.5	0.31	212.2	1.07
		6/1/2015	21	0.03	-	14	69	-	**5.5**	4	21	135	0.97	212	1.03
MW-6-C	40-45	3/1/1990	115	-	-	-	228	-	4.71	10.13	-	-	-	-	-
		7/1/1990	103.6	-	-	-	228	-	4.71	10.09	-	-	-	-	-
		11/13/1990	90	-	-	-	240	-	5.04	10.11	-	-	-	-	-
		3/6/1991	77	-	-	-	116	-	5.64	10.65	-	-	-	-	-
		7/22/1991	70.1	-	-	-	136	-	5.49	9.76	-	-	-	-	-
		11/6/1991	65.1	-	-	-	140	-	4.82	10.42	-	-	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
		3/25/1992	57.6	-	-	-	176	-	5.14	10.00	-	-	_	_	-
		7/15/1992	68.6	-	-	-	156	-	4.76	9.83	-	-	_	_	-
		11/24/1992	54.6	-	-	-	152	-	4.82	10.48	-	-	_	_	-
		3/22/1993	69.6	-	-	-	212	-	4.72	11.98	-	-	_	_	-
		7/19/1993	73.6	-	-	-	208	-	4.62	10.16	-	-	_	_	-
		11/4/1993	91.6	-	-	-	132	-	4.69	10.60	-	-	_	_	-
		3/7/1994	86.1	-	-	-	208	-	4.77	11.66	-	-	_	_	-
		7/11/1994	86.1	-	-	-	260	-	4.71	10.08	-	-	_	_	-
		11/2/1994	90	-	-	-	274	-	4.67	10.84	-	-	_	_	-
		3/8/1995	79	-	-	-	202	-	4.79	5.72	-	-	_	_	-
		3/6/1996	83	-	-	-	260	-	4.92	5.12	-	-	_	_	-
		3/17/1997	47	-	-	-	311	-	5.53	3.72	-	-	_	_	-
		3/16/1998	57.4	-	-	-	321	-	4.70	2.74	-	-	_	_	-
		3/17/1999	43.2	-	-	-	270	-	4.61	4.66	-	-	_	_	-
		3/6/2000	23	-	-	-	138	-	4.77	4.74	-	-	_	_	-
		3/16/2001	31.6	-	-	-	150	-	4.73	5.74	-	-	_	_	-
		3/6/2002	38.7	-	-	-	239	-	4.95	4.95	-	-	_	_	-
		3/18/2003	74.7	-	-	-	323	-	4.81	4.84	-	-	_	_	-
		3/9/2004	42.3	-	-	-	220	-	4.74	1.11	-	-	_	_	-
		3/7/2005	64.6	-	-	-	332	-	4.64	5.17	-	-	_	_	-
		3/2/2006	67.9	-	-	-	340	-	4.07	2.25	-	-	_	_	-
		12/12/2006	83	0.05	0.05	142	311	5	7.12	2.51	19.5	534	_	_	-
		3/6/2007	72.2	<0.02	<0.02	177	340	3.7	4.87	3.68	19.5	-	_	_	-
		11/7/2007	78	0.04	<0.02	190	330	0.6	4.62	6.28	-	591	_	_	-
		3/11/2008	86	<0.04	<0.02	136	345	0.6	4.33	6.10	19.6	591	_	_	-
		11/6/2008	95	<0.02	<0.02	142	381	0.6	4.65	5.62	20.2	651	_	_	-
		3/10/2009	72	<0.02	<0.02	130	332	<0.5	4.57	5.13	19.4	561	_	_	-
		10/6/2009	102	<0.02	<0.02	139	382	<0.5	4.67	3.39	20.3	659	_	_	-
		3/10/2010	113	<0.02	<0.02	141	429	<0.5	4.65	3.48	18.9	682	_	_	-
		11/11/2010	105	<0.1	<0.1	132	360	3.2	4.66	2.30	20.2	640	_	_	-
		3/2/2011	6.5 B	0.24	-	103	304 B	-	5.00	3.91	18.4	492	_	_	4.76
		10/4/2011	153	<0.2	-	130	456	-	4.57	3.91	22.16	798	_	_	2.79
		3/6/2012	163	<0.2	-	121	798	-	4.9	5.82	17.08	703	_	_	2.05
		6/5/2012	146	<0.02*	-	135	437	-	4.6	5.49	21.17	799	_	_	5.71
MW-7-C*	40-45	3/1/1990	210	-	-	-	468	-	**5.02**	8.49	-	-	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
		7/1/1990	175	-	-	-	384	-	**5.78**	8.84	-	-	-	-	-
		11/13/1990	150	-	-	-	380	-	**5.37**	8.68	-	-	-	-	-
		3/6/1991	94	-	-	-	152	-	**6.29**	9.33	-	-	-	-	-
		7/22/1991	98.6	-	-	-	236	-	**5.78**	8.24	-	-	-	-	-
		11/6/1991	82.6	-	-	-	196	-	**5.67**	8.64	-	-	-	-	-
		3/25/1992	91.1	-	-	-	272	-	**5.73**	8.45	-	-	-	-	-
		7/15/1992	112	-	-	-	292	-	**5.47**	9.44	-	-	-	-	-
		11/24/1992	110.5	-	-	-	268	-	**4.59**	8.10	-	-	-	-	-
		3/22/1993	151.7	-	-	-	352	-	**5.47**	10.04	-	-	-	-	-
		7/19/1993	105.1	-	-	-	328	-	**5.51**	8.35	-	-	-	-	-
		11/4/1993	79.1	-	-	-	148	-	**5.54**	9.47	-	-	-	-	-
		3/7/1994	46.6	-	-	-	144	-	**5.74**	10.32	-	-	-	-	-
		7/11/1994	55.1	-	-	-	176	-	**5.55**	8.42	-	-	-	-	-
		11/2/1994	65	-	-	-	212	-	**5.54**	9.63	-	-	-	-	-
		3/8/1995	30	-	-	-	106	-	**6.07**	7.34	-	-	-	-	-
		3/6/1996	85	-	-	-	299	-	**5.51**	8.19	-	-	-	-	-
		3/17/1997	61	-	-	-	186	-	**5.81**	6.78	-	-	-	-	-
		3/16/1998	75.1	-	-	-	265	-	**5.97**	6.21	-	-	-	-	-
		3/17/1999	87.4	-	-	-	283	-	**6.18**	7.71	-	-	-	-	-
		3/6/2000	39.5	-	-	-	136	-	**5.27**	7.12	-	-	-	-	-
		3/16/2001	61.4	-	-	-	191	-	**5.19**	8.31	-	-	-	-	-
		3/6/2002	48.2	-	-	-	527	-	**5.54**	8.44	-	-	-	-	-
		3/18/2003	45.8	-	-	-	191	-	**5.82**	8.07	-	-	-	-	-
		3/9/2004	20.4	-	-	-	104	-	**5.15**	6.54	-	-	-	-	-
		3/7/2005	43.7	-	-	-	211	-	**5.03**	7.73	-	-	-	-	-
		3/2/2006	10.9	-	-	-	64	-	**4.96**	6.40	-	-	-	-	-
		3/6/2007	26.5	-	-	-	132	-	**4.97**	6.83	-	-	-	-	-
		3/11/2008	16	-	-	-	112	-	**4.86**	7.95	-	-	-	-	-
		3/10/2009	446	-	-	-	897	-	**4.84**	7.78	-	-	-	-	-
		3/10/2010	163	-	-	-	421	-	**5.06**	6.58	-	-	-	-	-
		3/2/2011	22.3 B	-	-	-	118 B	-	**4.92**	7.23	17.17	144	3.11	239.5	1.63
		3/6/2012	49.2	0.28	-	92	228	-	**5.1**	10.56	19.01	391	0.75	-88	3.97
		6/5/2012	78.6	0.15 B	-	94.5	298	-	**4.9**	9.11	19.56	518	2.31	-51.3	8.06
		10/2/2012	77.7	0.26 B	-	85.8	225	-	**4.9**	9.69	22.27	457	1.53	194.9	6.81
		3/12/2013	68	0.02	-	68	230	-	**5**	8.20	19	408.7	0.27	239	4.05

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-8	40-50	6/12/2013	14	0.06	-	9.1	230	-	**5**	7.72	22	422.1	0.58	244.4	4.33
		10/3/2013	71	0.04	-	75	250	-	**5.3**	7.51	25.7	455	0.34	271.8	5.29
		3/4/2014	83	0.18	-	73	250	-	**5.6**	8.24	17.1	387.4	0.29	147.7	1.68
		6/2/2014	71	0.31	-	67	240	-	**5.5**	7.71	22	420	-	214	4.3
		10/2/2014	27	1.4	-	48	130	-	**5.2**	6.46	23	193.2	3.44	231.5	3.79
		3/10/2015	30	0.76	-	67	140	-	**5.3**	6.68	18.6	248	1.46	232.2	2.13
		6/2/2015	38	0.457	-	83	200	0.748	**5.0**	7	21	299	1.23	256	1.86
		3/1/1990	**260**	-	-	-	444	-	**6.09**	8.06	-	-	-	-	-
		7/1/1990	**255**	-	-	-	488	-	**6.05**	8.37	-	-	-	-	-
		11/13/1990	225	-	-	-	476	-	**5.53**	7.98	-	-	-	-	-
		3/6/1991	181	-	-	-	360	-	**6.18**	8.64	-	-	-	-	-
		7/22/1991	164.7	-	-	-	304	-	**5.40**	7.32	-	-	-	-	-
		11/6/1991	153.7	-	-	-	296	-	**5.57**	7.92	-	-	-	-	-
		3/25/1992	120.1	-	-	-	236	-	**5.87**	7.50	-	-	-	-	-
		7/15/1992	130	-	-	-	276	-	**5.58**	8.70	-	-	-	-	-
		11/24/1992	117.6	-	-	-	260	-	**5.57**	9.51	-	-	-	-	-
		3/22/1993	117.6	-	-	-	260	-	**5.59**	10.82	-	-	-	-	-
		7/19/1993	119.1	-	-	-	312	-	**5.71**	9.41	-	-	-	-	-
		11/4/1993	127.6	-	-	-	184	-	**5.69**	9.91	-	-	-	-	-
		3/7/1994	127.6	-	-	-	296	-	**5.64**	10.93	-	-	-	-	-
		7/11/1994	134.1	-	-	-	288	-	**5.61**	8.93	-	-	-	-	-
		11/2/1994	130	-	-	-	290	-	**5.69**	10.21	-	-	-	-	-
		3/8/1995	120	-	-	-	280	-	**5.92**	7.35	-	-	-	-	-
		3/6/1996	130	-	-	-	324	-	**5.80**	8.45	-	-	-	-	-
		3/17/1997	60	-	-	-	139	-	**5.91**	7.47	-	-	-	-	-
		3/16/1998	102	-	-	-	275	-	**5.45**	5.97	-	-	-	-	-
		3/17/1999	65.5	-	-	-	172	-	**5.50**	8.06	-	-	-	-	-
		3/6/2000	39.2	-	-	-	63	-	**5.85**	7.36	-	-	-	-	-
		3/16/2001	51.3	-	-	-	115	-	**5.83**	8.67	-	-	-	-	-
		3/6/2002	35.9	-	-	-	79	-	**5.85**	9.22	-	-	-	-	-
		3/18/2003	45.7	-	-	-	103	-	**5.80**	6.76	-	-	-	-	-
		3/9/2004	24.7	-	-	-	85	-	**5.63**	6.42	-	-	-	-	-
		3/7/2005	32.3	-	-	-	116	-	**5.71**	7.70	-	-	-	-	-
		3/2/2006	24.2	-	-	-	99	-	**5.45**	6.37	-	-	-	-	-
		3/6/2007	30.5	-	-	-	94	-	**5.44**	6.62	-	-	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-9	40-50	3/11/2008	39	-	-	-	127	-	**5.41**	8.19	-	-	-	-	-
		3/10/2009	31	-	-	-	105	-	**5.70**	7.78	-	-	-	-	-
		3/10/2010	20	-	-	-	108	-	**5.66**	6.25	-	-	-	-	-
		3/2/2011	7.2 B	-	-	-	62 B	-	**5.13**	6.89	17.59	79	-	-	0.38
		3/7/2012	23.6	<0.2	-	19.2	102	-	**5.7**	7.72	18.80	299	-	-	0.52
		6/6/2012	28.3	<0.02	-	21.5	101	-	**5.6**	7.79	19.19	170	-	-	0.65
		3/5/2014	-	-	-	-	52	-	**5.5**	7.93	15	82	0.9	272	0.9
		3/1/1990	11.5	-	-	-	20	-	**5.52**	6.91	-	-	-	-	-
		7/1/1990	9	-	-	-	0	-	**6.68**	7.01	-	-	-	-	-
		11/13/1990	10	-	-	-	46	-	**5.49**	6.15	-	-	-	-	-
		3/6/1991	22	-	-	-	76	-	**5.65**	7.16	-	-	-	-	-
		7/22/1991	22.5	-	-	-	32	-	**5.26**	5.93	-	-	-	-	-
		11/6/1991	12.5	-	-	-	28	-	**5.45**	6.46	-	-	-	-	-
		3/25/1992	5	-	-	-	60	-	**5.78**	6.06	-	-	-	-	-
		7/15/1992	6.51	-	-	-	24	-	**5.51**	7.30	-	-	-	-	-
		11/24/1992	6	-	-	-	30	-	**5.33**	8.29	-	-	-	-	-
		3/22/1993	7.11	-	-	-	24	-	**5.30**	9.76	-	-	-	-	-
		7/19/1993	11.6	-	-	-	50	-	**5.29**	8.01	-	-	-	-	-
		11/4/1993	16.3	-	-	-	10	-	**5.25**	8.46	-	-	-	-	-
		3/7/1994	26	-	-	-	88	-	**5.17**	10.28	-	-	-	-	-
		7/11/1994	39.5	-	-	-	100	-	**5.13**	7.93	-	-	-	-	-
		11/2/1994	29	-	-	-	68	-	**5.23**	9.67	-	-	-	-	-
		3/8/1995	32	-	-	-	78	-	**5.49**	17.97	-	-	-	-	-
		3/6/1996	28	-	-	-	185	-	**5.57**	19.44	-	-	-	-	-
		3/17/1997	34	-	-	-	60	-	**5.36**	17.73	-	-	-	-	-
		3/16/1998	30.3	-	-	-	77.5	-	**5.05**	15.54	-	-	-	-	-
		3/17/1999	22.3	-	-	-	50	-	**5.27**	17.64	-	-	-	-	-
		3/6/2000	10.5	-	-	-	25	-	**5.18**	16.96	-	-	-	-	-
		3/16/2001	23.1	-	-	-	69	-	**5.28**	18.60	-	-	-	-	-
		3/6/2002	8.99	-	-	-	35	-	**5.83**	19.35	-	-	-	-	-
		3/18/2003	22.7	-	-	-	73	-	**5.59**	18.26	-	-	-	-	-
		3/9/2004	5.7	-	-	-	35	-	**5.10**	15.64	-	-	-	-	-
		3/7/2005	11.4	-	-	-	50	-	**5.16**	17.32	-	-	-	-	-
		3/2/2006	5.9	-	-	-	30	-	**4.85**	15.58	-	-	-	-	-
		3/6/2007	6.5	-	-	-	24	-	**4.76**	15.84	-	-	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-10	40-50	3/11/2008	9	-	-	-	41	-	**4.66**	17.80	-	-	-	-	-
		3/10/2009	9	-	-	-	37	-	**5.08**	17.15	-	-	-	-	-
		3/10/2010	5	-	-	-	55	-	**4.95**	15.28	-	-	-	-	-
		3/2/2011	<5	-	-	-	50 B	-	**4.94**	15.90	18.06	52	-	-	1.30
		3/7/2012	<5	<0.2	-	9.8	44	-	**5.1**	17.46	19.07	105	-	-	0.34
		6/6/2012	5.2	0.33	-	9.3	33	-	**5.1**	17.41	19.14	59	-	-	0.61
		3/1/1990	8.51	-	-	-	156	-	**6.24**	8.65	-	-	-	-	-
		7/1/1990	7.01	-	-	-	0	-	**5.26**	8.77	-	-	-	-	-
		11/13/1990	6.5	-	-	-	62	-	**5.28**	8.75	-	-	-	-	-
		3/6/1991	11	-	-	-	34	-	**6.02**	9.33	-	-	-	-	-
		7/22/1991	11.5	-	-	-	26	-	**5.10**	8.63	-	-	-	-	-
		11/6/1991	16.5	-	-	-	40	-	**5.10**	9.16	-	-	-	-	-
		3/25/1992	17	-	-	-	36	-	**5.31**	7.83	-	-	-	-	-
		7/15/1992	17.5	-	-	-	56	-	**4.98**	9.33	-	-	-	-	-
		11/24/1992	15	-	-	-	32	-	**5.01**	9.76	-	-	-	-	-
		3/22/1993	20	-	-	-	54	-	**4.97**	11.08	-	-	-	-	-
		7/19/1993	47.6	-	-	-	124	-	**4.75**	9.70	-	-	-	-	-
		11/4/1993	12.5	-	-	-	6	-	**5.01**	9.95	-	-	-	-	-
		3/7/1994	7.01	-	-	-	72	-	**5.09**	11.18	-	-	-	-	-
		7/11/1994	31.2	-	-	-	92	-	**4.99**	9.47	-	-	-	-	-
		11/2/1994	6.6	-	-	-	25	-	**5.08**	10.54	-	-	-	-	-
		3/8/1995	5.4	-	-	-	34	-	**5.36**	16.18	-	-	-	-	-
		3/6/1996	42	-	-	-	117	-	**5.13**	8.45	-	-	-	-	-
		3/17/1997	61	-	-	-	153	-	**5.18**	15.66	-	-	-	-	-
		3/16/1998	51.1	-	-	-	140	-	**4.98**	14.62	-	-	-	-	-
		3/17/1999	34.7	-	-	-	130	-	**4.71**	16.11	-	-	-	-	-
		3/6/2000	25.7	-	-	-	17	-	**4.86**	15.53	-	-	-	-	-
		3/16/2001	22.5	-	-	-	63	-	**4.78**	16.65	-	-	-	-	-
		3/6/2002	18.2	-	-	-	73	-	**5.04**	17.09	-	-	-	-	-
		3/18/2003	20.9	-	-	-	71	-	**5.22**	16.61	-	-	-	-	-
		3/9/2004	13.3	-	-	-	68	-	**4.80**	14.16	-	-	-	-	-
		3/7/2005	13.8	-	-	-	61	-	**4.81**	17.13	-	-	-	-	-
		3/2/2006	11.9	-	-	-	57	-	**5.86**	15.96	-	-	-	-	-
		3/6/2007	14	-	-	-	44	-	**4.71**	14.88	-	-	-	-	-
		3/11/2008	9	-	-	-	33	-	**4.54**	17.53	-	-	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-11*	40-50	3/10/2009	6	-	-	-	37	-	**4.90**	16.82	-	-	-	-	-
		3/10/2010	11	-	-	-	52	-	**4.77**	15.58	-	-	-	-	-
		3/2/2011	12 B	-	-	-	64 B	-	**4.78**	15.96	19.42	86	-	-	0.35
		3/7/2012	12.2	<0.2	-	16.2	72	-	**5.0**	16.80	19.80	177	-	-	0.53
		6/5/2012	11.6	0.083 B	-	19.3	53	-	**5.2**	16.98	20.11	103	-	-	1.19
		3/1/1990	170	-	-	-	400	-	**5.15**	8.51	-	-	-	-	-
		7/1/1990	150	-	-	-	408	-	**5.15**	8.33	-	-	-	-	-
		11/13/1990	110	-	-	-	424	-	**4.88**	8.13	-	-	-	-	-
		3/6/1991	99	-	-	-	344	-	**5.00**	9.02	-	-	-	-	-
		7/22/1991	94.6	-	-	-	320	-	**4.71**	8.00	-	-	-	-	-
		11/6/1991	85.1	-	-	-	300	-	**4.77**	9.26	-	-	-	-	-
		3/25/1992	70.1	-	-	-	308	-	**5.07**	8.82	-	-	-	-	-
		7/15/1992	45.6	-	-	-	220	-	**4.68**	8.13	-	-	-	-	-
		11/24/1992	70.1	-	-	-	252	-	**4.76**	9.69	-	-	-	-	-
		3/22/1993	74.1	-	-	-	272	-	**4.68**	10.95	-	-	-	-	-
		7/19/1993	79.6	-	-	-	348	-	**4.62**	8.84	-	-	-	-	-
		11/4/1993	79.6	-	-	-	168	-	**4.63**	9.09	-	-	-	-	-
		3/7/1994	44.1	-	-	-	200	-	**4.69**	10.89	-	-	-	-	-
		7/11/1994	50.6	-	-	-	228	-	**4.62**	8.87	-	-	-	-	-
		11/2/1994	27	-	-	-	110	-	**4.61**	10.02	-	-	-	-	-
		3/8/1995	32	-	-	-	142	-	**4.78**	15.15	-	-	-	-	-
		3/6/1996	21	-	-	-	126	-	**5.07**	14.64	-	-	-	-	-
		3/17/1997	12	-	-	-	57	-	**5.02**	12.92	-	-	-	-	-
		3/16/1998	11.9	-	-	-	58	-	**5.09**	12.11	-	-	-	-	-
		3/17/1999	11.4	-	-	-	51.5	-	**4.94**	14.02	-	-	-	-	-
		3/6/2000	9	-	-	-	31	-	**5.02**	13.11	-	-	-	-	-
		3/16/2001	14.7	-	-	-	4	-	**5.03**	14.81	-	-	-	-	-
		3/6/2002	6.9	-	-	-	41	-	**5.06**	16.19	-	-	-	-	-
		3/18/2003	13.3	-	-	-	33	-	**5.00**	15.41	-	-	-	-	-
		3/9/2004	5.7	-	-	-	38	-	**4.75**	11.76	-	-	-	-	-
		3/7/2005	9	-	-	-	30	-	**4.75**	15.10	-	-	-	-	-
		3/2/2006	6.9	-	-	-	29	-	**4.31**	12.45	-	-	-	-	-
		3/6/2007	8	-	-	-	14	-	**4.49**	12.95	-	-	-	-	-
		3/11/2008	8	-	-	-	29	-	**4.35**	16.00	-	-	-	-	-
		3/10/2009	5	-	-	-	31	-	**4.57**	14.82	-	-	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-12*	40-50	3/10/2010	5	-	-	-	46	-	**4.62**	12.69	-	-	-	-	-
		3/2/2011	<5	-	-	-	<50	-	**4.50**	13.11	18.04	49	5.16	226	3.36
		3/7/2012	7.3	0.49	-	8.8	48	-	**5.0**	15.41	17.58	126	2.87	-63.1	3.13
		6/6/2012	7.1	0.5	-	10.6	39	-	**4.6**	15.46	19.09	65	2.27	-55.9	2.97
		10/2/2012	8	0.47	-	10.7	<25	-	**4.50**	14.26	22.09	70	1.86	296.7	3.50
		3/13/2013	9	0.42	-	13	37	-	**4.60**	14.69	17.4	70.7	1.38	322.7	2.33
		6/13/2013	10	0.42	-	13	46	-	**4.00**	14.81	21.7	82.2	1.79	281.1	2.61
		10/3/2013	11	0.39	-	14	58	-	**4.50**	13.04	22.3	85.6	1.5	371.9	2.15
		3/5/2014	9.4	0.47	-	12	42	-	**4.70**	15.04	14.1	76.4	2.36	322.6	5.04
		6/3/2014	6.8	0.52	-	10	41	-	**4.70**	14.19	23	63.1	-	334.8	2.00
		10/2/2014	5.6	0.57	-	10	30	-	**4.40**	12.34	22	59.2	3.77	295.9	2.46
		3/10/2015	3.9	0.52	-	13	<25	-	**4.50**	12.67	19.3	49.3	4.73	306.8	3.82
		6/1/2015	4.0	0.51	-	12	<25	-	**4.50**	13.51	21.00	48	4.48	323	3.69
		3/1/1990	185	-	-	-	428	-	**5.84**	9.76	-	-	-	-	-
		7/1/1990	170	-	-	-	436	-	**5.59**	9.55	-	-	-	-	-
		11/13/1990	160	-	-	-	524	-	**5.06**	9.55	-	-	-	-	-
		3/6/1991	161	-	-	-	476	-	**5.04**	10.32	-	-	-	-	-
		7/22/1991	164.2	-	-	-	448	-	**4.99**	9.11	-	-	-	-	-
		11/6/1991	158.2	-	-	-	460	-	**4.89**	10.16	-	-	-	-	-
		3/25/1992	134.7	-	-	-	464	-	**5.33**	9.84	-	-	-	-	-
		7/15/1992	150	-	-	-	488	-	**4.81**	9.47	-	-	-	-	-
		11/24/1992	120.1	-	-	-	468	-	**4.83**	10.22	-	-	-	-	-
		3/22/1993	95.1	-	-	-	432	-	**4.87**	11.30	-	-	-	-	-
		7/19/1993	83.1	-	-	-	448	-	**4.87**	9.37	-	-	-	-	-
		11/4/1993	84.6	-	-	-	248	-	**4.87**	10.07	-	-	-	-	-
		3/7/1994	90	-	-	-	408	-	**4.86**	11.85	-	-	-	-	-
		7/11/1994	82.1	-	-	-	384	-	**4.87**	9.42	-	-	-	-	-
		11/2/1994	88	-	-	-	361	-	**4.86**	10.61	-	-	-	-	-
		3/8/1995	82	-	-	-	367	-	**4.89**	10.76	-	-	-	-	-
		3/6/1996	82	-	-	-	369	-	**5.04**	10.50	-	-	-	-	-
		3/17/1997	69	-	-	-	341	-	**5.05**	8.74	-	-	-	-	-
		3/16/1998	56.2	-	-	-	366	-	**5.12**	7.36	-	-	-	-	-
		3/17/1999	57.5	-	-	-	364	-	**4.86**	10.16	-	-	-	-	-
		3/6/2000	48.2	-	-	-	326	-	**5.01**	8.64	-	-	-	-	-
		3/16/2001	58.6	-	-	-	337	-	**5.19**	10.79	-	-	-	-	-

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-17	45-50	3/6/2002	46.5	-	-	-	313	-	**5.07**	11.56	-	-	-	-	-
		3/18/2003	52.1	-	-	-	335	-	**4.91**	10.87	-	-	-	-	-
		3/9/2004	14.7	-	-	-	177	-	**5.14**	7.88	-	-	-	-	-
		3/7/2005	36.6	-	-	-	304	-	**5.14**	10.31	-	-	-	-	-
		3/2/2006	46.6	-	-	-	315	-	**4.72**	7.19	-	-	-	-	-
		3/6/2007	59.2	-	-	-	302	-	**4.99**	8.22	-	-	-	-	-
		3/11/2008	82	-	-	-	330	-	**4.65**	11.04	-	-	-	-	-
		3/10/2009	74	-	-	-	365	-	**4.99**	10.37	-	-	-	-	-
		3/10/2010	47	-	-	-	327	-	**5.39**	8.09	-	-	-	-	-
		3/2/2011	36.6 B	-	-	-	286 B	-	**5.36**	8.73	16.25	400	1.07	176.5	1.09
		3/7/2012	26.9	<0.2	-	98	274	-	**6.3**	11.29	15.37	693	0.86	-73.7	8.96
		6/6/2012	33.7	0.04 B	-	130	312	-	**6.6**	11.10	19.23	306	4.07	-52.3	2.07
		10/2/2012	26.2	0.18 B	-	159	260	-	**5.60**	10.16	23.4	447	0.72	99.4	8.26
		3/13/2013	24	0.05	-	130	260	-	**5.60**	10.47	17.5	414.7	0.39	220.9	2.79
		6/13/2013	18	0.03	-	110	220	-	**5.20**	10.50	22.9	360	0.29		3.76
		10/3/2013	24	0.07	-	110	270	-	**5.90**	8.79	20.6	428.3	0.42	213.8	1.35
		3/5/2014	17	0.17	-	78	200	-	**6.50**	10.79	14.6	322.5	3.85	291.5	2.11
		6/3/2014	16	0.13	-	64	170	-	**6.10**	10.08	24	276	-	181.5	1.40
		10/2/2014	39	<0.023	-	110	230	-	**5.70**	7.73	21	287.3	0.27	272.9	0.48
		3/10/2015	110	<0.023	-	160	430	-	6.70	8.06	19.8	341	0.44	265.2	2.26
		6/2/2015	100	0.018	-	130	410	2.5	8.50	8.79	22	264	5.52	156	4.33
		3/2/2006	48	-	-	-	398	-	6.09	19.03	-	-	-	-	-
		12/12/2006	37.4	0.05	0.05	195	377	2.24	6.38	20.08	19.7	570	-	-	-
		3/6/2007	35.6	<0.02	<0.02	188	387	6.6	6.30	19.96	19.5	-	-	-	-
		11/7/2007	34	<0.02	<0.02	234	367	3	6.25	20.42	-	610	-	-	-
		3/11/2008	37	<0.04	<0.02	172	396	3.1	6.23	20.44	20	622	-	-	-
		11/6/2008	31	<0.02	<0.02	163	393	3.1	6.53	21.16	20.4	630	-	-	-
		3/10/2009	38	<0.02	<0.02	152	373	3	6.52	20.31	20.3	614	-	-	-
		10/6/2009	84	<0.02	<0.02	149	471	3.3	6.59	19.59	20.2	796	-	-	-
		3/10/2010	44	<0.02	<0.02	155	412	3.1	6.59	19.50	19.5	645	-	-	-
		11/11/2010	37.7	<0.1	<0.1	144	342	4.8	6.58	19.23	19.7	581	-	-	-
		3/2/2011	77.3	<0.1	-	146	368	-	6.20	20.12	18.38	585	-	-	2.18
		10/4/2011	51.3	<0.2	-	134	360	-	6.32	20.01	22.49	594	-	-	2.44
		3/6/2012	101	<0.2	-	130	377	-	6.3	20.82	19.24	686	-	-	1.74
		6/5/2012	134	<0.02	-	148	574	-	6.3	20.53	19.50	983	-	-	3.47

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-18	45-50	3/2/2006	35.2	-	-	-	389	-	6.47	9.94	-	-	-	-	-
		3/6/2007	53	-	-	-	398	-	6.53	10.58	-	-	-	-	-
		3/11/2008	48	-	-	-	358	-	6.47	11.48	-	-	-	-	-
		3/10/2009	73	-	-	-	447	-	6.62	11.23	-	-	-	-	-
		3/10/2010	407	-	-	-	1040	-	6.69	10.08	-	-	-	-	-
		3/2/2011	162	-	-	-	570	-	6.69	10.83	18.43	705	-	-	1.06
		3/6/2012	88.6	<0.2	-	81.6	505	-	6.7	11.89	17.88	753	-	-	9.69
		6/5/2012	77.3	<0.02	-	69.4	415	-	6.7	11.45	20.33	738	-	-	8.73
MW-19*	45-50	3/2/2006	105	-	-	-	440	-	**6.26**	19.38	-	-	-	-	-
		12/12/2006	71.6	0.05	0.05	126	334	2.08	**6.34**	20.43	20	685	-	-	-
		3/6/2007	54.6	<0.02	<0.02	160	294	4.2	**6.24**	20.24	20.1	-	-	-	-
		11/7/2007	46	<0.02	<0.02	156	336	2.3	**6.17**	21.48	-	583	-	-	-
		3/11/2008	36	<0.04	<0.02	141	360	2.6	**6.25**	21.37	20.9	566	-	-	-
		11/6/2008	32	<0.02	<0.02	148	314	2.7	**6.50**	21.70	20.8	581	-	-	-
		3/10/2009	35	<0.02	<0.02	161	354	2.2	**6.43**	21.14	20.8	585	-	-	-
		10/6/2009	36	<0.02	<0.02	155	359	2.4	6.50	19.91	20.8	582	-	-	-
		3/10/2010	33	<0.02	<0.02	142	361	2.4	6.56	19.88	20.2	542	-	-	-
		11/11/2010	28.8	<0.1	<0.1	124	293	4.5	**6.47**	19.28	20.6	504	-	-	-
		3/2/2011	39.2 B	0.14	-	126	334 B	-	**6.26**	20.54	17.93	520	0.54	124.8	0.70
		10/4/2011	28.3	<0.2	-	111	311	-	**6.34**	20.45	22.55	488	0.57	-18.4	0.60
		3/6/2012	28.8	<0.2	-	109	329	-	6.7	22.07	18.87	454	1.1	-118	0.28
		6/5/2012	52.2	<0.02	-	151	404	-	**6.3**	21.66	20.11	646	1.94	-43.9	1.34
		10/3/2012	30.5	0.2 B	-	148	304	-	6.70	21.61	21.9	540	3.81	132.2	1.06
		3/12/2013	73	0.03	-	130	470	-	6.50	21.54	19.8	684	0.34	52.2	1.22
		6/12/2013	69	<0.023	-	110	480	-	**6.20**	21.20	23	819	0.46	-	1.64
		10/2/2013	51	<0.023	-	120	500	-	**6.40**	20.51	22.7	845	0.43	30.9	1.50
		3/4/2014	53	<0.023	-	130	490	-	6.60	22.70	16.9	677	0.31	215.6	1.00
		6/3/2014	43	<0.023	-	130	480	-	6.50	21.18	20	781	-	43.6	0.97
		10/2/2014	44	<0.023	-	140	470	-	**6.30**	19.90	22	735	0.28	20.4	0.91
		3/11/2015	28	<0.023	-	150	400	-	**6.40**	20.10	20.3	679	0.31	186.6	1.12
		6/1/2015	28	0.02	-	140	380	-	**6.40**	20.50	22	630	0.39	42	5.44
MW-21-C*	40-45	10/3/2011	-	-	-	117	**511**	-	6.98	20.20	21.30	610	-	-10.2	0.2
		1/18/2012	-	-	-	138	404	-	6.70	21.63	17.99	452	0.2	-34.8	1.4
		10/3/2012	76.2	0.027 B	-	814	447	-	6.60	21.42	22.63	796	1.38	-59.3	9.38
		3/12/2013	79	<0.023	-	120	500	-	6.50	21.18	19.90	803	0.43	-26.2	3.24

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
		6/12/2013	67	0.48	-	140	450	-	**6.40**	20.96	21.40	746	1.57	-	7.29
		10/2/2013	68	<0.023	-	96	500	-	6.50	20.35	23.90	873	0.46	-42	9.39
		3/4/2014	63	<0.023	-	120	480	-	6.80	21.47	15.80	691	0.39	9.4	9.92
		6/3/2014	60	<0.023	-	110	490	-	6.60	21.00	20.00	804	-	-25.4	7.24
		10/2/2014	53	<0.023	-	130	490	-	**6.40**	19.80	23.00	769	0.3	-52	7.14
		3/11/2015	32	<0.023	-	130	420	-	6.60	19.99	21.20	728	0.27	-34.5	8.06
		6/1/2015	34	0.08	-	140	420	-	6.50	20.35	21.00	697	0.2	-42	15.9
		6/1/2015	34	0.08	-	140	420	-	6.50	20.35	21.00	697	0.2	-42	15.9
MW-22-B*	22-27	10/3/2011	-	-	-	13.6	54	-	7.26	8.52	22.04	113	-	98.8	0.42
		1/17/2012	-	-	-	15	35	-	**5.77**	10.48	20.38	93	1.78	160.6	1.1
		10/3/2012	5.5	0.55	-	12.6	40	-	**6.20**	9.93	24.37	82	2.57	115.8	1.88
		3/12/2013	3.2	0.27	-	7.4	34	-	**6.00**	9.94	18.20	85.5	4.71	150.1	0.57
		6/12/2013	8.4	0.35	-	32	110	-	**6.00**	9.71	22.30	188.1	0.78	91.7	0.52
		10/2/2013	2.6	0.08	-	4.2	<25	-	**5.10**	8.74	24.60	39.3	3.24	251.8	0.31
		3/4/2014	2.4	0.27	-	6.2	27	-	7.10	10.28	15.70	32	5.39	111.4	0.94
		6/2/2014	1.8	0.11	-	4.5	<25	-	**5.90**	9.63	21.00	32	-	161.3	0.66
		10/2/2014	3.8	0.12	-	3.3	<25	-	**5.30**	8.06	23.00	31.2	8.41	255	0.75
		3/11/2015	2.2	0.38	-	4.4	<25	-	**5.80**	8.32	19.70	26.1	7.05	212.8	1.17
		6/1/2015	2.7	0.2	-	4.8	<25	-	**5.70**	8.77	20.00	31	5.68	85	0.28
MW-22-C*	39.5-44.5	10/3/2011	-	-	-	122	400	-	6.90	8.58	23.88	641	6.3	-52.9	0.41
		1/17/2012	-	-	-	125	341	-	6.77	10.56	20.26	516	11.83	37.9	1.4
		10/3/2012	36	<0.02	-	172	380	-	**6.30**	10.02	23.61	652	0.78	13.9	1.2
		3/12/2013	34	<0.023	-	160	390	-	**6.40**	9.99	18.50	602	0.43	66.1	1
		6/12/2013	39	<0.023	-	160	480	-	**6.20**	9.81	23.30	763	0.3	86	1.86
		10/2/2013	32	<0.023	-	150	460	-	**6.30**	8.82	24.50	764	0.42	95.8	2.16
		3/4/2014	35	0.46	-	160	390	-	7.00	10.37	15.30	526.4	5.55	197.3	0.65
		6/2/2014	37	0.05	-	160	490	-	6.50	9.73	22.00	755	-	45.1	4.1
		10/2/2014	33	<0.023	-	160	470	-	**6.20**	8.12	23.00	710	0.37	163	2.23
		3/11/2015	34	0.36	-	160	430	-	**6.40**	8.43	20.30	733	0.22	128.3	2.93
		6/1/2015	41	0.13	-	160	440	-	**6.40**	8.87	22.00	684	0.4	23	0.51
MW-23-B*	21.5-26.5	10/3/2011	-	-	-	29.1	**1,990**	-	6.92	5.00	22.47	247	-	54.7	0.4
		1/16/2012	-	-	-	34.8	148	-	6.92	7.37	17.48	216	5.86	23.5	1.6
		10/2/2012	18.7	0.2 B	-	74.9	186	-	**6.20**	6.44	23.45	339	0.59	39.6	2.07
		3/12/2013	17	0.35	-	78	210	-	6.60	6.65	18.10	297.3	4.57	120.1	1.1
		6/12/2013	28	0.22	-	160	330	-	**6.20**	6.50	22.80	497.5	0.69	81.4	0.63

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			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
		10/2/2013	17	0.37	-	90	220	-	**6.10**	5.23	23.10	331.7	1.09	167.5	0.63
		3/4/2014	18	0.43	-	69	170	-	6.90	7.10	14.80	231.5	4.73	186.1	5.69
		6/2/2014	11	0.44	-	45	140	-	6.50	6.40	21.00	237	-	127	1.4
		10/1/2014	4.3	0.46	-	24	83	-	**6.00**	4.46	23.00	146.1	2.23	214.6	3.62
		3/10/2015	3	0.25	-	15	55	-	**6.40**	4.81	17.40	108.8	5.07	299.5	2.29
		6/3/2015	2.3	0.123	-	9.8	55	1	**6.30**	4.71	19.00	90	2.21	34	0.88
MW-23-C*	40-45	10/3/2011	-	-	-	131	460	-	6.56	5.46	22.66	618	6.8	-50.3	1.41
		1/16/2012	-	-	-	134	335	-	**6.44**	7.67	18.92	413	0.24	136.4	0.9
		10/2/2012	71.1	0.024 B	-	200	456	-	**6.10**	6.93	23.30	766	0.67	44	1.37
		3/12/2013	76	<0.023	-	180	470	-	**6.20**	7.14	18.60	758	0.28	85.2	0.92
		6/12/2013	90	0.03	-	200	**530**	-	**6.00**	7.00	23.10	842	0.31	65	1.58
		10/2/2013	74	<0.023	-	210	**540**	-	**6.10**	5.72	24.70	878	0.41	94.4	1.66
		3/4/2014	98	<0.023	-	190	**540**	-	6.60	7.58	14.90	677	0.51	206.2	3.46
		6/2/2014	89	0.06	-	190	**540**	-	**6.30**	7.76	22.00	850	-	82.7	2.8
		10/1/2014	76	<0.023	-	240	**580**	-	**6.00**	4.95	22.00	856	0.3	185.6	2.16
		3/10/2015	32	0.04	-	120	380	-	**6.40**	5.30	18.30	636	0.16	301.4	4.59
		6/2/2015	29	<0.01	-	69	280	2.7	6.60	5.94	22.00	454	0.33	16	1.27
MW-24-B*	22-27	10/4/2011	-	-	-	74.2	328	-	6.82	3.83	20.42	561	12.7	-10.4	0.2
		1/17/2012	-	-	-	68.7	331	-	**6.28**	5.90	19.26	506	0.55	123.9	1.1
		10/3/2012	73.6	0.021 B	-	124	391	-	**6.20**	5.01	23.76	727	0.72	39.4	5.57
		3/13/2013	62	0.02	-	99	360	-	6.50	5.49	16.90	610	3.67	100.7	0.59
		6/12/2013	69	<0.023	-	100	380	-	**6.30**	5.41	22.20	638	0.31	96.9	2.58
		10/2/2013	65	<0.023	-	100	380	-	**6.30**	3.93	22.20	668	0.28	126.2	1.43
		3/5/2014	64	<0.023	-	100	370	-	6.80	5.94	13.90	680	4.02	166.9	1.01
		6/3/2014	56	<0.023	-	94	350	-	6.60	5.30	22.00	604	-	150.1	0.92
		10/1/2014	46	<0.023	-	86	320	-	**6.10**	3.25	23.00	542	0.35	233.9	1.44
		3/10/2015	18	0.07	-	38	180	-	6.60	3.53	17.00	337	3.5	283.2	3.1
		6/2/2015	11	0.015	-	28	140	1.2	6.60	4.40	19.00	265	0.97	26	0.67
MW-24-C*	40-45	10/4/2011	-	-	-	137	**560**	-	**5.75**	3.52	20.07	1003	-	77.6	3.84
		1/17/2012	-	-	-	145	**597**	-	**5.99**	5.71	19.02	909	13.03	66	2.1
		10/3/2012	164	<0.02	-	163	**579**	-	**5.90**	4.69	25.25	1027	0.87	31.8	4.62
		3/13/2013	160	<0.023	-	150	**530**	-	**5.80**	5.15	17.30	919	0.29	67.1	3.11
		6/12/2013	170	0.03	-	150	**550**	-	**5.80**	5.07	22.30	951	1.22	83.9	4.63
		10/2/2013	170	<0.023	-	150	**560**	-	**5.60**	3.44	23.70	967	0.34	134.9	4.07
		3/5/2014	190	<0.023	-	160	**610**	-	**6.10**	5.59	14.30	1070	0.56	196.2	5.83

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
		6/3/2014	170	<0.023	-	150	**550**	-	**5.80**	4.97	26.00	943	-	138	8.1
		10/1/2014	170	<0.023	-	160	**560**	-	**5.00**	2.87	23.00	904	0.39	238.8	4.94
		3/10/2015	160	<0.023	-	160	500	-	**5.40**	3.16	17.60	899	0.27	293.8	5.32
		6/2/2015	150	0.066	-	150	500	1.7	**5.50**	4.00	22.00	858	1.48	77	0.69
MW-27-B*	22-27	10/3/2011	-	-	-	83	309	-	6.52	4.30	19.95	579	-	95.2	0.8
		1/18/2012	-	-	-	77.9	292	-	**6.25**	4.86	17.48	424	2.84	137.7	1.4
		10/2/2012	58.7	1.6	-	92.7	240	-	**5.60**	4.60	22.33	459	1.07	112.4	2.32
		3/13/2013	63	1.9	-	90	250	-	**5.50**	4.88	15.50	443.7	2.79	245.2	0.67
		6/13/2013	56	2.1	-	91	250	-	**5.00**	4.45	21.90	432.4	0.5	184.5	2.74
		10/2/2013	50	1.5	-	96	240	-	**4.50**	4.11	21.30	427.1	1.16	355.2	1.48
		3/5/2014	50	1.5	-	97	260	-	**5.20**	4.95	13.10	455.4	1.97	227.6	1.17
		6/2/2014	51	1.2	-	96	250	-	**4.70**	4.82	20.00	419	-	320	0.39
		10/1/2014	42	1.3	-	95	230	-	**4.30**	3.88	22.00	381.7	1.97	230.7	0.81
		3/10/2015	19	1.5	-	75	120	-	**4.50**	4.01	16.40	231.1	4.16	320.5	1.21
		6/2/2015	14	1.3	-	62	110	0.45	**4.70**	4.39	21.00	196	4.81	151	2.67
MW-28-B*	25-30	10/3/2011	-	-	-	27.5	236	-	7.56	22.50	22.10	254	-	87.9	0.62
		1/17/2012	-	-	-	16.5	112	-	7.21	24.03	19.53	175	2.95	104.2	1.3
		10/3/2012	3.3	0.56	-	11.7	94	-	7.20	23.66	23.71	191	1.47	51.6	1.29
		3/12/2013	2.8	0.39	-	13	88	-	7.20	23.21	19.40	142.3	5.02	83.1	0.57
		6/12/2013	2.8	0.41	-	12	78	-	6.60	22.96	24.50	130.4	3.42	94.3	1.54
		10/2/2013	2.2	0.26	-	11	67	-	6.80	22.42	23.70	113.3	3.36	140.9	0.47
		3/4/2014	2.9	0.31	-	11	60	-	6.90	23.40	16.10	81.5	6.19	211.4	0.67
		6/2/2014	2.9	0.27	-	11	63	-	6.90	22.91	22.00	90.2	-	135	1
		10/2/2014	4	0.4	-	11	44	-	6.50	21.66	23.00	81.3	4.76	149.4	0.72
		3/11/2015	4.3	0.28	-	11	46	-	6.50	21.89	20.00	70.1	6.2	238.1	1.46
		6/1/2015	4.8	0.27	-	10	40	-	**6.30**	22.21	25.00	69	4.88	33	0.61
MW-28-C*	40-45	10/3/2011	-	-	-	17.6	**1,240**	-	**6.34**	21.69	22.28	121	11.1	-26.3	1.58
		1/17/2012	-	-	-	18	69	-	**5.97**	23.22	19.45	106	2.43	160.1	1.9
		10/3/2012	37.7	0.18 B	-	47.2	177	-	**6.20**	22.84	22.85	370	0.93	96.1	2.1
		3/12/2013	18	0.11	-	78	210	-	**6.20**	22.39	19.80	342	0.28	96.1	1.01
		6/12/2013	30	0.07	-	100	250	-	**6.00**	22.23	22.60	430.8	0.34	55.9	1.29
		10/2/2013	9.5	0.45	-	30	89	-	**6.00**	21.58	22.00	131.7	3.49	194.2	0.88
		3/4/2014	17	0.16	-	57	150	-	**6.20**	22.58	16.00	210.9	0.33	202.5	0.75
		6/2/2014	9.1	0.34	-	28	85	-	6.50	22.09	23.00	143	-	145.3	1.3

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Sample ID	Screen Interval (ft BGS)	Sample Date	Concentration												
			Chloride	Nitrate	Nitrite	Sulfate	TDS	TOC	pH	Water Level	Temp.	Cond.	DO	ORP	Turbidity
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	SU	feet	˚C	µmhos/cm	mg/l	mV	NTU
		Groundwater Standards	250	10	1	250	500	NC	6.5-8.5	NC	NC	NC	NC	NC	NC
		IMAC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
		10/2/2014	4.1	0.71	_	11	34	_	**5.70**	20.87	22.00	61.7	5.62	208	0.88
		3/11/2015	2.7	0.81	_	7.4	33	_	**5.60**	21.08	20.50	48.9	5.47	269.3	1.82
		6/1/2015	2.6	0.6	_	10	26	_	**5.60**	21.42	22.00	55	5.26	77	1.09
MW-31-C*	40-45	10/4/2011	-	-	_	131	349	_	**5.46**	6.55	21.78	620	7.6	-3.7	0.72
		1/17/2012	-	-	_	136	386	_	**5.28**	8.63	18.17	518	0.26	149.5	0.9
		10/2/2012	114	0.14 B	_	174	407	_	**5.10**	7.64	22.70	737	0.69	69.8	9.78
		3/13/2013	110	<0.023	_	150	400	_	**5.30**	8.06	16.40	679	0.4	131.4	6.15
		6/13/2013	110	<0.023	_	150	420	_	**5.10**	8.20	22.60	691	0.35	147.4	4.09
		10/3/2013	140	<0.023	_	150	490	_	**5.20**	6.27	22.70	828	0.34	167.3	1.5
		3/5/2014	150	0.11	_	150	490	_	**5.80**	8.42	14.50	690	2.56	312	3.23
		6/3/2014	170	<0.023	_	150	**570**	_	**5.20**	7.68	24.00	941	-	141.5	2.8
		10/2/2014	180	<0.023	_	150	**550**	_	**5.00**	5.46	23.00	905	0.3	260.2	1.39
		3/10/2015	170	<0.023	_	160	**510**	_	**5.20**	5.70	18.00	907	0.26	250.3	1.57
		6/5/2015	170	0.024	_	160	**540**	0.63	**5.40**	5.93	20.00	877	0.61	82	3.83
MW-32-C	45-50	11/20/2013	7.9	0.14	_	35	120	_	**9.20**	26.16	19.50	236	2.21	102.2	<10
		3/4/2014	3.8	0.21	_	13	32	_	**5.80**	26.37	17.00	54	4.2	342	3.3
		6/3/2014	5.8	0.18	_	24	57	_	**5.50**	25.65	22.00	128.1	-	244.4	9.2
		10/2/2014	4.4	0.36	_	15	29	_	**4.60**	23.76	20.00	60.9	5.14	291.9	5.82
		3/11/2015	4	0.39	_	18	26	_	**4.80**	24.18	21.00	65.1	3.98	311.2	6.69
		6/1/2015	4.2	0.36	_	16	31	_	**5.00**	24.64	22.00	70	3.97	121	2.37
MW-33-C	40-45	11/20/2013	5.3	0.76	-	21	83	-	**9.70**	16.32	18.30	156	2.97	124.2	<10
		3/4/2014	5.2	0.91	-	10	36	-	**5.20**	16.50	16.00	49	3.3	363	2.6
		6/3/2014	6	0.72	-	13	42	-	**5.20**	15.75	21.00	64	-	194.3	9.2
		10/2/2014	4.9	0.94	-	9.7	28	-	**4.70**	13.65	21.00	57.2	3.7	253.1	5.85
		3/11/2015	4.3	0.92	-	11	<25	-	**4.80**	14.15	21.20	53.2	1.5	265.7	2.25
		6/1/2015	4.5	0.66	-	12	30	-	**4.60**	14.61	23.00	55	1.06	134	0.96

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] SPLP indicates synthetic precipitation leaching procedure.
[4] ft BGS indicates feet below ground surface.
[5] Sample IDs for these locations were a combination of location, depth, and sampling date, i.e. SS-F-DPT-1(3-4)-20140630.
[6] * indicates sample was collected to verify that native soil had been reached.

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Table 9. Groundwater and CCR Interstitial Water Field Parameters

Location	Screen Interval (ft BGS)	Sample Date	Drawdown (ft)	pH (S.U.)	Conductivity (µS/cm)	Temperature (˚C)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
MW-2B	22-27	5/23/2014	0.00	5.91	51.8	19.60	2.61	159	4.14
MW-2C	40-45	5/23/2014	0.02	6.66	807	22.08	28.7	4.0	0.50
MW-3B	22-27	5/27/2014	0.01	5.61	91	19.24	0.71	161	0.95
MW-5B	22-27	5/23/2014	0.01	**3.94**	32	20.42	7.51	163	4.40
MW-6B	22-27	5/21/2014	1.03	6.66	629	22.35	2.53	80.1	0.39
MW-6C	40-45	5/21/2014	0.05	4.82	577	21.93	4.92	100.3	0.60
MW-27C	40-45	5/22/2014	0.12	**5.38**	358	19.79	37.9	104	1.06
MW-31B	22-27	5/27/2014	0.05	**5.65**	109	21.17	9.95	74.3	0.44
MW-34B	22-27	5/27/2014	0.00	5.33	324.4	21.10	9.20	116	0.34
MW-34C	40-45	5/28/2014	0.03	5.91	465	22.07	7.85	75.4	0.15
MW-35B	22-27	5/28/2014	0.02	**5.47**	112	20.16	5.78	87.6	4.16
MW-35C	40-45	5/28/2014	0.09	6.91	620	23.40	81.3	66.2	0.54
MW-36B	22-27	5/21/2014	0.02	6.52	513	19.80	5.86	0.61	81.2
MW-36C	40-45	5/21/2014	NM	6.35	5.32	20.77	9.44	71.1	0.23
PZ-25	22-27	5/27/2014	0.03	**4.58**	22	19.33	6.44	131	8.60
PZ-INT	13-18	5/20/2014	0.59	7.43	997	19.84	>1,000	-267	0.07

Note(s):

[1] ft indicates feet.
[2] ft BGS indicates feet below ground surface.
[3] SU indicates standard units.
[4] µS/cm indicates microsiemens per centimeter.
[5] ˚C indicates degrees Celsius.
[6] NTU indicates Nephelometric turbidity units.
[7] ORP indicates oxidation reduction potential.
[8] mV indicates millivolts.
[9] DO indicates dissolved oxygen.
[10] mg/L indicates milligrams per liter.
[11] NM means not measured.
[12] Bold values mean an exceedance at or beyond the compliance boundary.

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Table 10. Groundwater and CCR Interstitial Water Analytical Data

Location	Screen Interval (ft BGS)	Sample Date	Concentration (µg/L)															
			Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Total Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium
Groundwater Standards			NC	10	700	NC	700	2	NC	10	1,000	300	15	NC	50	1	NC	100	NC
IMAC			1	NC	NC	4	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-2B	22-27	5/23/2014	5.3 U	6.8 U	< 10	0.67 U	< 100	0.76 U	2,870	1.6 U	2.7 U	< 400	4.7 U	574	< 10	0.06 U	< 20	1.5 U	<1,000
MW-2C	40-45	5/23/2014	5.3 U	278	80.6	0.67 U	3,020	0.76 U	109,000	1.6 U	2.7 U	9,510	4.7 U	28,500	375	0.06 U	294	1.5 U	19,500
MW-3B	22-27	5/27/2014	5.3 U	6.8 U	< 10	0.67 U	446	0.76 U	12,000	1.6 U	2.7 U	43 U	4.7 U	2,270	18.5	0.06 U	329	1.5 U	3,580
MW-5B	22-27	5/23/2014	5.3 U	6.8 U	44.5	0.67 U	< 100	0.76 U	948	1.6 U	2.7 U	**700**	4.7 U	444	32	0.06 U	1.7 U	1.5 U	1,020
MW-6B	22-27	5/21/2014	5.3 U	6.8 U	34.9	0.67 U	1,130	0.76 U	53,900	1.6 U	2.7 U	< 400	< 30	13,400	68.2	0.06 U	256	1.5 U	11,700
MW-6C	40-45	5/21/2014	5.3 U	6.8 U	28.2	0.67 U	1,270	0.76 U	30,100	1.6 U	2.7 U	514	4.7 U	8,920	857	0.06 U	1.7 U	1.5 U	6,160
MW-27C	40-45	5/22/2014	5.3 U	6.8 U	45.6	0.67 U	517	0.76 U	25,200	< 30	2.7 U	**1,090**	4.7 U	5,050	**342**	0.06 U	1.7 U	< 20	8,440
MW-31B	22-27	5/27/2014	5.3 U	6.8 U	33.6	0.67 U	268	0.76 U	11,800	1.6 U	2.7 U	**1,390**	4.7 U	2,350	46.1	0.06 U	< 20	1.5 U	2,500
MW-34B	22-27	5/27/2014	5.3 U	6.8 U	17.3	0.67 U	223	0.76 U	25,900	1.6 U	2.7 U	< 400	4.7 U	2,940	< 10	0.06 U	37.6	1.5 U	5,250
MW-34C	40-45	5/28/2014	5.3 U	6.8 U	47.1	0.67 U	491	0.76 U	29,400	1.6 U	2.7 U	613	4.7 U	5,340	303	0.06 U	< 20	< 20	8,160
MW-35B	22-27	5/28/2014	5.3 U	6.8 U	42	0.67 U	< 100	0.76 U	4,110	1.6 U	2.7 U	< 400	4.7 U	450	24.7	0.06 U	1.7 U	1.5 U	1,030
MW-35C	40-45	5/28/2014	5.3 U	6.8 U	31.7	0.67 U	412	0.76 U	35,900	< 30	< 20	**2,810**	4.7 U	4,500	**345**	0.06 U	< 20	< 20	4,530
MW-36B	22-27	5/21/2014	5.3 U	6.8 U	153	0.67 U	528	0.76 U	44,100	1.6 U	2.7 U	< 400	4.7 U	6,830	< 10	0.06 U	132	1.5 U	10,900
MW-36C	40-45	5/21/2014	5.3 U	6.8 U	33.7	0.67 U	522	0.76 U	32,100	< 30	2.7 U	877	4.7 U	5,820	558	0.06 U	< 20	1.5 U	10,800
PZ-25	22-27	5/27/2014	5.3 U	6.8 U	11.5	0.67 U	< 100	0.76 U	1,180	1.6 U	2.7 U	< 400	4.7 U	324	11.2	0.06 U	1.7 U	1.5 U	<1,000
PZ-INT	13-18	5/20/2014	5.3 U	275	925	< 10	4,260	< 10	122,000	< 30	91.3	9,570	< 30	38,600	184	0.06 U	70.3	63.7	18,600

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] IMAC indicates Interim Maximum Allowable Concentrations
[4] Groundwater Standards and IMAC values are from Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina (NCDENR, Division of Water Quality, April 2013).
[5] NC indicates no criteria.
[6] Bold values indicate concentrations exceeding groundwater standards at or beyond compliance boundary.
[7] TDS indicates total dissolved solids.
[8] ft BGS indicates feet below ground surface.
[9] Sample IDs for these locations were a combination of location and sampling date, i.e. GW-MW-2B-20140523

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Table 10. Groundwater and CCR Interstitial Water Analytical Data (Continued)

Location	Screen Interval (ft BGS)	Sample Date	Concentration (µg/L)													
			Selenium	Silver	Sodium	Strontium	Thallium	Vanadium	Zinc	Bromide	Chloride	Nitrate (as N)	Nitrite (as N)	Sulfate	Alkalinity as CaCO3	TDS
Groundwater Standards			20	20	NC	NC	NC	NC	1,000	NC	250,000	10,000	1,000	250,000	NC	500,000
IMAC			NC	NC	NC	NC	0.2	0.3	NC	NC	NC	NC	NC	NC	NC	NC
MW-2B	22-27	5/23/2014	8.4 U	2.1 U	2,580	52.6	5.4 U	2 U	< 40	2,000 U	4,200	< 500	400 U	<5,000	5,300	<30,000
MW-2C	40-45	5/23/2014	8.4 U	2.1 U	36,600	3,100	5.4 U	2 U	< 40	2,000 U	42,100	250 U	400 U	130,000	269,000	542,000
MW-3B	22-27	5/27/2014	8.4 U	2.1 U	3,060	346	5.4 U	2 U	2 U	2,000 U	3,900	770	400 U	16,000	27,300	61,000
MW-5B	22-27	5/23/2014	8.4 U	2.1 U	2,020	< 10	5.4 U	2 U	< 40	2,000 U	3,700	250 U	400 U	5,400	700 U	<30,000
MW-6B	22-27	5/21/2014	8.4 U	2.1 U	52,300	1,930	5.4 U	2 U	< 40	2,000 U	71,500	250 U	400 U	91,800	105,000	374,000
MW-6C	40-45	5/21/2014	8.4 U	2.1 U	67,200	431	5.4 U	2 U	< 40	2,000 U	85,100	250 U	400 U	112,000	2,800	338,000
MW-27C	40-45	5/22/2014	**55**	2.1 U	50,200	294	5.4 U	< 10	< 40	2,000 U	52,300	740	400 U	96,900	8,100	258,000
MW-31B	22-27	5/27/2014	8.4 U	2.1 U	8,840	243	5.4 U	2 U	< 40	2,000 U	15,600	250 U	400 U	19,500	15,900	81,500
MW-34B	22-27	5/27/2014	< 40	2.1 U	28,100	230	5.4 U	2 U	< 40	2,000 U	34,700	1,100	400 U	62,300	24,300	164,000
MW-34C	40-45	5/28/2014	< 40	2.1 U	72,200	311	5.4 U	2 U	< 40	2,000 U	61,300	250 U	400 U	122,000	28,800	339,000
MW-35B	22-27	5/28/2014	8.4 U	2.1 U	17,500	15.2	5.4 U	2 U	< 40	2,000 U	6,400	250 U	400 U	31,800	5,700	88,500
MW-35C	40-45	5/28/2014	**55**	2.1 U	89,400	299	5.4 U	< 10	< 40	2,000 U	58,400	< 500	400 U	131,000	57,300	419,000
MW-36B	22-27	5/21/2014	< 40	2.1 U	46,300	546	5.4 U	< 10	< 40	2,000 U	51,900	630	400 U	90,400	72,400	316,000
MW-36C	40-45	5/21/2014	< 40	2.1 U	61,600	324	5.4 U	< 10	< 40	2,000 U	54,800	< 500	400 U	117,000	41,000	327,000
PZ-25	22-27	5/27/2014	8.4 U	2.1 U	< 2,000	< 10	5.4 U	2 U	< 40	2,000 U	3,200	250 U	400 U	5,900	700 U	<30,000
PZ-INT	13-18	5/20/2014	< 40	2.1 U	41,100	7,240	5.4 U	129	72.3	2,000 U	83,400	250 U	400 U	73,200	335,000	631,000

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] IMAC indicates Interim Maximum Allowable Concentrations
[4] Groundwater Standards and IMAC values are from Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina (NCDENR, Division of Water Quality, April 2013).
[5] NC indicates no criteria.
[6] Bold values indicate concentrations exceeding groundwater standards at or beyond compliance boundary.
[7] TDS indicates total dissolved solids.
[8] ft BGS indicates feet below ground surface.
[9] Sample IDs for these locations were a combination of location and sampling date, i.e. GW-MW-2B-20140523

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Table 11. LOLA Investigation – Groundwater Field Parameters

Location	Screen Interval (ft BGS)	Sample Date	Drawdown (ft)	pH (S.U.)	Conductivity (µS/cm)	Temperature (˚C)	Turbidity (NTU)	ORP (mV)	DO (mg/L)
MW-13	8-18	7/2/2014	0.02	6.85	510.5	21.3	9.95	-75.4	0.69
MW-13D	33.5-38.5	7/2/2014	0.20	7.04	773	21.9	6.98	####	1.51
MW-14	1-11	6/30/2014	0.05	6.50	151.4	26.8	16.1	4.4	1.85
MW-15	1-11	7/2/2014	0.01	6.73	583	21.5	2.38	-83.8	1.35
MW-15D	40-45	7/2/2014	0.10	**6.43**	626	23.0	8.18	52.8	1.26
MW-16	2-12	7/1/2014	0.01	6.30	193	23.3	28.4	-18.9	1.67
MW-16D	42-47	7/1/2014	0.15	4.82	539	22.3	7.30	95.4	1.04
MW-20	4-14	7/1/2014	-0.02	6.32	471.2	21.7	1.54	-60.5	2.38
MW-20D	43-48	7/1/2014	0.32	7.08	544	22.0	12.5	-48.5	0.84

Note(s):

[1] ft indicates feet.
[2] ft BGS indicates feet below ground surface.
[3] S.U. indicates standard units.
[4] µS/cm indicates microsiemens per centimeter.
[5] ˚C indicates degrees Celsius.
[6] NTU indicates Nephelometric turbidity units.
[7] ORP indicates oxidation reduction potential.
[8] mV indicates millivolts.
[9] DO indicates dissolved oxygen.
[10] mg/L indicates milligrams per liter.
[11] **Bold** value indicates exceedance of groundwater standard at or beyond the Compliance Boundary.

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Table 12. LOLA Investigation – Groundwater Analytical Data

Location	Screen Interval (ft BGS)	Sample Date	Concentration (µg/L)															
			Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Total Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium
Groundwater Standards			NC	10	700	NC	700	2	NC	10	1,000	300	15	NC	50	1	NC	100	NC
IMAC			1	NC	NC	4	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
MW-13	8-18	7/2/2014	5.1 U	218	367	0.67 U	935	0.33 U	45,300	0.5 U	2.8 U	5,500	4.7 U	15,700	145	0.06 U	140	1.6 U	13,000
MW-13D	33.5-38.5	7/2/2014	5.1 U	9.7	144	0.67 U	2,350	0.33 U	89,400	0.5 U	2.8 U	4,720	4.7 U	25,100	459	0.06 U	319	1.6 U	14,700
MW-14	1-11	6/30/2014	5.1 U	6.1	441	0.67 U	104	0.33 U	47,300	< 4.0	2.8 U	1,170	4.7 U	3,030	27.5	0.06 U	< 20	1.6 U	5,360
MW-15	1-11	7/2/2014	5.1 U	**31.2**	36.5	0.67 U	< 100	0.33 U	114,000	0.5 U	2.8 U	**5,720**	4.7 U	5,200	**109**	0.06 U	< 20	1.6 U	3,500
MW-15D	40-45	7/2/2014	5.1 U	< 4.0	53.3	0.67 U	550	0.33 U	61,500	0.5 U	2.8 U	**724**	4.7 U	8,180	**1,620**	0.06 U	1.7 U	1.6 U	7,610
MW-16	2-12	7/1/2014	5.1 U	< 4.0	26.3	0.67 U	143	0.33 U	8,660	< 4.0	2.8 U	781	4.7 U	3,860	20.4	0.06 U	< 20	1.6 U	5,460
MW-16D	42-47	7/1/2014	5.1 U	< 4.0	34.3	0.67 U	432	0.33 U	24,500	0.5 U	2.8 U	1,820	4.7 U	5,970	269	0.06 U	1.7 U	< 20	4,820
MW-20	4-14	7/1/2014	5.1 U	7.2 U	126	0.67 U	129	0.33 U	85,500	0.5 U	2.8 U	2,610	4.7 U	8,940	413	0.06 U	1.7 U	< 20	6,710
MW-20D	43-48	7/1/2014	5.1 U	7.2 U	58.7	0.67 U	227	0.33 U	69,900	0.5 U	2.8 U	2,310	4.7 U	5,620	190	0.06 U	< 20	1.6 U	2,720

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] IMAC indicates Interim Maximum Allowable Concentrations.
[4] Groundwater Standards and IMAC values are from Classifications and Water Quality Applicable to the Groundwaters of North Carolina (NCDENR, Division of Water Quality, April 2013).
[5] NC indicates no criteria.
[6] Bold values indicate concentrations exceeding groundwater standards at or beyond Compliance Boundary.
[7] TDS indicates total dissolved solids.
[8] ft BGS indicates feet below ground surface.
[9] Sample IDs for these locations were a combination of location and sampling date, i.e. GW-MW-16-20140701 or 20140630 - MW14.

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Table 12. LOLA Investigation – Groundwater Analytical Data (Continued)

Location	Screen Interval (ft BGS)	Sample Date	Concentration (µg/L)												
			Selenium	Silver	Sodium	Strontium	Thallium	Vanadium	Zinc	Bromide	Chloride	Nitrate (as N)	Nitrite (as NO_2^-)	Sulfate	Alkalinity (as CaCO3)	TDS
Groundwater Standards			20	20	NC	NC	NC	NC	1,000	NC	250,000	10,000	1,000	250,000	NC	500,000
IMAC			NC	NC	NC	NC	0.2	0.3	NC	NC	NC	NC	NC	NC	NC	NC
MW-13	8-18	7/2/2014	4.8 U	1.8 U	44,800	1,400	5.1 U	1.9 U	< 40	2,000U	47,200	250 U	400 U	128,000	86,900	370,000
MW-13D	33.5-38.5	7/2/2014	4.8 U	1.8 U	52,100	3,200	5.1 U	1.9 U	< 40	2,000U	59,600	250 U	400 U	96,900	235,000	516,000
MW-14	1-11	6/30/2014	4.8 U	1.8 U	19,200	398	5.1 U	11.4	< 40	2,000U	22,700	< 500	400 U	6,500	125,000	200,000
MW-15	1-11	7/2/2014	4.8 U	1.8 U	18,300	553	5.1 U	1.9 U	< 40	2,000U	45,100	250 U	400 U	42,000	211,000	398,000
MW-15D	40-45	7/2/2014	4.8 U	1.8 U	66,500	615	5.1 U	1.9 U	< 40	2,000U	131,000	250 U	400 U	75,700	70,100	435,000
MW-16	2-12	7/1/2014	4.8 U	1.8 U	26,900	105	5.1 U	3.0	< 40	2,000U	28,000	250 U	400 U	31,800	23,800	140,000
MW-16D	42-47	7/1/2014	4.8 U	1.8 U	80,700	154	5.1 U	6.0	< 40	2,000U	114,000	250 U	400 U	89,000	2,700	345,000
MW-20	4-14	7/1/2014	4.8 U	1.8 U	16,300	785	5.1 U	41.3	< 40	2,000U	18,800	250 U	400 U	53,700	207,000	334,000
MW-20D	43-48	7/1/2014	4.8 U	1.8 U	51,700	186	5.1 U	1.9 U	< 40	2,000U	83,500	250 U	400 U	69,600	118,000	365,000

Note(s):

[1] U indicates results below the method detection limit (MDL) and < indicates results below the practical quantitation limit (PQL).
[2] µg/L indicates micrograms per liter.
[3] IMAC indicates Interim Maximum Allowable Concentrations.
[4] Groundwater Standards and IMAC values are from Classifications and Water Quality Applicable to the Groundwaters of North Carolina (NCDENR, Division of Water Quality, April 2013).
[5] NC indicates no criteria.
[6] Bold values indicate concentrations exceeding groundwater standards at or beyond Compliance Boundary.
[7] TDS indicates total dissolved solids.
[8] ft BGS indicates feet below ground surface.
[9] Sample IDs for these locations were a combination of location and sampling date, i.e. GW-MW-16-20140701 or 20140630 - MW14.

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FIGURES



Legend

- Soil/CCR Sample Location
- Property Boundary
- Pond Boundary
- 500 ft Compliance Boundary

0 — 3,500 Feet

Notes
1. Property boundary information provided by New Hanover County Online GIS Resources. Accessed 17 June, 2014.
2. CCR indicates coal combustion residuals.
4. Horizontal coordinate system US State Plane 1983 North Carolina, US survey feet.
5. 2011 World Imagery - Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

Soil and CCR Sampling Locations May 2014

L.V. Sutton Plant

Geosyntec
Consultants of NC, PC
NC License No.: C-3500

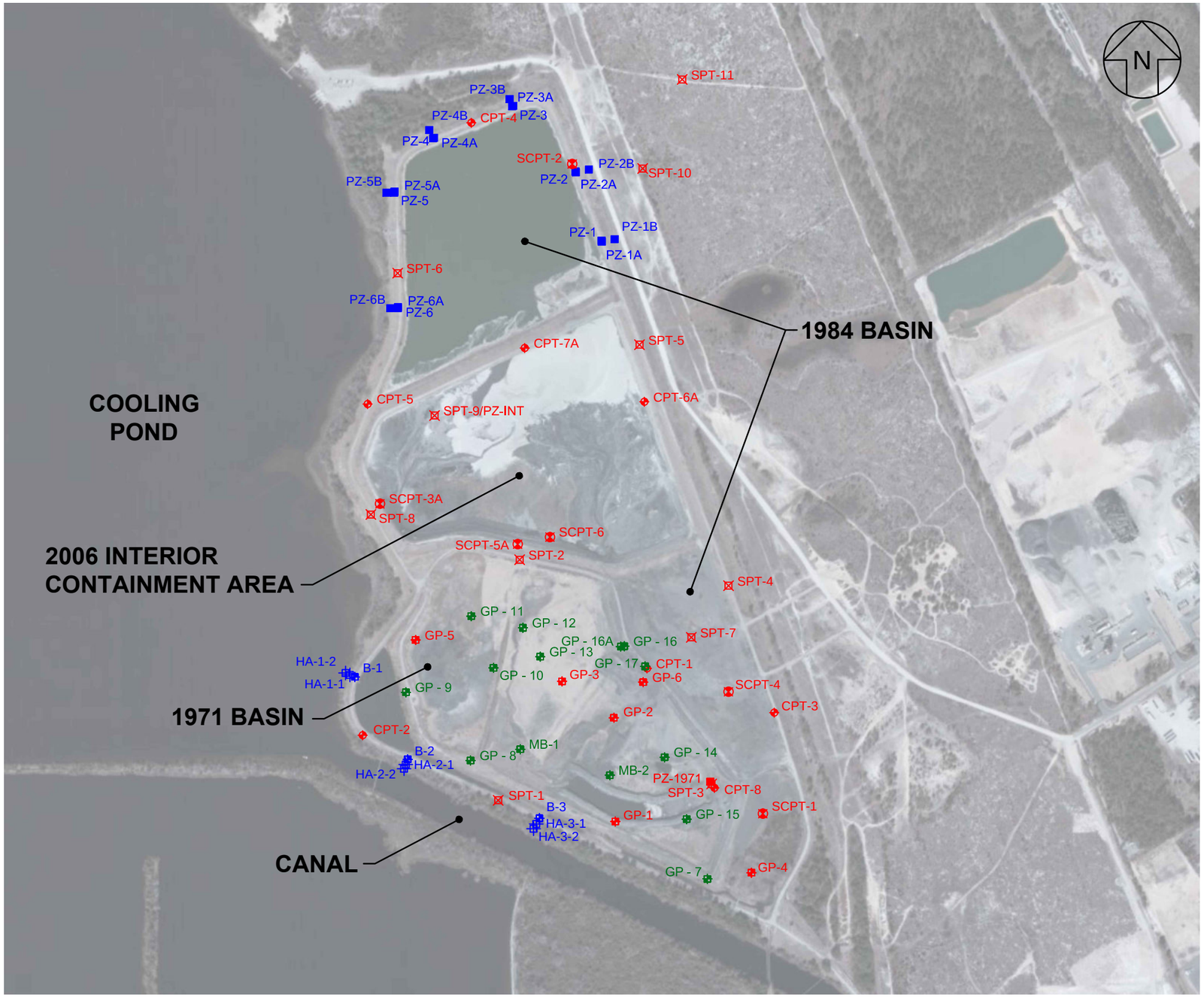
Raleigh, NC | October 2015

Figure 1

M:\GIS\Duke Sutton\MXDs\Report No. 1\Figure 2\ES - Soil and CCR Samples - v2.mxd rdonohue 9/3/2014

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L.V. SUTTON PLANT
HISTORICAL AND CONCEPTUAL
CLOSURE GEOTECHNICAL INVESTIGATION



LEGEND

- CPT-1 GEOSYNTEC CONE PENETRATION TEST
- GP-1 GEOSYNTEC GEOPROBE (MAY 2014)
- GP-7 GEOSYNTEC GEOPROBE (JUNE-JULY 2014)
- MB-1 GEOSYNTEC MARSH BORINGS (JUNE-JULY 2014)
- PZ-1971 GEOSYNTEC PIEZOMETER
- SCPT-1 GEOSYNTEC SEISMIC CONE PENETRATION TEST
- SPT-1 GEOSYNTEC STANDARD PENETRATION TEST
- HA-1-1 HISTORICAL HAND-AUGER
- PZ-1 HISTORICAL PIEZOMETER
- B-1 HISTORICAL STANDARD PENETRATION TEST

NOTES:

1. B-SERIES, HA-SERIES, AND PZ-B-SERIES POINTS ARE SHOWN AT APPROXIMATE LOCATIONS.
2. POST-FIX 'A' FOR GEOSYNTEC INVESTIGATION POINTS INDICATES A POINT ON THE DIKE OF 2006 INTERIOR CONTAINMENT AREA.
3. THE LOCATIONS OF THE GEOSYNTEC BORINGS WERE SURVEYED BY WSP SELLS, INC., IN MAY AND JULY 2014.

0 600' 1200'

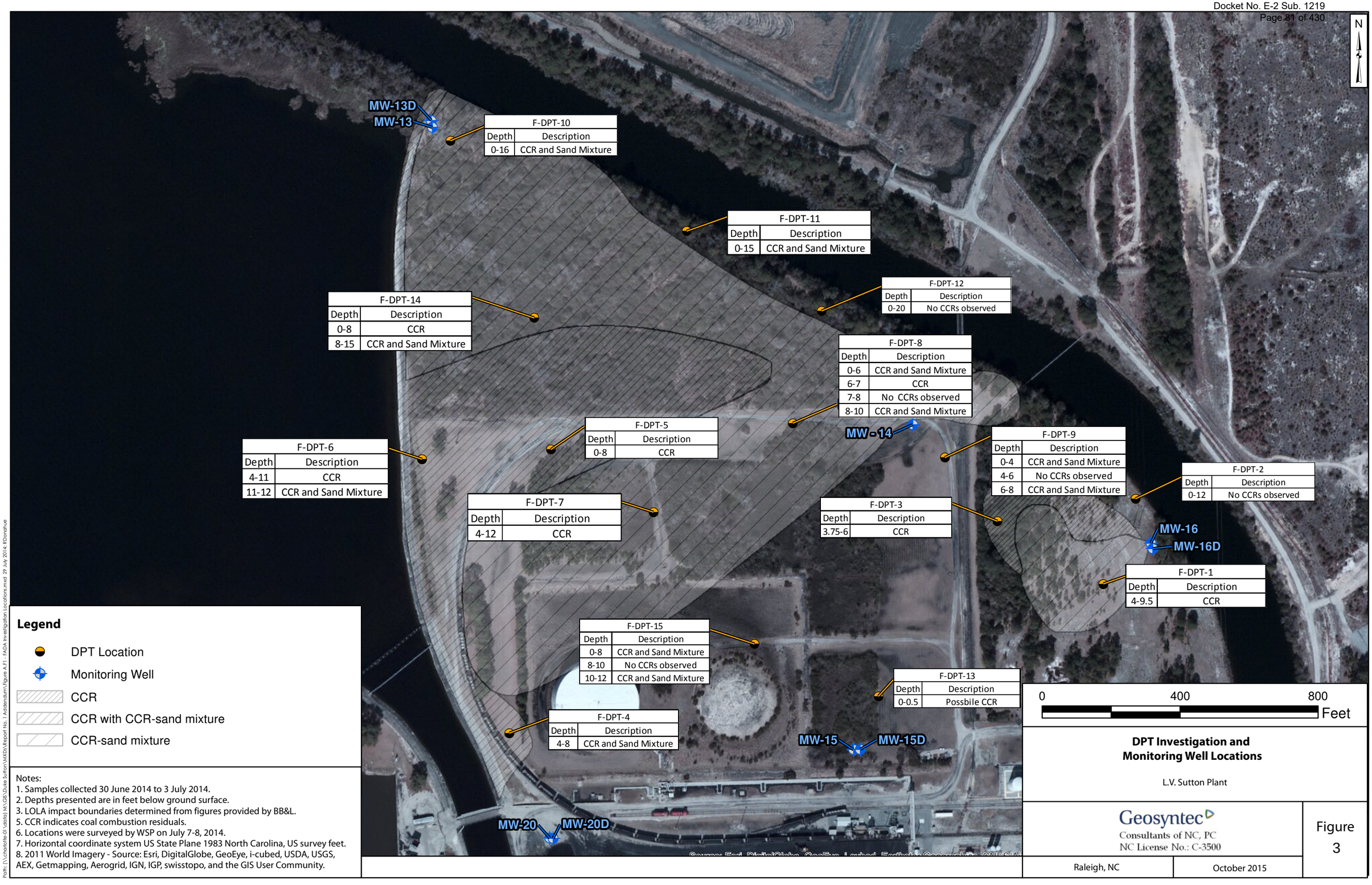
SCALE IN FEET

Geosyntec
Consultants of NC, PC
NC License No.: C-3500

FIGURE 2

PROJECT NO: GC5770 | OCTOBER 2015

M:\D\DUKE ENERGY\DUKE-LV SUTTON-GC5592\FIGURES\5592F030 CLOSURE GEOTECHNICAL INVESTIGATION



Notes:
1. Samples collected 30 June 2014 to 3 July 2014.
2. Depths presented are in feet below ground surface.
3. LOLA impact boundaries determined from figures provided by BB&L.
5. CCR indicates coal combustion residuals.
6. Locations were surveyed by WSP on July 7-8, 2014.
7. Horizontal coordinate system US State Plane 1983 North Carolina, US survey feet.
8. 2011 World Imagery - Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

DPT Investigation and Monitoring Well Locations

L.V. Sutton Plant

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NC License No.: C-3500

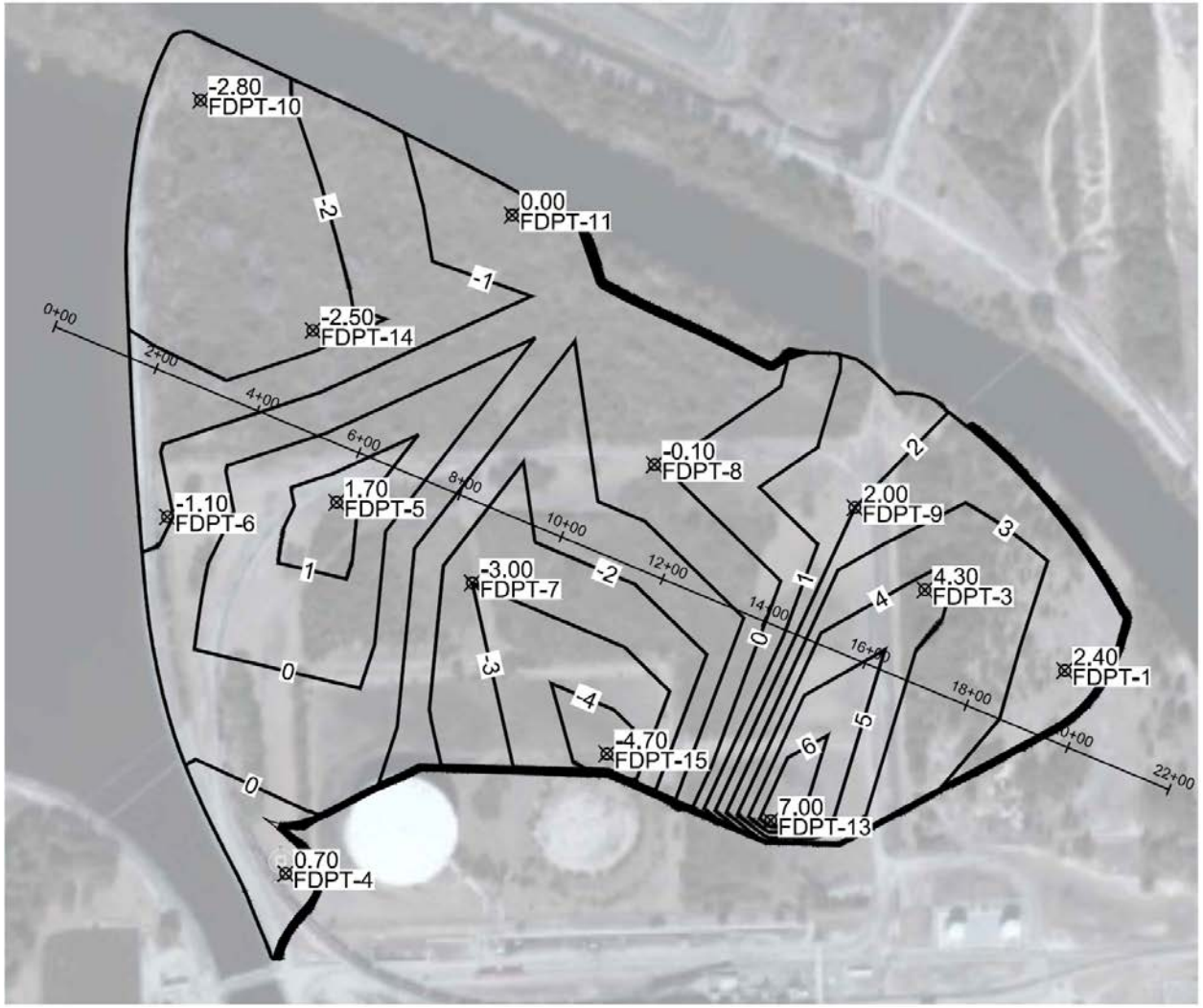
Raleigh, NC | October 2015

Figure 3

Path: [\\charlotte-01\data] M:\GIS\Duke Sutton\WKDA\Report No. 1 Addendum\Figure A.F.1 - FADA Investigation Locations.mxd 29 July 2014; KDonohue

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Oct 30 2019



Notes:
1. LOLA indicates Lay-of-Land Area
2. FDPT indicates direct-push technology boring location
3. Bottom elevations are in feet relative to North American Vertical Datum of 1988 (NAVD88)
4. Horizontal coordinate system North American Datum 1983 (NAD83)

Bottom Elevations of CCR in LOLA

L.V. Sutton Plant

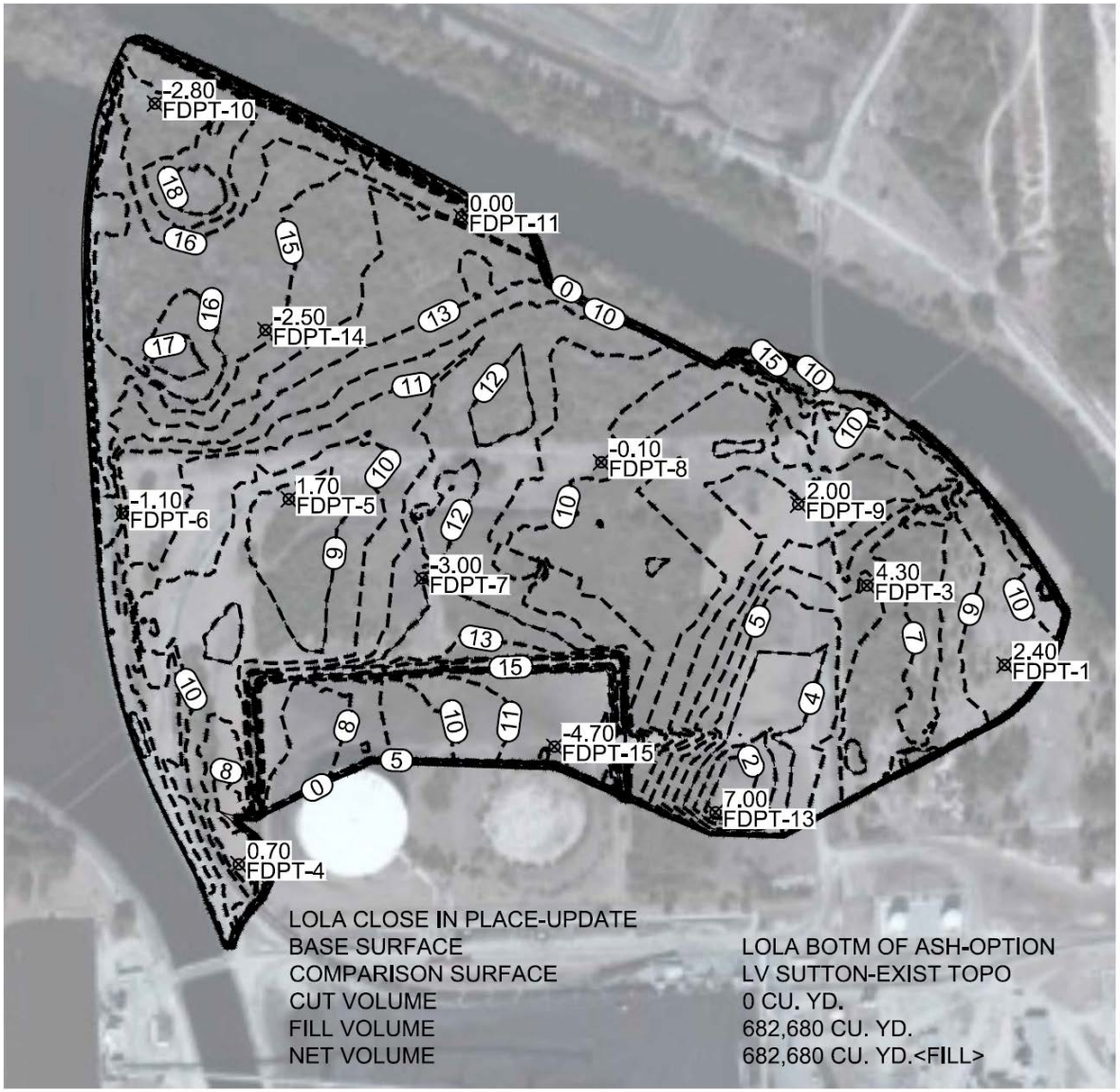
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Project No. GC5770

October 2015

Figure
4

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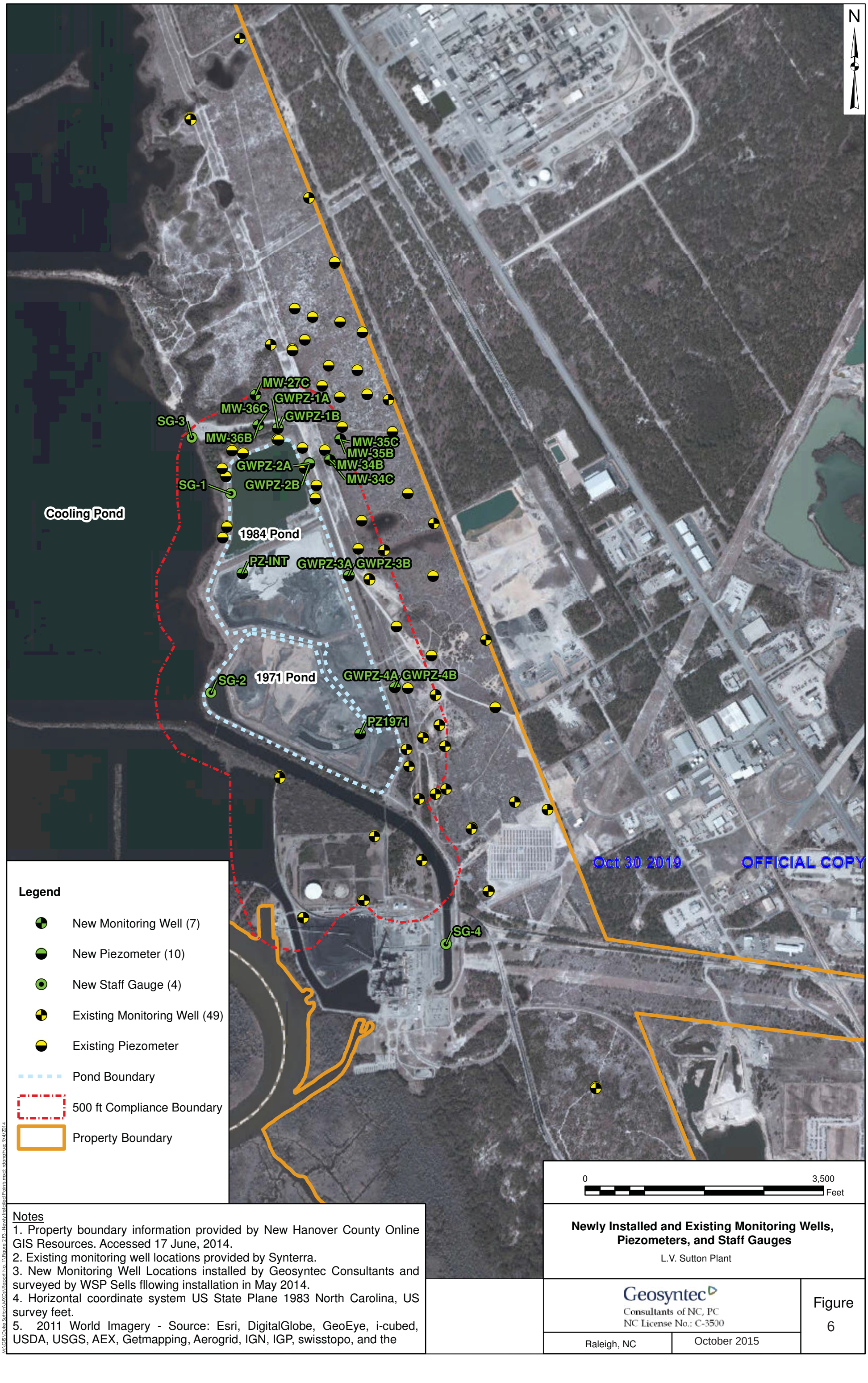


Notes:
1. LOLA indicates Lay-of-Land Area
2. FDPT indicates direct-push technology boring location
3. Isopach thickness is denoted in feet
4. Elevations are in feet relative to North American Vertical Datum of 1988 (NAVD88)
5. Horizontal coordinate system North American Datum 1983 (NAD83)

Isopach Thickness of CCR in LOLA

L.V. Sutton Plant

Geosyntec Consultants of NC, PC NC License No.: C-3500	Project No. GC5770 October 2015	Figure 5



Notes
1. Property boundary information provided by New Hanover County Online GIS Resources. Accessed 17 June, 2014.
2. Existing monitoring well locations provided by Synterra.
3. New Monitoring Well Locations installed by Geosyntec Consultants and surveyed by WSP Sells fllowing installation in May 2014.
4. Horizontal coordinate system US State Plane 1983 North Carolina, US survey feet.
5. 2011 World Imagery - Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the

Newly Installed and Existing Monitoring Wells, Piezometers, and Staff Gauges

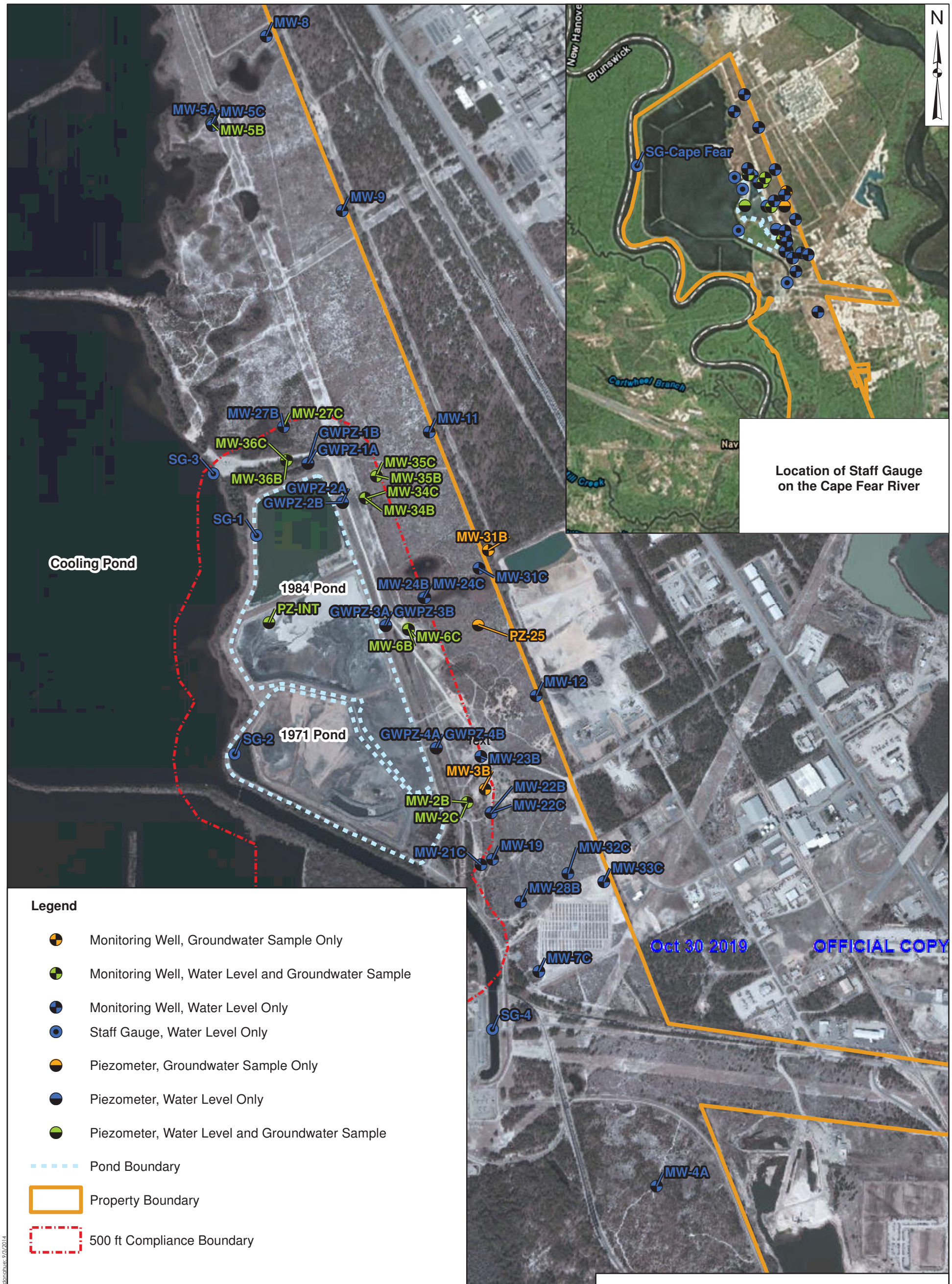
L.V. Sutton Plant

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NC License No.: C-3500

Raleigh, NC | October 2015

Figure 6

M:\GIS\Duke Sutton\WKD\Report No. 1\Figure 2\F3 - Newly Installed Points.mxd; rdonohue; 9/4/2014



Notes
1. Property boundary information provided by New Hanover County Online GIS Resources. Accessed 17 June, 2014.
2. Existing monitoring well locations provided by Synterra.
3. New Monitoring Well Locations installed by Geosyntec Consultants and surveyed by WSP Sells fllowing installation in May 2014.
4. Horizontal coordinate system US State Plane 1983 North Carolina, US survey feet.
5. 2011 World Imagery - Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

Groundwater and Surface Water Monitoring
May 2014
L.V. Sutton Plant

Geosyntec
Consultants of NC, PC
NC License No.: C-3500

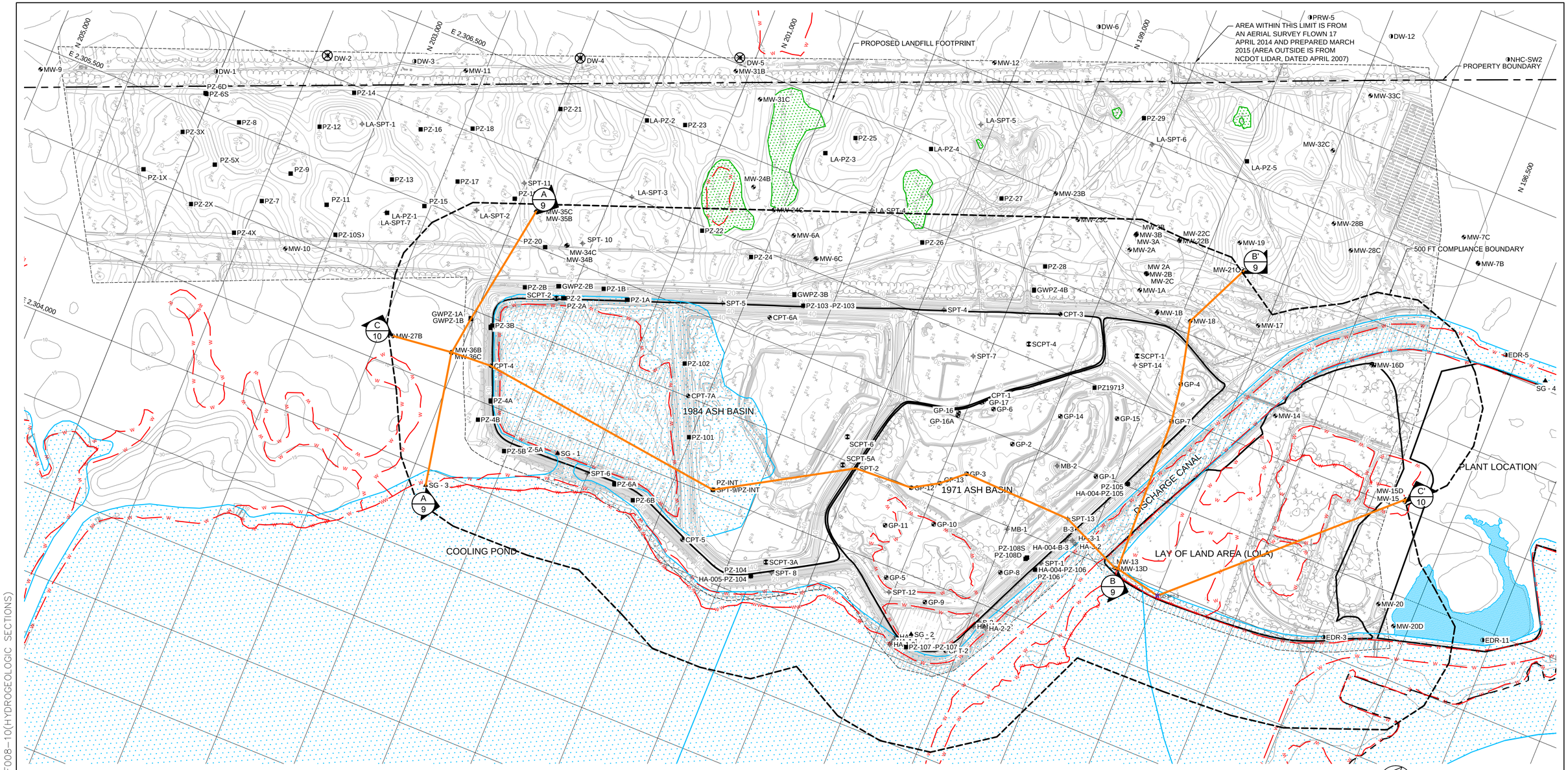
Raleigh, NC | October 2015

Figure 7

M:\GIS\Duke Sutton\MXDs\Report No. 1\Figure 2F4 - MW Sampling Plan.mxd; rdonohue; 9/9/2014

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T:\PROJECTS_CADD\S\SUTTON\GC5770_F008-10(HYDROGEOLOGIC SECTIONS)



LEGEND

- PROPERTY BOUNDARY
- EXISTING GROUND ELEVATION CONTOURS IN OBSCURED AREAS
- EXISTING GROUND ELEVATION CONTOURS IN OPEN AREAS
- AERIAL MAPPING LIMIT
- DRAINAGE CENTERLINE
- FENCE LINE
- GRAVEL / DIRT PATH
- SPOT ELEVATION
- SPOT ELEVATION ESTIMATED IN OBSCURED AREAS
- 500 FT COMPLIANCE BOUNDARY
- TREE / BRUSH LINE
- UNIDENTIFIED UTILITIES / STRUCTURES / OBJECTS
- UTILITY POLE
- WET AREA
- FEMA FLOOD ZONE AE (NOTE 1)
- FEMA FLOOD ZONE X (NOTE 1)
- WETLANDS - NATIONAL WETLAND INVENTORY (NOTE 2)
- WETLANDS - SURVEYED (NOTE 3)
- HAND AUGER
- CONE PENETRATION TEST
- SEISMIC CONE PENETRATION TEST
- GEO-PROBE
- BORING
- PIEZOMETER
- MONITORING WELL
- WATER SUPPLY WELL
- ABANDONED WATER SUPPLY WELL
- STAFF GAUGE
- HYDROGEOLOGIC CROSS SECTION LOCATION

NOTES:

1. FLOOD ZONE INFORMATION OBTAINED FROM NEW HANOVER COUNTY GIS WEBSITE AND ARE SHOWN IN REFERENCE TO FEMA FIRM MAP PANELS 3109 AND 3200, LAST REVISED 2 JUNE 2006.
2. NATIONAL WETLAND INVENTORY INFORMATION SHOWN WAS OBTAINED FROM THE US FISH AND WILDLIFE SERVICE WEBSITE.
3. WETLANDS WERE OBTAINED FROM FIELD DELINEATION BY GEOSYNTEC AND PROVIDED IN A DRAWING DATED 4 MARCH 2015 BASED ON FIELD SURVEY BY WSP.

N

0 300' 600'

SCALE IN FEET

CROSS-SECTION LOCATIONS
L.V. SUTTON STEAM STATION
WILMINGTON, NORTH CAROLINA 28401

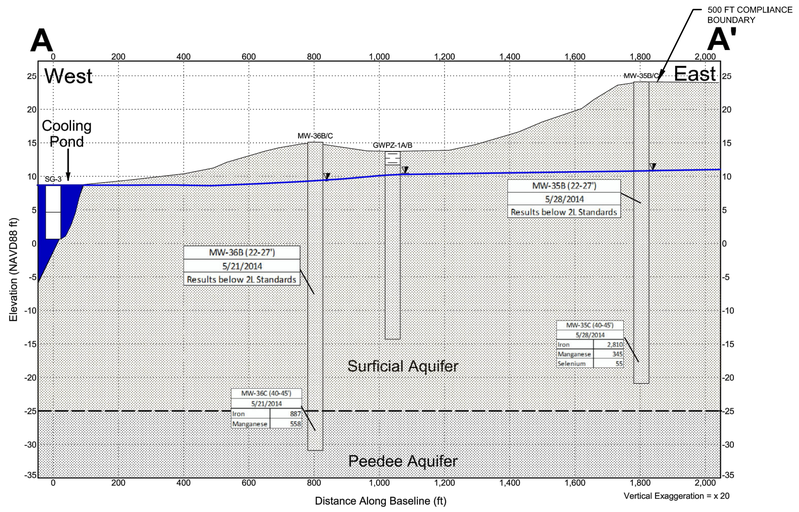
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PROJECT NO: GC5770

OCTOBER 2015

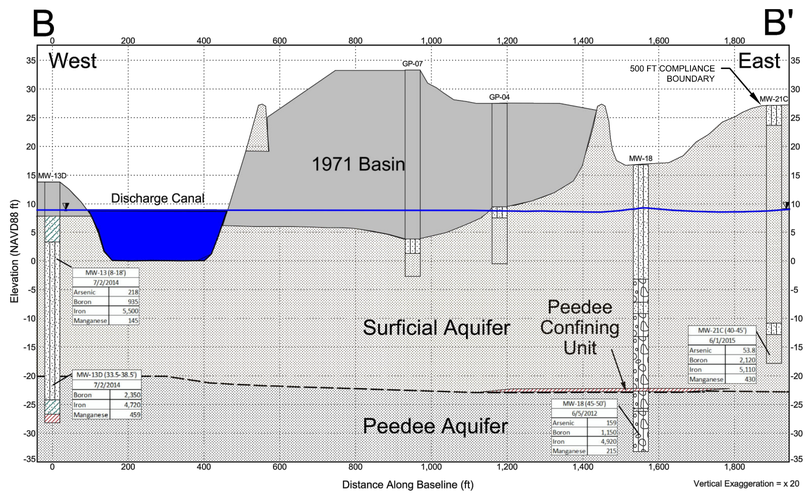
FIGURE
8

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A/8 SECTION
HYDROGEOLOGICAL CROSS SECTION

SCALE AS SHOWN



B/8 SECTION
HYDROGEOLOGICAL CROSS SECTION

SCALE AS SHOWN

LEGEND

Legend - USGS Aquifer

- Ash
- Surficial Aquifer
- Peedee Confining Unit
- Peedee Aquifer

Screening Criteria	
Parameter	2L Standards
Arsenic	10
Boron	700
Iron	300
Manganese	50
Selenium	20

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

NOTES:

1. ALL CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER.
2. ONLY RESULTS ABOVE NCDENR'S 2L STANDARDS ARE SHOWN.
3. SCREEN INTERVALS ARE REPORTED IN FEET BELOW GROUND SURFACE.

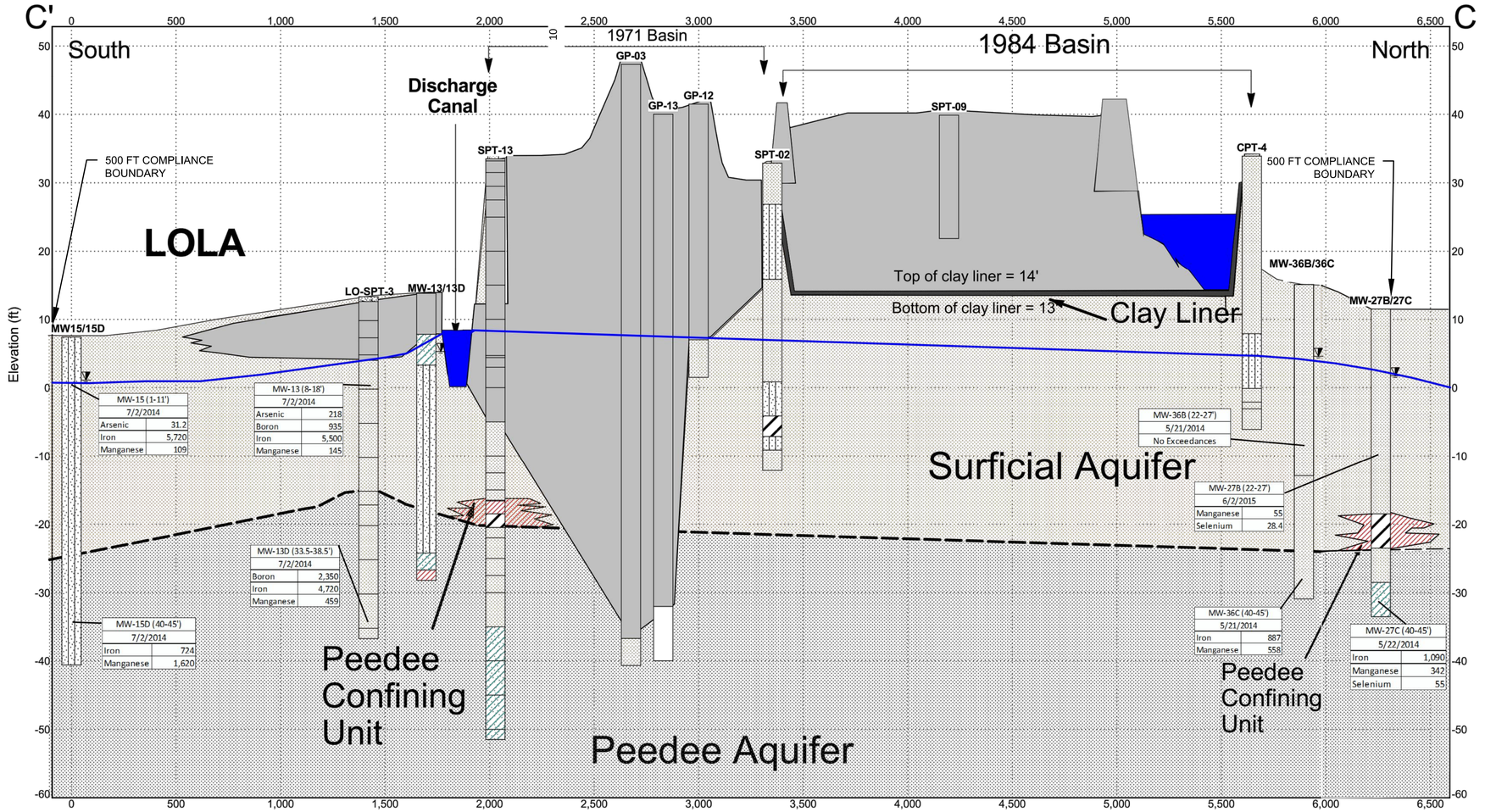
CROSS-SECTIONS A AND B
L.V. SUTTON STEAM STATION
WILMINGTON, NORTH CAROLINA 28401

Geosyntec
Consultants of NC, PC
NC License No.: C-3500

PROJECT NO: GC5770 | OCTOBER 2015 | FIGURE 9

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C
8
SECTION
HYDROGEOLOGICAL CROSS SECTION
SCALE AS SHOWN

LEGEND

Legend - USGS Aquifer

- Ash
- Surficial Aquifer
- Peedee Confining Unit
- Peedee Aquifer

Screening Criteria	
Parameter	2L Standards
Arsenic	10
Boron	700
Iron	300
Manganese	50
Selenium	20

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

NOTES:

1. ALL CONCENTRATIONS ARE REPORTED IN MICROGRAMS PER LITER.
2. ONLY RESULTS ABOVE NCDENR'S 2L STANDARDS ARE SHOWN.
3. SCREEN INTERVALS ARE REPORTED IN FEET BELOW GROUND SURFACE.

CROSS-SECTION C
L.V. SUTTON STEAM STATION
WILMINGTON, NORTH CAROLINA 28401

Geosyntec
Consultants of NC, PC
NC License No.: C-3500

PROJECT NO: GC5770 | OCTOBER 2015

FIGURE
10

T:\PROJECTS_CADD\S\SUTTON\GC5770_F008-10(HYDROGEOLOGIC SECTIONS)

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APPENDICES

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Appendix A1
Laboratory Analytical Report Supplemental Investigation

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Analysis Report

REVISED

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

June 16, 2014

Project: Duke Sutton, NC

Submittal Date: 05/10/2014
Group Number: 1473465
SDG: DUK25
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
SS-SPT9(12-14)-20140507 Solid Sample	7459366
SS-SPT9(12-14)-20140507 Solid Sample	7459367
SS-SPT7(4-6)-20140507 Solid Sample	7459368
SS-SPT7(4-6)-20140507 Solid Sample	7459369
SS-MW36C(4-6)-20140509 Solid Sample	7459370

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

REVISED

Sample Description: SS-SPT9(12-14)-20140507 Solid Sample
Duke Sutton

LL Sample # SW 7459366
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/07/2014 11:25

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK01 SDG#: DUK25-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		1.27	6.84	1
06935	Arsenic	7440-38-2	38.1		1.20	6.84	1
06946	Barium	7440-39-3	304		0.282	8.55	5
06947	Beryllium	7440-41-7	4.15		0.115	1.71	1
07914	Boron	7440-42-8	31.0		1.44	17.1	1
06949	Cadmium	7440-43-9	0.328	J	0.130	1.71	1
01650	Calcium	7440-70-2	2,390		5.71	68.4	1
06951	Chromium	7440-47-3	19.3		0.274	5.13	1
06953	Copper	7440-50-8	70.7		0.496	3.42	1
01654	Iron	7439-89-6	7,610		6.19	68.4	1
06955	Lead	7439-92-1	21.2		0.855	5.13	1
01657	Magnesium	7439-95-4	809		2.86	34.2	1
06958	Manganese	7439-96-5	40.8		0.142	1.71	1
06960	Molybdenum	7439-98-7	2.44	J	0.291	3.42	1
06961	Nickel	7440-02-0	28.5		0.222	3.42	1
01662	Potassium	7440-09-7	1,890		14.3	171	1
06936	Selenium	7782-49-2	1.55	J	1.37	6.84	1
06966	Silver	7440-22-4	N.D.		0.291	1.71	1
01667	Sodium	7440-23-5	334	J	28.6	342	1
07968	Strontium	7440-24-6	290		0.282	8.55	5
06925	Thallium	7440-28-0	N.D.		0.889	10.3	1
06972	Zinc	7440-66-6	29.2		0.342	6.84	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0362	J	0.0169	0.337	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		6.8	8.5	1
07333	Chloride by IC (solid)	16887-00-6	32.5		8.5	17.0	1
07338	Sulfate by IC (solid)	14808-79-8	74.8		8.5	25.4	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.02		0.0100	0.0100	1
	The pH was measured in water at 21.5 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	42.1		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SPT9(12-14)-20140507 Solid Sample
Duke Sutton

LL Sample # SW 7459366
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/07/2014 11:25

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK01 SDG#: DUK25-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141330637001	05/15/2014 06:15	Tara L Snyder	1
06946	Barium	SW-846 6010C	1	141330637001	05/15/2014 06:27	Tara L Snyder	5
06947	Beryllium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06955	Lead	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141330637001	05/15/2014 06:27	Tara L Snyder	5
06925	Thallium	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141330637001	05/14/2014 18:40	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141320638002	05/14/2014 11:19	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141330637001	05/14/2014 08:14	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141320638002	05/13/2014 13:20	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 18:41	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 18:41	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 18:41	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14140140201A	05/20/2014 08:15	Nancy J Shoop	1
00394	pH	SW-846 9045D modified	1	14133039401A	05/13/2014 21:25	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14139820003A	05/19/2014 19:01	Scott W Freisher	1

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Analysis Report

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Sample Description: SS-SPT9(12-14)-20140507 Solid Sample
SPLP NVE
Duke Sutton

LL Sample # TL 7459367
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/07/2014 11:25

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK02 SDG#: DUK25-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.0699	0.0068	0.0400	1
07046	Barium	7440-39-3	0.143	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0644 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	4.87	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0032 J	0.0016	0.0300	1
07053	Copper	7440-50-8	0.0028 J	0.0027	0.0200	1
01754	Iron	7439-89-6	0.0983 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.531	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0061 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0189 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0038 J	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.460 J	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	1.83 J	0.167	2.00	1
08068	Strontium	7440-24-6	0.265	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07035	Arsenic	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07046	Barium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07047	Beryllium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
08014	Boron	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
01750	Calcium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07051	Chromium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1

*=This limit was used in the evaluation of the final result

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Analysis Report

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Sample Description: SS-SPT9(12-14)-20140507 Solid Sample
SPLP NVE
Duke Sutton

LL Sample # TL 7459367
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/07/2014 11:25

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK02 SDG#: DUK25-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
01754	Iron	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07055	Lead	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07058	Manganese	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07060	Molybdenum	SW-846 6010C	1	141360636002	05/19/2014 16:06	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
01762	Potassium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07036	Selenium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07066	Silver	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
01767	Sodium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
08068	Strontium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07022	Thallium	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
07072	Zinc	SW-846 6010C	1	141360636002	05/19/2014 06:32	Joanne M Gates	1
00259	Mercury	SW-846 7470A	1	141365713003	05/19/2014 10:45	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141360636002	05/18/2014 23:00	Annamaria Kuhns	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141365713003	05/19/2014 01:00	Annamaria Kuhns	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14135-482-1567A	05/15/2014 14:30	Darin P Wagner	n.a.

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Analysis Report

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Sample Description: SS-SPT7(4-6)-20140507 Solid Sample
Duke Sutton

LL Sample # SW 7459368
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/07/2014 14:15

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK03 SDG#: DUK25-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.959	5.18	1
06935	Arsenic	7440-38-2	49.1		0.907	5.18	1
06946	Barium	7440-39-3	430		0.428	13.0	10
06947	Beryllium	7440-41-7	5.81		0.0868	1.30	1
07914	Boron	7440-42-8	31.3		1.09	13.0	1
06949	Cadmium	7440-43-9	0.540	J	0.0985	1.30	1
01650	Calcium	7440-70-2	3,560		4.33	51.8	1
06951	Chromium	7440-47-3	42.3		0.207	3.89	1
06953	Copper	7440-50-8	58.1		0.376	2.59	1
01654	Iron	7439-89-6	13,900		4.69	51.8	1
06955	Lead	7439-92-1	28.6		0.648	3.89	1
01657	Magnesium	7439-95-4	1,510		2.16	25.9	1
06958	Manganese	7439-96-5	67.4		0.108	1.30	1
06960	Molybdenum	7439-98-7	1.33	J	0.220	2.59	1
06961	Nickel	7440-02-0	30.5		0.168	2.59	1
01662	Potassium	7440-09-7	2,820		10.8	130	1
06936	Selenium	7782-49-2	5.39		1.04	5.18	1
06966	Silver	7440-22-4	N.D.		0.220	1.30	1
01667	Sodium	7440-23-5	499		21.6	259	1
07968	Strontium	7440-24-6	420		0.428	13.0	10
06925	Thallium	7440-28-0	1.68	J	0.674	7.77	1
06972	Zinc	7440-66-6	58.0		0.259	5.18	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.262	J	0.0133	0.266	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		5.4	6.8	1
07333	Chloride by IC (solid)	16887-00-6	N.D.		6.8	13.5	1
07338	Sulfate by IC (solid)	14808-79-8	24.6		6.8	20.3	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.35		0.0100	0.0100	1
	The pH was measured in water at 21.8 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	26.5		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SPT7(4-6)-20140507 Solid Sample
Duke Sutton

LL Sample # SW 7459368
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/07/2014 14:15

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK03 SDG#: DUK25-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141330637001	05/15/2014 06:19	Tara L Snyder	1
06946	Barium	SW-846 6010C	1	141330637001	05/15/2014 06:31	Tara L Snyder	10
06947	Beryllium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06955	Lead	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141330637001	05/15/2014 06:31	Tara L Snyder	10
06925	Thallium	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141330637001	05/14/2014 18:44	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141320638002	05/14/2014 11:21	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141330637001	05/14/2014 08:14	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141320638002	05/13/2014 13:20	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 19:30	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 19:30	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 19:30	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14140140201A	05/20/2014 08:15	Nancy J Shoop	1
00394	pH	SW-846 9045D modified	1	14133039401A	05/13/2014 21:25	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14139820003A	05/19/2014 19:01	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SPT7(4-6)-20140507 Solid Sample
SPLP NVE
Duke Sutton

LL Sample # TL 7459369
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/07/2014 14:15

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK04 SDG#: DUK25-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.0734	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0727	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0734 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	6.38	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0051 J	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	1.46	0.0167	0.200	1
07058	Manganese	7439-96-5	N.D.	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0086 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0428	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	1.74 J	0.167	2.00	1
08068	Strontium	7440-24-6	0.224	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07035	Arsenic	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07046	Barium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07047	Beryllium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
08014	Boron	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
01750	Calcium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07051	Chromium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SPT7(4-6)-20140507 Solid Sample
SPLP NVE
Duke Sutton

LL Sample # TL 7459369
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/07/2014 14:15

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK04 SDG#: DUK25-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
01754	Iron	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07055	Lead	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07058	Manganese	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07060	Molybdenum	SW-846 6010C	1	141360636002	05/19/2014 16:30	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
01762	Potassium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07036	Selenium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07066	Silver	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
01767	Sodium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
08068	Strontium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07022	Thallium	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
07072	Zinc	SW-846 6010C	1	141360636002	05/19/2014 07:11	Joanne M Gates	1
00259	Mercury	SW-846 7470A	1	141365713003	05/19/2014 10:53	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141360636002	05/18/2014 23:00	Annamaria Kuhns	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141365713003	05/19/2014 01:00	Annamaria Kuhns	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14135-482-1567A	05/15/2014 14:30	Darin P Wagner	n.a.

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-MW36C(4-6)-20140509 Solid Sample
Duke Sutton

LL Sample # SW 7459370
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/09/2014 08:05

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK05 SDG#: DUK25-05*

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.778	4.21	1
06935	Arsenic	7440-38-2	N.D.		0.736	4.21	1
06946	Barium	7440-39-3	1.42		0.0347	1.05	1
06947	Beryllium	7440-41-7	N.D.		0.0705	1.05	1
07914	Boron	7440-42-8	N.D.		0.884	10.5	1
06949	Cadmium	7440-43-9	N.D.		0.0799	1.05	1
01650	Calcium	7440-70-2	224		3.51	42.1	1
06951	Chromium	7440-47-3	1.20	J	0.168	3.16	1
06953	Copper	7440-50-8	0.315	J	0.305	2.10	1
01654	Iron	7439-89-6	835		3.81	42.1	1
06955	Lead	7439-92-1	0.865	J	0.526	3.16	1
01657	Magnesium	7439-95-4	36.1		1.76	21.0	1
06958	Manganese	7439-96-5	5.05		0.0873	1.05	1
06960	Molybdenum	7439-98-7	N.D.		0.179	2.10	1
06961	Nickel	7440-02-0	0.512	J	0.137	2.10	1
01662	Potassium	7440-09-7	34.6	J	8.77	105	1
06936	Selenium	7782-49-2	N.D.		0.842	4.21	1
06966	Silver	7440-22-4	N.D.		0.179	1.05	1
01667	Sodium	7440-23-5	N.D.		17.6	210	1
07968	Strontium	7440-24-6	1.26		0.0347	1.05	1
06925	Thallium	7440-28-0	N.D.		0.547	6.31	1
06972	Zinc	7440-66-6	1.70	J	0.210	4.21	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0106	0.212	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		4.3	5.3	1
07333	Chloride by IC (solid)	16887-00-6	N.D.		5.3	10.6	1
07338	Sulfate by IC (solid)	14808-79-8	N.D.		5.3	16.0	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.90		0.0100	0.0100	1
	The pH was measured in water at 21.7 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	6.8		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-MW36C(4-6)-20140509 Solid Sample
Duke Sutton

LL Sample # SW 7459370
LL Group # 1473465
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/09/2014 08:05

Submitted: 05/10/2014 09:35
Reported: 06/16/2014 14:30

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DUK05 SDG#: DUK25-05*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141330637001	05/15/2014 06:23	Tara L Snyder	1
06946	Barium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06947	Beryllium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06955	Lead	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06925	Thallium	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141330637001	05/14/2014 18:48	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141320638002	05/14/2014 11:23	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141330637001	05/14/2014 08:14	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141320638002	05/13/2014 13:20	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 19:46	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 19:46	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 19:46	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14140140201A	05/20/2014 08:15	Nancy J Shoop	1
00394	pH	SW-846 9045D modified	1	14133039401B	05/13/2014 21:25	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14139820003A	05/19/2014 19:01	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1473465
Reported: 06/16/14 at 02:30 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141320638002	Sample number(s): 7459366,7459368,7459370								
Mercury	N.D.	0.0100	0.200	mg/kg	90		80-120		
Batch number: 141330637001	Sample number(s): 7459366,7459368,7459370								
Antimony	N.D.	0.740	4.00	mg/kg	107		80-120		
Arsenic	N.D.	0.700	4.00	mg/kg	106		80-120		
Barium	N.D.	0.0330	1.00	mg/kg	103		80-120		
Beryllium	N.D.	0.0670	1.00	mg/kg	103		80-120		
Boron	N.D.	0.840	10.0	mg/kg	101		80-120		
Cadmium	N.D.	0.0760	1.00	mg/kg	106		80-120		
Calcium	10.8 J	3.34	40.0	mg/kg	102		80-120		
Chromium	N.D.	0.160	3.00	mg/kg	103		80-120		
Copper	N.D.	0.290	2.00	mg/kg	106		80-120		
Iron	N.D.	3.62	40.0	mg/kg	102		80-120		
Lead	N.D.	0.500	3.00	mg/kg	108		80-120		
Magnesium	N.D.	1.67	20.0	mg/kg	100		80-120		
Manganese	0.0880 J	0.0830	1.00	mg/kg	103		80-120		
Molybdenum	N.D.	0.170	2.00	mg/kg	104		80-120		
Nickel	N.D.	0.130	2.00	mg/kg	109		80-120		
Potassium	N.D.	8.34	100	mg/kg	98		80-120		
Selenium	N.D.	0.800	4.00	mg/kg	102		80-120		
Silver	N.D.	0.170	1.00	mg/kg	86		80-120		
Sodium	N.D.	16.7	200	mg/kg	100		80-120		
Strontium	0.0630 J	0.0330	1.00	mg/kg	105		80-120		
Thallium	N.D.	0.520	6.00	mg/kg	109		80-120		
Zinc	0.691 J	0.200	4.00	mg/kg	105		80-120		
Batch number: 141360636002	Sample number(s): 7459367,7459369								
Antimony	N.D.	0.0053	0.0400	mg/l	107		80-120		
Arsenic	N.D.	0.0068	0.0400	mg/l	103		80-120		
Barium	N.D.	0.00033	0.0100	mg/l	105		80-120		
Beryllium	N.D.	0.00067	0.0100	mg/l	102		80-120		
Boron	N.D.	0.0084	0.100	mg/l	102		80-120		
Cadmium	N.D.	0.00076	0.0100	mg/l	106		80-120		
Calcium	0.0388 J	0.0334	0.400	mg/l	107		80-120		
Chromium	N.D.	0.0016	0.0300	mg/l	104		80-120		
Copper	N.D.	0.0027	0.0200	mg/l	108		80-120		
Iron	N.D.	0.0430	0.400	mg/l	108		80-120		
Lead	N.D.	0.0047	0.0300	mg/l	105		80-120		
Magnesium	N.D.	0.0167	0.200	mg/l	104		80-120		
Manganese	N.D.	0.00083	0.0100	mg/l	107		80-120		
Molybdenum	N.D.	0.0017	0.0200	mg/l	108		80-120		
Nickel	N.D.	0.0015	0.0200	mg/l	110		80-120		
Potassium	N.D.	0.0980	1.00	mg/l	105		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1473465
Reported: 06/16/14 at 02:30 PM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Selenium	N.D.	0.0084	0.0400	mg/l	106		80-120		
Silver	N.D.	0.0021	0.0100	mg/l	105		80-120		
Sodium	N.D.	0.167	2.00	mg/l	105		80-120		
Strontium	N.D.	0.00033	0.0100	mg/l	108		80-120		
Thallium	N.D.	0.0054	0.0600	mg/l	107		80-120		
Zinc	N.D.	0.0020	0.0400	mg/l	104		80-120		
Batch number: 141365713003	Sample number(s): 7459367,7459369								
Mercury	N.D.	0.00006	0.00020	mg/l	97		80-120		
		0							
Batch number: 14140140201A	Sample number(s): 7459366,7459368,7459370								
Bromide by IC (solid)	N.D.	4.0	5.0	mg/kg	97		90-110		
Chloride by IC (solid)	N.D.	5.0	10.0	mg/kg	101		90-110		
Sulfate by IC (solid)	N.D.	5.0	15.0	mg/kg	99		90-110		
Batch number: 14133039401A	Sample number(s): 7459366,7459368								
pH					100		90-110		
Batch number: 14133039401B	Sample number(s): 7459370								
pH					100		90-110		
Batch number: 14139820003A	Sample number(s): 7459366,7459368,7459370								
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc		DUP Conc		DUP RPD	Dup RPD Max
Batch number: 141320638002	Sample number(s): 7459366,7459368,7459370 UNSPK: P459349 BKG: P459349										
Mercury	173*	111	80-120	19	20	0.285		0.537		61* (1)	20
Batch number: 141330637001	Sample number(s): 7459366,7459368,7459370 UNSPK: P459333 BKG: P459333										
Antimony	84	87	75-125	5	20	3.19	J	N.D.		200* (1)	20
Arsenic	93	97	75-125	4	20	5.63		4.63		19 (1)	20
Barium	85	85	75-125	2	20	129		110		17	20
Beryllium	100	103	83-119	4	20	0.252	J	0.241	J	4 (1)	20
Boron	97	100	84-110	5	20	16.2		10.4		43* (1)	20
Cadmium	95	113	75-120	14	20	1.44		1.44		0 (1)	20
Calcium	1 (2)	85 (2)	75-125	4	20	8,180		8,250		1	20
Chromium	119	110	75-125	4	20	11.8		12.1		2 (1)	20
Copper	89	100	75-125	4	20	48.7		45.7		6	20
Iron	-303 (2)	507 (2)	75-125	9	20	8,650		10,300		18	20
Lead	-576 (2)	-533 (2)	75-125	2	20	389		300		26*	20
Magnesium	112 (2)	115 (2)	75-125	1	20	1,260		1,120		11	20
Manganese	75 (2)	83 (2)	75-125	2	20	198		187		6	20
Molybdenum	96	101	82-110	6	20	1.03	J	0.951	J	8 (1)	20
Nickel	99	109	75-125	9	20	14.7		15.5		5	20

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(1) The result for one or both determinations was less than five times the LOQ.
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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1473465
Reported: 06/16/14 at 02:30 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Potassium	163*	160*	75-125	0	20	769	761	1	20
Selenium	102	107	75-125	6	20	1.91 J	2.07 J	8 (1)	20
Silver	87	87	75-125	2	20	N.D.	N.D.	0 (1)	20
Sodium	97	101	75-125	6	20	69.0 J	51.7 J	29* (1)	20
Strontium	97	101	81-125	5	20	35.5	35.4	0	20
Thallium	91	97	78-119	8	20	N.D.	N.D.	0 (1)	20
Zinc	63 (2)	95 (2)	75-125	6	20	247	241	3	20
Batch number: 141360636002	Sample number(s): 7459367,7459369 UNSPK: 7459367 BKG: 7459367								
Antimony	95	96	75-125	1	20	N.D.	N.D.	0 (1)	20
Arsenic	96	97	75-125	1	20	0.0699	0.0702	0 (1)	20
Barium	92	94	75-125	2	20	0.143	0.144	1	20
Beryllium	90	91	75-125	2	20	N.D.	N.D.	0 (1)	20
Boron	94	96	75-125	2	20	0.0644 J	0.0635 J	1 (1)	20
Cadmium	92	92	75-125	0	20	N.D.	N.D.	0 (1)	20
Calcium	94	94	75-125	1	20	4.87	4.94	1	20
Chromium	92	93	75-125	2	20	0.0032 J	0.0036 J	11 (1)	20
Copper	95	97	75-125	2	20	0.0028 J	0.0029 J	2 (1)	20
Iron	93	94	75-125	1	20	0.0983 J	0.107 J	8 (1)	20
Lead	90	91	75-125	0	20	N.D.	N.D.	0 (1)	20
Magnesium	93	94	75-125	1	20	0.531	0.541	2 (1)	20
Manganese	93	94	75-125	2	20	0.0061 J	0.0062 J	1 (1)	20
Molybdenum	93	94	75-125	1	20	0.0189 J	0.0161 J	16 (1)	20
Nickel	91	91	75-125	0	20	0.0038 J	0.0037 J	5 (1)	20
Potassium	95	96	75-125	1	20	0.460 J	0.497 J	8 (1)	20
Selenium	95	96	75-125	1	20	N.D.	0.0092 J	200* (1)	20
Silver	65*	79	75-125	20	20	N.D.	N.D.	0 (1)	20
Sodium	94	94	75-125	0	20	1.83 J	1.83 J	0 (1)	20
Strontium	93	94	75-125	1	20	0.265	0.269	1	20
Thallium	91	91	75-125	1	20	N.D.	N.D.	0 (1)	20
Zinc	93	93	75-125	1	20	N.D.	N.D.	0 (1)	20
Batch number: 141365713003	Sample number(s): 7459367,7459369 UNSPK: 7459367 BKG: 7459367								
Mercury	79*	80	80-120	1	20	N.D.	N.D.	0 (1)	20
Batch number: 14140140201A	Sample number(s): 7459366,7459368,7459370 UNSPK: 7459366 BKG: 7459366								
Bromide by IC (solid)	91		90-110			N.D.	N.D.	0 (1)	20
Chloride by IC (solid)	84*		90-110			18.8	18.5	2 (1)	20
Sulfate by IC (solid)	87*		90-110			43.3	42.6	2 (1)	20
Batch number: 14133039401A	Sample number(s): 7459366,7459368 BKG: P459212								
pH						7.29	7.33	1	3
Batch number: 14133039401B	Sample number(s): 7459370 BKG: 7459370								
pH						7.90	7.94	1	3
Batch number: 14139820003A	Sample number(s): 7459366,7459368,7459370 BKG: 7459370								
Moisture						6.8	7.1	4	5

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1473465
Reported: 06/16/14 at 02:30 PM

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
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Bednarcik Exhibit 11
Sutton SARP Appendix G
Docket No. E-2 Sub. 1219
Page 10 of 450

Lancaster / 10634/1473465/745936-71

Chain of Custody Record

TestAmerica Laboratories, Inc.

TestAmerica Laboratory location: Lancaster, PA

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other

Client Contact					
Company Name: Geosyntec Consultants	Client Project Manager: Beau Hodge	Site Contact: Rachel Donahue	Lab Contact: Barbara Weyandt	COC No: 063287
Address: 150 Blue Ridge Rd. Suite 101	Telephone: (919) 442-5518	Telephone: (904) 705-1346	Telephone: (717) 556-7264	1 of 1 COCs
City/State/Zip: Raleigh, NC 27607	Email: bhodge@geosyntec.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: (904) 705-1346		TAT if different from below 2 weeks		☐ Walk-in client ☐ Lab pickup ☐ Lab sampling
Project Name: Duke-Sutton	Method of Shipment/Carrier: FedEx	☐ 3 weeks ☒ 2 weeks ☒ 1 week ☐ 2 days ☐ 1 day		
Project Number: 605592	Shipping/Tracking No:	RD 5/7		Job/SDG No:
PO #				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Metals-6010C	Hg-7470A	Major Cations-6010C	Major Anions-300.0	Sr, B, Ba, Mn, Fe-6010C	pH-SW-846 9045D	SPLP metals-1312+6000 Series				Sample Specific Notes / Special Instructions:
SS-SPT9(12-14)-20140507	5-7-14	1125				X							X		N	G	X	X	X	X	X	X	X				
SS-SPT7(4-6)-20140507	5-7-14	1415				X							X		N	G	X	X	X	X	X	X	X				
SS-MW36((4-6)-20140509	5-9-14	0805				X							X		N	G	X	X	X	X	X	X	X				HOLD SPLP sample

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☒ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments: include Fe + Mn w/ SPLP analyses. Hold SPLP analysis for SS-MW36C(4-6)-20140509.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Donahue	Geosyntec	5-9-14 1500			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				ELLE	5/10/14 0935

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TAL 0018- 1 (04/10)

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Explanation of Symbols and Abbreviations

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The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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Analysis Report

REVISED

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

June 16, 2014

Project: Duke Sutton, NC

Submittal Date: 05/14/2014
Group Number: 1474124
SDG: DUK26
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
SS-SPT3(10-12)20140509 Solid Sample	7462436
SS-SPT3(10-12)20140509 Solid Sample	7462437
SS-MW34C(4-6)20140513 Solid Sample	7462438
SS-SB1(2.5-3.0)20140513 Solid Sample	7462440
SS-SB1(2.5-3.0)20140513 Solid Sample	7462441
SS-SB2(2.5-3.0)20140513 Solid Sample	7462442
SS-SB2(2.5-3.0)20140513 Solid Sample	7462443

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

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ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

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Analysis Report

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Sample Description: SS-SPT3(10-12)20140509 Solid Sample
Duke Sutton

LL Sample # SW 7462436
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/09/2014 10:40

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SPT3- SDG#: DUK26-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.955	5.16	1
06935	Arsenic	7440-38-2	19.6		0.904	5.16	1
06946	Barium	7440-39-3	214		0.0852	2.58	2
06947	Beryllium	7440-41-7	2.71		0.0865	1.29	1
07914	Boron	7440-42-8	12.4	J	1.08	12.9	1
06949	Cadmium	7440-43-9	0.111	J	0.0981	1.29	1
01650	Calcium	7440-70-2	1,700		4.31	51.6	1
06951	Chromium	7440-47-3	27.4		0.207	3.87	1
06953	Copper	7440-50-8	38.8		0.374	2.58	1
01654	Iron	7439-89-6	20,100		4.67	51.6	1
06955	Lead	7439-92-1	16.8		0.645	3.87	1
01657	Magnesium	7439-95-4	842		2.16	25.8	1
06958	Manganese	7439-96-5	88.3		0.107	1.29	1
06960	Molybdenum	7439-98-7	2.52	J	0.219	2.58	1
06961	Nickel	7440-02-0	26.4		0.168	2.58	1
01662	Potassium	7440-09-7	1,370		10.8	129	1
06936	Selenium	7782-49-2	14.9		1.03	5.16	1
06966	Silver	7440-22-4	N.D.		0.219	1.29	1
01667	Sodium	7440-23-5	221	J	21.6	258	1
07968	Strontium	7440-24-6	148		0.0852	2.58	2
06925	Thallium	7440-28-0	N.D.		0.671	7.75	1
06972	Zinc	7440-66-6	24.1		0.258	5.16	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.170	J	0.0124	0.247	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		5.2	6.5	1
07333	Chloride by IC (solid)	16887-00-6	N.D.		6.5	13.0	1
07338	Sulfate by IC (solid)	14808-79-8	9.2	J	6.5	19.6	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	6.53		0.0100	0.0100	1
	The pH was measured in water at 21.2 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	23.3		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SPT3(10-12)20140509 Solid Sample
Duke Sutton

LL Sample # SW 7462436
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/09/2014 10:40

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SPT3- SDG#: DUK26-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141340637001	05/15/2014 13:27	Eric L Eby	2
06947	Beryllium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
07914	Boron	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
01657	Magnesium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141340637001	05/15/2014 13:27	Eric L Eby	2
06925	Thallium	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141340637001	05/15/2014 07:31	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141340638002	05/16/2014 07:34	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141340637001	05/14/2014 22:24	Annamaria Kuhns	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141340638002	05/15/2014 01:20	Annamaria Kuhns	1
07335	Bromide by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 20:02	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 20:02	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 20:02	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14140140201A	05/20/2014 08:15	Nancy J Shoop	1
00394	pH	SW-846 9045D modified	1	14137039401A	05/17/2014 13:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14139820005A	05/19/2014 19:33	Scott W Freisher	1

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Analysis Report

REVISED

Sample Description: SS-SPT3(10-12)20140509 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7462437
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/09/2014 10:40

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SPT3S SDG#: DUK26-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0642	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0571 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	1.87	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.0494 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.582	0.0167	0.200	1
07058	Manganese	7439-96-5	0.00084 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0060 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0018 J	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.297 J	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0339 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	2.59	0.167	2.00	1
08068	Strontium	7440-24-6	0.0811	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07035	Arsenic	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07046	Barium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07047	Beryllium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
08014	Boron	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
01750	Calcium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07051	Chromium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1

*=This limit was used in the evaluation of the final result

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Analysis Report

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Sample Description: SS-SPT3(10-12)20140509 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7462437
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/09/2014 10:40

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SPT3S SDG#: DUK26-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
01754	Iron	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07055	Lead	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07058	Manganese	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07060	Molybdenum	SW-846 6010C	1	141360636002	05/19/2014 16:34	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
01762	Potassium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07036	Selenium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07066	Silver	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
01767	Sodium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
08068	Strontium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07022	Thallium	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
07072	Zinc	SW-846 6010C	1	141360636002	05/19/2014 07:14	Joanne M Gates	1
00259	Mercury	SW-846 7470A	1	141365713003	05/19/2014 10:59	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141360636002	05/18/2014 23:00	Annamaria Kuhns	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141365713003	05/19/2014 01:00	Annamaria Kuhns	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14135-482-1567A	05/15/2014 14:30	Darin P Wagner	n.a.

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Analysis Report

REVISED

Sample Description: SS-MW34C(4-6)20140513 Solid Sample
Duke Sutton

LL Sample # SW 7462438
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 08:45

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

W36C- SDG#: DUK26-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.749	4.05	1
06935	Arsenic	7440-38-2	N.D.		0.709	4.05	1
06946	Barium	7440-39-3	1.29		0.0334	1.01	1
06947	Beryllium	7440-41-7	N.D.		0.0679	1.01	1
07914	Boron	7440-42-8	N.D.		0.851	10.1	1
06949	Cadmium	7440-43-9	N.D.		0.0770	1.01	1
01650	Calcium	7440-70-2	27.0	J	3.38	40.5	1
06951	Chromium	7440-47-3	0.870	J	0.162	3.04	1
06953	Copper	7440-50-8	0.450	J	0.294	2.03	1
01654	Iron	7439-89-6	342		3.67	40.5	1
06955	Lead	7439-92-1	0.953	J	0.506	3.04	1
01657	Magnesium	7439-95-4	10.3	J	1.69	20.3	1
06958	Manganese	7439-96-5	2.42		0.0841	1.01	1
06960	Molybdenum	7439-98-7	0.176	J	0.172	2.03	1
06961	Nickel	7440-02-0	0.418	J	0.132	2.03	1
01662	Potassium	7440-09-7	20.7	J	8.45	101	1
06936	Selenium	7782-49-2	N.D.		0.810	4.05	1
06966	Silver	7440-22-4	N.D.		0.172	1.01	1
01667	Sodium	7440-23-5	N.D.		16.9	203	1
07968	Strontium	7440-24-6	0.515	J	0.0334	1.01	1
06925	Thallium	7440-28-0	N.D.		0.527	6.08	1
06972	Zinc	7440-66-6	0.699	J	0.203	4.05	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0099	0.198	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		4.1	5.1	1
07333	Chloride by IC (solid)	16887-00-6	6.8	J	5.1	10.2	1
07338	Sulfate by IC (solid)	14808-79-8	74.4		5.1	15.3	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	6.27		0.0100	0.0100	1
	The pH was measured in water at 21.4 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	3.2		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-MW34C(4-6)20140513 Solid Sample
Duke Sutton

LL Sample # SW 7462438
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 08:45

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

W36C- SDG#: DUK26-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
07914	Boron	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
01657	Magnesium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06925	Thallium	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141340637001	05/15/2014 07:35	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141340638002	05/16/2014 07:36	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141340637001	05/14/2014 22:24	Annamaria Kuhns	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141340638002	05/15/2014 01:20	Annamaria Kuhns	1
07335	Bromide by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 20:51	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 20:51	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 20:51	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14140140201A	05/20/2014 08:15	Nancy J Shoop	1
00394	pH	SW-846 9045D modified	1	14137039401A	05/17/2014 13:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14139820005A	05/19/2014 19:33	Scott W Freisher	1

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Analysis Report

REVISED

Sample Description: SS-SB1(2.5-3.0)20140513 Solid Sample
Duke Sutton

LL Sample # SW 7462440
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 11:30

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SB1-- SDG#: DUK26-05

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.783	4.23	1
06935	Arsenic	7440-38-2	N.D.		0.740	4.23	1
06946	Barium	7440-39-3	0.500	J	0.0349	1.06	1
06947	Beryllium	7440-41-7	N.D.		0.0709	1.06	1
07914	Boron	7440-42-8	N.D.		0.888	10.6	1
06949	Cadmium	7440-43-9	N.D.		0.0804	1.06	1
01650	Calcium	7440-70-2	8.61	J	3.53	42.3	1
06951	Chromium	7440-47-3	0.383	J	0.169	3.17	1
06953	Copper	7440-50-8	N.D.		0.307	2.12	1
01654	Iron	7439-89-6	32.5	J	3.83	42.3	1
06955	Lead	7439-92-1	N.D.		0.529	3.17	1
01657	Magnesium	7439-95-4	N.D.		1.77	21.2	1
06958	Manganese	7439-96-5	1.22		0.0878	1.06	1
06960	Molybdenum	7439-98-7	N.D.		0.180	2.12	1
06961	Nickel	7440-02-0	0.172	J	0.137	2.12	1
01662	Potassium	7440-09-7	N.D.		8.82	106	1
06936	Selenium	7782-49-2	N.D.		0.846	4.23	1
06966	Silver	7440-22-4	N.D.		0.180	1.06	1
01667	Sodium	7440-23-5	N.D.		17.7	212	1
07968	Strontium	7440-24-6	0.249	J	0.0349	1.06	1
06925	Thallium	7440-28-0	N.D.		0.550	6.35	1
06971	Vanadium	7440-62-2	0.420	J	0.137	1.06	1
06972	Zinc	7440-66-6	0.219	J	0.212	4.23	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0106	0.212	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		4.3	5.4	1
07333	Chloride by IC (solid)	16887-00-6	N.D.		5.4	10.7	1
07338	Sulfate by IC (solid)	14808-79-8	5.4	J	5.4	16.1	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	4.68		0.0100	0.0100	1
	The pH was measured in water at 21.2 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	8.2		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SB1(2.5-3.0)20140513 Solid Sample
Duke Sutton

LL Sample # SW 7462440
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 11:30

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SB1-- SDG#: DUK26-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
07914	Boron	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
01657	Magnesium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06925	Thallium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141340637001	05/15/2014 07:39	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141340638002	05/16/2014 07:50	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141340637001	05/14/2014 22:24	Annamaria Kuhns	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141340638002	05/15/2014 01:20	Annamaria Kuhns	1
07335	Bromide by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 21:07	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 21:07	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 21:07	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14140140201A	05/20/2014 08:15	Nancy J Shoop	1
00394	pH	SW-846 9045D modified	1	14137039401A	05/17/2014 13:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14139820005A	05/19/2014 19:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SB1(2.5-3.0)20140513 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7462441
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 11:30

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SB1-S SDG#: DUK26-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0056 J	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0180 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	0.199 J	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.0366 J	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0014 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	1.36 J	0.167	2.00	1
08068	Strontium	7440-24-6	0.00083 J	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.0028 J	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0063 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1

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Analysis Report

REVISED

Sample Description: SS-SB1(2.5-3.0)20140513 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7462441
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 11:30

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SB1-S SDG#: DUK26-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 01:08	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 01:08	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07071	Vanadium	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 21:31	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 17:07	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

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Analysis Report

REVISED

Sample Description: SS-SB2(2.5-3.0)20140513 Solid Sample
Duke Sutton

LL Sample # SW 7462442
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 15:00

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SB2-- SDG#: DUK26-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.729	3.94	1
06935	Arsenic	7440-38-2	N.D.		0.690	3.94	1
06946	Barium	7440-39-3	1.50		0.0325	0.985	1
06947	Beryllium	7440-41-7	N.D.		0.0660	0.985	1
07914	Boron	7440-42-8	N.D.		0.828	9.85	1
06949	Cadmium	7440-43-9	N.D.		0.0749	0.985	1
01650	Calcium	7440-70-2	11.9	J	3.29	39.4	1
06951	Chromium	7440-47-3	2.09	J	0.158	2.96	1
06953	Copper	7440-50-8	0.446	J	0.286	1.97	1
01654	Iron	7439-89-6	1,620		3.57	39.4	1
06955	Lead	7439-92-1	1.71	J	0.493	2.96	1
01657	Magnesium	7439-95-4	32.2		1.65	19.7	1
06958	Manganese	7439-96-5	1.93		0.0818	0.985	1
06960	Molybdenum	7439-98-7	N.D.		0.167	1.97	1
06961	Nickel	7440-02-0	0.411	J	0.128	1.97	1
01662	Potassium	7440-09-7	30.0	J	8.22	98.5	1
06936	Selenium	7782-49-2	N.D.		0.788	3.94	1
06966	Silver	7440-22-4	N.D.		0.167	0.985	1
01667	Sodium	7440-23-5	N.D.		16.5	197	1
07968	Strontium	7440-24-6	0.604	J	0.0325	0.985	1
06925	Thallium	7440-28-0	N.D.		0.512	5.91	1
06971	Vanadium	7440-62-2	3.95		0.128	0.985	1
06972	Zinc	7440-66-6	1.13	J	0.197	3.94	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0099	0.197	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		4.0	5.0	1
07333	Chloride by IC (solid)	16887-00-6	N.D.		5.0	10.1	1
07338	Sulfate by IC (solid)	14808-79-8	9.1	J	5.0	15.1	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	4.55		0.0100	0.0100	1
	The pH was measured in water at 21.3 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	2.4		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SB2(2.5-3.0)20140513 Solid Sample
Duke Sutton

LL Sample # SW 7462442
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 15:00

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SB2-- SDG#: DUK26-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
07914	Boron	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
01657	Magnesium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06925	Thallium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141340637001	05/15/2014 07:43	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141340638002	05/16/2014 07:52	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141340637001	05/14/2014 22:24	Annamaria Kuhns	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141340638002	05/15/2014 01:20	Annamaria Kuhns	1
07335	Bromide by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 21:23	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 21:23	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14140140201A	05/20/2014 21:23	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14140140201A	05/20/2014 08:15	Nancy J Shoop	1
00394	pH	SW-846 9045D modified	1	14137039401A	05/17/2014 13:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14139820005A	05/19/2014 19:33	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: SS-SB2(2.5-3.0)20140513 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7462443
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 15:00

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SB2-S SDG#: DUK26-08*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	mg/l	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0164	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0441 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	0.496	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0053 J	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	3.87	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.183 J	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0036 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.169 J	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	5.17	0.167	2.00	1
08068	Strontium	7440-24-6	0.0032 J	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.0106	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0088 J	0.0020	0.0400	1
	SW-846 7470A		mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1

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Analysis Report

REVISED

Sample Description: SS-SB2(2.5-3.0)20140513 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7462443
LL Group # 1474124
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/13/2014 15:00

Submitted: 05/14/2014 09:50
Reported: 06/16/2014 14:28

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

SB2-S SDG#: DUK26-08*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 01:30	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 01:30	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07071	Vanadium	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:09	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 17:16	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1474124
Reported: 06/16/14 at 02:28 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141340637001	Sample number(s): 7462436,7462438,7462440,7462442								
Antimony	N.D.	0.740	4.00	mg/kg	105		80-120		
Arsenic	N.D.	0.700	4.00	mg/kg	107		80-120		
Barium	N.D.	0.0330	1.00	mg/kg	101		80-120		
Beryllium	N.D.	0.0670	1.00	mg/kg	97		80-120		
Boron	N.D.	0.840	10.0	mg/kg	96		80-120		
Cadmium	N.D.	0.0760	1.00	mg/kg	102		80-120		
Calcium	5.40 J	3.34	40.0	mg/kg	101		80-120		
Chromium	N.D.	0.160	3.00	mg/kg	101		80-120		
Copper	N.D.	0.290	2.00	mg/kg	104		80-120		
Iron	N.D.	3.62	40.0	mg/kg	101		80-120		
Lead	N.D.	0.500	3.00	mg/kg	105		80-120		
Magnesium	N.D.	1.67	20.0	mg/kg	99		80-120		
Manganese	N.D.	0.0830	1.00	mg/kg	101		80-120		
Molybdenum	N.D.	0.170	2.00	mg/kg	102		80-120		
Nickel	N.D.	0.130	2.00	mg/kg	106		80-120		
Potassium	N.D.	8.34	100	mg/kg	97		80-120		
Selenium	N.D.	0.800	4.00	mg/kg	100		80-120		
Silver	N.D.	0.170	1.00	mg/kg	82		80-120		
Sodium	N.D.	16.7	200	mg/kg	98		80-120		
Strontium	0.0330 J	0.0330	1.00	mg/kg	103		80-120		
Thallium	N.D.	0.520	6.00	mg/kg	105		80-120		
Vanadium	N.D.	0.130	1.00	mg/kg	101		80-120		
Zinc	N.D.	0.200	4.00	mg/kg	101		80-120		
Batch number: 141340638002	Sample number(s): 7462436,7462438,7462440,7462442								
Mercury	N.D.	0.0100	0.200	mg/kg	105		80-120		
Batch number: 141360636002	Sample number(s): 7462437								
Antimony	N.D.	0.0053	0.0400	mg/l	107		80-120		
Arsenic	N.D.	0.0068	0.0400	mg/l	103		80-120		
Barium	N.D.	0.00033	0.0100	mg/l	105		80-120		
Beryllium	N.D.	0.00067	0.0100	mg/l	102		80-120		
Boron	N.D.	0.0084	0.100	mg/l	102		80-120		
Cadmium	N.D.	0.00076	0.0100	mg/l	106		80-120		
Calcium	0.0388 J	0.0334	0.400	mg/l	107		80-120		
Chromium	N.D.	0.0016	0.0300	mg/l	104		80-120		
Copper	N.D.	0.0027	0.0200	mg/l	108		80-120		
Iron	N.D.	0.0430	0.400	mg/l	108		80-120		
Lead	N.D.	0.0047	0.0300	mg/l	105		80-120		
Magnesium	N.D.	0.0167	0.200	mg/l	104		80-120		
Manganese	N.D.	0.00083	0.0100	mg/l	107		80-120		
Molybdenum	N.D.	0.0017	0.0200	mg/l	108		80-120		
Nickel	N.D.	0.0015	0.0200	mg/l	110		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1474124
Reported: 06/16/14 at 02:28 PM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Potassium	N.D.	0.0980	1.00	mg/l	105		80-120		
Selenium	N.D.	0.0084	0.0400	mg/l	106		80-120		
Silver	N.D.	0.0021	0.0100	mg/l	105		80-120		
Sodium	N.D.	0.167	2.00	mg/l	105		80-120		
Strontium	N.D.	0.00033	0.0100	mg/l	108		80-120		
Thallium	N.D.	0.0054	0.0600	mg/l	107		80-120		
Zinc	N.D.	0.0020	0.0400	mg/l	104		80-120		
Batch number: 141365713003	Sample number(s): 7462437								
Mercury	N.D.	0.00006	0.00020	mg/l	97		80-120		
		0							
Batch number: 141500636002	Sample number(s): 7462441,7462443								
Antimony	N.D.	0.0053	0.0400	mg/l	104		80-120		
Arsenic	N.D.	0.0068	0.0400	mg/l	103		80-120		
Barium	N.D.	0.00033	0.0100	mg/l	99		80-120		
Beryllium	N.D.	0.00067	0.0100	mg/l	99		80-120		
Boron	N.D.	0.0084	0.100	mg/l	94		80-120		
Cadmium	N.D.	0.00076	0.0100	mg/l	102		80-120		
Calcium	N.D.	0.0334	0.400	mg/l	103		80-120		
Chromium	N.D.	0.0016	0.0300	mg/l	100		80-120		
Copper	N.D.	0.0027	0.0200	mg/l	102		80-120		
Iron	N.D.	0.0430	0.400	mg/l	102		80-120		
Lead	N.D.	0.0047	0.0300	mg/l	109		80-120		
Magnesium	N.D.	0.0167	0.200	mg/l	100		80-120		
Manganese	N.D.	0.00083	0.0100	mg/l	100		80-120		
Molybdenum	N.D.	0.0017	0.0200	mg/l	103		80-120		
Nickel	N.D.	0.0015	0.0200	mg/l	106		80-120		
Potassium	N.D.	0.0980	1.00	mg/l	102		80-120		
Selenium	N.D.	0.0084	0.0400	mg/l	98		80-120		
Silver	N.D.	0.0021	0.0100	mg/l	104		80-120		
Sodium	0.479 J	0.167	2.00	mg/l	105		80-120		
Strontium	N.D.	0.00033	0.0100	mg/l	101		80-120		
Thallium	N.D.	0.0054	0.0600	mg/l	104		80-120		
Vanadium	N.D.	0.0020	0.0100	mg/l	102		80-120		
Zinc	N.D.	0.0020	0.0400	mg/l	101		80-120		
Batch number: 141505713007	Sample number(s): 7462441,7462443								
Mercury	N.D.	0.00006	0.00020	mg/l	106		80-120		
		0							
Batch number: 14140140201A	Sample number(s): 7462436,7462438,7462440,7462442								
Bromide by IC (solid)	N.D.	4.0	5.0	mg/kg	97		90-110		
Chloride by IC (solid)	N.D.	5.0	10.0	mg/kg	101		90-110		
Sulfate by IC (solid)	N.D.	5.0	15.0	mg/kg	99		90-110		
Batch number: 14137039401A	Sample number(s): 7462436,7462438,7462440,7462442								
pH					99		90-110		
Batch number: 14139820005A	Sample number(s): 7462436,7462438,7462440,7462442								
Moisture					100		99-101		

Sample Matrix Quality Control

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1474124
Reported: 06/16/14 at 02:28 PM
Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141340637001	Sample number(s): 7462436,7462438,7462440,7462442 UNSPK: P462380 BKG: P462380								
Antimony	98	83	75-125	17	20	N.D.	N.D.	0 (1)	20
Arsenic	94	60*	75-125	32*	20	4.23	0.955 J	126* (1)	20
Barium	98	109	75-125	9	20	31.6	41.6	27*	20
Beryllium	95	102	83-119	6	20	0.370 J	0.419 J	12 (1)	20
Boron	105	101	84-110	4	20	1.33 J	6.53 J	132* (1)	20
Cadmium	90	69*	75-120	23*	20	0.603 J	0.651 J	8 (1)	20
Calcium	7248 (2)	2566 (2)	75-125	13	20	120,000	138,000	14	20
Chromium	248*	1226*	75-125	91*	20	66.4	168	87*	20
Copper	35*	91	75-125	24*	20	43.3	33.3	26*	20
Iron	-6213 (2)	26837 (2)	75-125	104*	20	21,400	25,100	16	20
Lead	-89 (2)	480 (2)	75-125	71*	20	90.1	131	37*	20
Magnesium	7920 (2)	-4467 (2)	75-125	35*	20	66,500	64,700	3	20
Manganese	326 (2)	6223 (2)	75-125	114*	20	950	2,230	81*	20
Molybdenum	98	101	82-110	2	20	1.43 J	1.76 J	21* (1)	20
Nickel	79	85	75-125	5	20	13.5	11.4	17	20
Potassium	139*	141*	75-125	1	20	876	1,040	17	20
Selenium	106	134*	75-125	22*	20	1.25 J	1.01 J	22* (1)	20
Silver	72*	40*	75-125	58*	20	N.D.	N.D.	0 (1)	20
Sodium	107	114	75-125	5	20	119 J	148 J	22* (1)	20
Strontium	94	118	81-125	15	20	48.4	63.2	26*	20
Thallium	75*	60*	78-119	23*	20	N.D.	N.D.	0 (1)	20
Vanadium	161*	487*	75-125	81*	20	39.2	125	105*	20
Zinc	54*	192*	75-125	35*	20	134	173	25*	20
Batch number: 141340638002	Sample number(s): 7462436,7462438,7462440,7462442 UNSPK: 7462438 BKG: 7462438								
Mercury	110	105	80-120	5	20	N.D.	N.D.	0 (1)	20
Batch number: 141360636002	Sample number(s): 7462437 UNSPK: P459367 BKG: P459367								
Antimony	95	96	75-125	1	20	N.D.	N.D.	0 (1)	20
Arsenic	96	97	75-125	1	20	0.0699	0.0702	0 (1)	20
Barium	92	94	75-125	2	20	0.143	0.144	1	20
Beryllium	90	91	75-125	2	20	N.D.	N.D.	0 (1)	20
Boron	94	96	75-125	2	20	0.0644 J	0.0635 J	1 (1)	20
Cadmium	92	92	75-125	0	20	N.D.	N.D.	0 (1)	20
Calcium	94	94	75-125	1	20	4.87	4.94	1	20
Chromium	92	93	75-125	2	20	0.0032 J	0.0036 J	11 (1)	20
Copper	95	97	75-125	2	20	0.0028 J	0.0029 J	2 (1)	20
Iron	93	94	75-125	1	20	0.0983 J	0.107 J	8 (1)	20
Lead	90	91	75-125	0	20	N.D.	N.D.	0 (1)	20
Magnesium	93	94	75-125	1	20	0.531	0.541	2 (1)	20
Manganese	93	94	75-125	2	20	0.0061 J	0.0062 J	1 (1)	20
Molybdenum	93	94	75-125	1	20	0.0189 J	0.0161 J	16 (1)	20
Nickel	91	91	75-125	0	20	0.0038 J	0.0037 J	5 (1)	20
Potassium	95	96	75-125	1	20	0.460 J	0.497 J	8 (1)	20
Selenium	95	96	75-125	1	20	N.D.	0.0092 J	200* (1)	20
Silver	65*	79	75-125	20	20	N.D.	N.D.	0 (1)	20
Sodium	94	94	75-125	0	20	1.83 J	1.83 J	0 (1)	20

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1474124
Reported: 06/16/14 at 02:28 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Strontium	93	94	75-125	1	20	0.265	0.269	1	20
Thallium	91	91	75-125	1	20	N.D.	N.D.	0 (1)	20
Zinc	93	93	75-125	1	20	N.D.	N.D.	0 (1)	20
Batch number: 141365713003	Sample number(s): 7462437 UNSPK: P459367 BKG: P459367								
Mercury	79*	80	80-120	1	20	N.D.	N.D.	0 (1)	20
Batch number: 141500636002	Sample number(s): 7462441,7462443 UNSPK: 7462441 BKG: 7462441								
Antimony	90	91	75-125	1	20	N.D.	N.D.	0 (1)	20
Arsenic	90	91	75-125	1	20	N.D.	N.D.	0 (1)	20
Barium	87	96	75-125	9	20	0.0056 J	0.0055 J	0 (1)	20
Beryllium	87	86	75-125	0	20	N.D.	N.D.	0 (1)	20
Boron	86	87	75-125	1	20	0.0180 J	0.0145 J	21* (1)	20
Cadmium	87	88	75-125	1	20	N.D.	N.D.	0 (1)	20
Calcium	91	92	75-125	1	20	0.199 J	0.177 J	12 (1)	20
Chromium	87	88	75-125	1	20	N.D.	N.D.	0 (1)	20
Copper	89	89	75-125	0	20	N.D.	N.D.	0 (1)	20
Iron	89	89	75-125	0	20	N.D.	N.D.	0 (1)	20
Lead	85	86	75-125	0	20	N.D.	N.D.	0 (1)	20
Magnesium	89	90	75-125	1	20	0.0366 J	0.0374 J	2 (1)	20
Manganese	87	88	75-125	1	20	0.0014 J	0.0013 J	8 (1)	20
Molybdenum	89	90	75-125	1	20	N.D.	N.D.	0 (1)	20
Nickel	86	87	75-125	1	20	N.D.	N.D.	0 (1)	20
Potassium	93	94	75-125	1	20	N.D.	N.D.	0 (1)	20
Selenium	88	88	75-125	1	20	N.D.	N.D.	0 (1)	20
Silver	76	77	75-125	1	20	N.D.	N.D.	0 (1)	20
Sodium	91	91	75-125	1	20	1.36 J	1.37 J	0 (1)	20
Strontium	84	84	75-125	0	20	0.00083 J	0.00074 J	11 (1)	20
Thallium	83	84	75-125	1	20	N.D.	N.D.	0 (1)	20
Vanadium	90	90	75-125	0	20	0.0028 J	0.0030 J	8 (1)	20
Zinc	87	88	75-125	1	20	0.0063 J	0.0050 J	23* (1)	20
Batch number: 141505713007	Sample number(s): 7462441,7462443 UNSPK: 7462441 BKG: 7462441								
Mercury	82	82	80-120	0	20	N.D.	N.D.	0 (1)	20
Batch number: 14140140201A	Sample number(s): 7462436,7462438,7462440,7462442 UNSPK: P459366 BKG: P459366								
Bromide by IC (solid)	91		90-110			N.D.	N.D.	0 (1)	20
Chloride by IC (solid)	84*		90-110			18.8	18.5	2 (1)	20
Sulfate by IC (solid)	87*		90-110			43.3	42.6	2 (1)	20
Batch number: 14137039401A	Sample number(s): 7462436,7462438,7462440,7462442 BKG: P464348								
pH						5.59	5.64	1	3
Batch number: 14139820005A	Sample number(s): 7462436,7462438,7462440,7462442 BKG: P463166								
Moisture						24.1	25.5	6*	5

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Chain of Custody Record

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~~TestAmerica~~ Laboratory location: Lancaster PA
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager:	Site Contact:	Lab Contact:	COC No:
Company Name: Geosyntec Consultants	Beau Hodge	Rachel Donahue	Barbara Weyandt	063288
Address: 2501 Blue Ridge RD, Suite 430	Telephone: 919-412-5718	Telephone: 904-705-1346	Telephone: 717-556-7264	1 of 1 COCs
City/State/Zip: Raleigh NC 27607	Email: BHodge@geosyntec.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 919 424 1828		TAT if different from below: ☐ 3 weeks ☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: Dike-Sutton	Method of Shipment/Carrier: FEDEX			Job/SDG No:
Project Number: GC5592	Shipping/Tracking No:			
PO#				Sample Specific Notes / Special Instructions:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: Metals-6010C	Hg-7470A	Metals-6020A	Antimony-3005A	Sr, B, Ba, Mo, Fe-6010C	pH-9040C	SPLP Metals-1312					Sample Specific Notes / Special Instructions:
SS-SPT3(10-12)20140509	5-9-14	1040				X							X		N	G	X	X	X	X	X	X	X					
~~SS-MW36C(4-6)20140513~~	5-13-14	0845				X							X		N	G	X	X	X	X	X	X	X					Hold SPLP sample
SB1(2.5-3.0)-20140513	5-13-14	1130				X							X		N	G	X	X	X	X	X	X	X					Hold SPLP metals
~~SB2(2.5-3.0)-20140513~~	5.13.14	1300				X							X		N	G	X	X	X	X	X	X	X					Hold SPLP metals
SS-SB1(2.5-3.0)-20140513																												
SS-SB2(2.5-3.0)-20140513																												
SS-MW34C(4-6)20140513 per R.D. BW 6/13/14																												

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☒ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments: Include Return WPSPLP analysis.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Donahue	Geosyntec	5-13-14 1900			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: ELLE	Date/Time: 5.14.14 950

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2nd REVISION

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10634 / 1474124 / 7462436-43

Eurofins RD 5/13

Chain of Custody Record

~~TestAmerica~~ Laboratory location: Lancaster PA

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other

~~TestAmerica~~ THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Biosyntec Consultants	Client Project Manager: Beau Hodge	Site Contact: Rachel Donahue	Lab Contact: Barbara Weyandt
Address: 2501 Blue Ridge RD. Suite 430	Telephone: 919-412-5118	Telephone: 904-705-1346	Telephone: 717-556-7264
City/State/Zip: Raleigh NC 27607	Email: BHodge@biosyntec.com	Analysis Turnaround Time (in BUS days)	Analyses
Phone: 919 424 1828		TAT if different from below: ☐ 3 weeks ☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	
Project Name: Dike-Sutton	Method of Shipment/Carrier: FEDEX		
Project Number: GCS592	Shipping/Tracking No:		
PO #			

COC No: 063288

1 of 1 COCs

For lab use only: Walk-in client ☐ Lab pickup ☐ Lab sampling ☐ Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Metals-6010C	Hg-7470A	Mercury Metals-7470A-Water	Mercury Metals-7471B	Sr-90 Ba, Ra-226	PH 5W-846 9045D	SPLP Metals-1312				Sample Specific Notes / Special Instructions:
SS-SPT3(10-12)-20140509	5-9-14	1040				X							X		N	G	X	X	X	X	X	X	X				
SS-MW36C(46)-20140513	5-13-14	0845				X							X		N	G	X	X	X	X	X	X	X				Hold SPLP sample
SB1(2.5-3.0)-20140513	5-13-14	1130				X							X		N	G	X	X	X	X	X	X	X				Hold SPLP metals
SB2(2.5-3.0)-20140513	5.13.14	1300				X							X		N	G	X	X	X	X	X	X	X				Hold SPLP metals
SS-SB1(2.5-3.0)-20140513																											
SS-SB2(2.5-3.0)-20140513																											

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☒ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments: Include ft thru WT SPLP analysis.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Donahue	Biosyntec	5-13-14 1900			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				ELLE	5.14.14 950

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10634 / 1474124 / 7462436-43

Eurofins RD 5/13

Chain of Custody Record

~~TestAmerica~~ Laboratory location: Lancaster PA

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other

Eurofins ~~TestAmerica~~ RD 5/13
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Crosgntc Consultants	Client Project Manager: Beau Hodge	Site Contact: Rachel Donahue	Lab Contact: Barbara Weyandt
Address: 2501 Blue Ridge RD, Suite 430	Telephone: 919-412-5718	Telephone: 404-705-1346	Telephone: 717-556-7264
City/State/Zip: Raleigh NC 27607	Email: BHodge@crosgntc.com	Analysis Turnaround Time (in BUS days)	Analyses
Phone: 919 424 1828		TAT if different from below ____	
Project Name: Dike-Sutton	Method of Shipment/Carrier: REDEX	☐ 3 weeks ☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	
Project Number: GCS592	Shipping/Tracking No:		
PO #			

COC No: 063288
1 of 1 COCs

For lab use only
Walk-in client ☐
Lab pickup ☐
Lab sampling ☐
Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: Metals-6010C Hg-7471B	Metals Analysis-6010C	Mercury Analysis-7470A	Sr, Ba, Mn, Fe-6010C	pH-9045C/9040C	SPLP Metals-1312	Sample Specific Notes / Special Instructions:
SS-SPT3(10-12)20140589	5-9-14	1040				X							X		N	G	X	X	X	X	X	X	
SS-MW36C(4-6)20140513	5-13-14	0845				X							X		N	G	X	X	X	X	X	X	Hold SPLP Sample
SB1(2.5-3.0)-20140513	5-13-14	1130				X							X		N	G	X	X	X	X	X	X	Hold SPLP metals
SB2(2.5-3.0)-20140573	5.13.14	1300				X							X		N	G	X	X	X	X	X	X	Hold SPLP metals

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments: Include Return WT SPLP analysis.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Donahue	Crosgntc	5-13-14 1900			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				ELLE	5.14.14 950

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Explanation of Symbols and Abbreviations

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The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

June 03, 2014

Project: Duke Sutton, NC

Submittal Date: 05/21/2014
Group Number: 1475873
SDG: DUK27
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
PZ-INT-20140520 Water Sample	7471432

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: PZ-INT-20140520 Water Sample
Duke Sutton

LL Sample # WW 7471432
LL Group # 1475873
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 15:35

Submitted: 05/21/2014 09:50
Reported: 06/03/2014 06:20

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSPZI SDG#: DUK27-01*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.275	0.0068	0.0400	1
07046	Barium	7440-39-3	0.925	0.00033	0.0100	1
07047	Beryllium	7440-41-7	0.0069 J	0.00067	0.0100	1
08014	Boron	7440-42-8	4.26	0.0840	1.00	10
07049	Cadmium	7440-43-9	0.00080 J	0.00076	0.0100	1
01750	Calcium	7440-70-2	122	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0256 J	0.0016	0.0300	1
07053	Copper	7440-50-8	0.0913	0.0027	0.0200	1
01754	Iron	7439-89-6	9.57	0.0430	0.400	1
07055	Lead	7439-92-1	0.0294 J	0.0047	0.0300	1
01757	Magnesium	7439-95-4	38.6	0.0167	0.200	1
07058	Manganese	7439-96-5	0.184	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0703	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0637	0.0015	0.0200	1
01762	Potassium	7440-09-7	18.6	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0134 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	41.1	0.167	2.00	1
08068	Strontium	7440-24-6	7.24	0.0033	0.100	10
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.129	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0723	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	83.4	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	73.2	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	335	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	631	19.4	60.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: PZ-INT-20140520 Water Sample
Duke Sutton

LL Sample # WW 7471432
LL Group # 1475873
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 15:35

Submitted: 05/21/2014 09:50
Reported: 06/03/2014 06:20

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSPZI SDG#: DUK27-01*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/30/2014 08:47	Eric L Eby	10
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141510635001	06/02/2014 19:46	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
08068	Strontium	SW-846 6010C	1	141470635001	05/30/2014 08:47	Eric L Eby	10
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:00	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141415713002	05/23/2014 10:29	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	2	141510635001	06/02/2014 10:04	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141415713002	05/22/2014 12:58	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14141373601A	05/22/2014 00:42	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14141373601A	05/22/2014 09:07	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14141373601A	05/22/2014 00:42	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14141373601A	05/22/2014 00:42	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14141373601A	05/22/2014 00:42	Sandra J Miller	5
12150	Total Alkalinity	EPA 310.1	1	14142002103A	05/22/2014 18:28	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14143021201A	05/23/2014 08:43	Yolunder Y Bunch	1

*=This limit was used in the evaluation of the final result

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1475873
Reported: 06/03/14 at 06:20 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141415713002	Sample number(s): 7471432								
Mercury	N.D.	0.00006 0	0.00020	mg/l	98		80-120		
Batch number: 141470635001	Sample number(s): 7471432								
Antimony	N.D.	0.0053	0.0400	mg/l	107		88-111		
Arsenic	N.D.	0.0068	0.0400	mg/l	108		90-113		
Barium	N.D.	0.00033	0.0100	mg/l	106		90-110		
Beryllium	N.D.	0.00067	0.0100	mg/l	104		90-111		
Boron	N.D.	0.0084	0.100	mg/l	98		90-110		
Cadmium	N.D.	0.00076	0.0100	mg/l	110		90-112		
Calcium	N.D.	0.0334	0.400	mg/l	107		90-112		
Chromium	N.D.	0.0016	0.0300	mg/l	104		90-110		
Copper	N.D.	0.0027	0.0200	mg/l	108		90-112		
Iron	N.D.	0.0430	0.400	mg/l	108		90-112		
Lead	N.D.	0.0047	0.0300	mg/l	115		88-116		
Magnesium	N.D.	0.0167	0.200	mg/l	105		89-110		
Manganese	N.D.	0.00083	0.0100	mg/l	107		90-110		
Molybdenum	N.D.	0.0017	0.0200	mg/l	108		90-110		
Potassium	N.D.	0.0980	1.00	mg/l	103		90-110		
Selenium	N.D.	0.0084	0.0400	mg/l	110		89-113		
Silver	N.D.	0.0021	0.0100	mg/l	114		80-120		
Sodium	N.D.	0.167	2.00	mg/l	105		87-114		
Strontium	N.D.	0.00033	0.0100	mg/l	107		90-110		
Thallium	N.D.	0.0054	0.0600	mg/l	112		90-118		
Vanadium	N.D.	0.0020	0.0100	mg/l	106		90-110		
Zinc	0.0024 J	0.0020	0.0400	mg/l	110		90-110		
Batch number: 141510635001	Sample number(s): 7471432								
Nickel	N.D.	0.0015	0.0200	mg/l	110		90-111		
Batch number: 14141373601A	Sample number(s): 7471432								
Bromide	N.D.	0.40	0.50	mg/l	96	96	90-110	0	20
Chloride	N.D.	0.20	0.40	mg/l	103	98	90-110	5	20
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	99	99	90-110	0	20
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	96	95	90-110	1	20
Sulfate	N.D.	0.30	1.0	mg/l	100	97	90-110	3	20
Batch number: 14142002103A	Sample number(s): 7471432								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	96		90-110		
Batch number: 14143021201A	Sample number(s): 7471432								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	105		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1475873
Reported: 06/03/14 at 06:20 AM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141415713002	Sample number(s): 7471432 UNSPK: P470904 BKG: P470904								
Mercury	119	103	80-120	15	20	N.D.	N.D.	0 (1)	20
Batch number: 141470635001	Sample number(s): 7471432 UNSPK: P473019 BKG: P473019								
Antimony	105	108	76-122	3	20	N.D.	N.D.	0 (1)	20
Arsenic	107	110	81-123	3	20	N.D.	N.D.	0 (1)	20
Barium	100	104	78-125	4	20	0.153	0.167	9	20
Beryllium	101	104	87-114	3	20	N.D.	N.D.	0 (1)	20
Boron	96	99	87-111	3	20	0.528	0.574	8	20
Cadmium	105	108	75-122	2	20	N.D.	N.D.	0 (1)	20
Calcium	78 (2)	113 (2)	75-125	3	20	44.1	43.8	1	20
Chromium	100	103	76-120	3	20	N.D.	N.D.	0 (1)	20
Copper	103	107	86-122	3	20	N.D.	N.D.	0 (1)	20
Iron	104	110	75-125	4	20	0.276 J	0.287 J	4 (1)	20
Lead	109	112	75-125	3	20	N.D.	N.D.	0 (1)	20
Magnesium	90	105	81-118	3	20	6.83	6.75	1	20
Manganese	101	105	75-125	4	20	0.0016 J	0.0019 J	13 (1)	20
Molybdenum	104	108	89-117	3	20	0.132	0.129	2	20
Potassium	100	107	77-128	3	20	10.9	10.8	0	20
Selenium	99	103	75-125	3	20	0.0268 J	0.0261 J	2 (1)	20
Silver	107	111	75-125	4	20	N.D.	N.D.	0 (1)	20
Sodium	94 (2)	107 (2)	84-117	2	20	46.3	45.8	1	20
Strontium	100	104	88-117	3	20	0.546	0.597	9	20
Thallium	104	107	75-125	3	20	N.D.	N.D.	0 (1)	20
Vanadium	103	106	90-117	3	20	0.0023 J	0.0025 J	9 (1)	20
Zinc	105	108	85-117	3	20	0.0077 J	0.0059 J	27* (1)	20
Batch number: 141510635001	Sample number(s): 7471432 UNSPK: P479329 BKG: P479329								
Nickel	108	107	79-123	2	20	N.D.	N.D.	0 (1)	20
Batch number: 14141373601A	Sample number(s): 7471432 UNSPK: P471371 BKG: P471371								
Bromide	86*		90-110			N.D.	N.D.	0 (1)	20
Chloride	85*		90-110			5.1	4.3	19 (1)	20
Nitrate Nitrogen	87*		90-110			1.0	1.1	7 (1)	20
Nitrite Nitrogen	85*		90-110			N.D.	N.D.	0 (1)	20
Sulfate	90		90-110			15.7	16.6	6 (1)	20
Batch number: 14142002103A	Sample number(s): 7471432 UNSPK: P466063 BKG: P466063								
Total Alkalinity	94	95	17-146	1	5	20.7	20.9	1	5
Batch number: 14143021201A	Sample number(s): 7471432 UNSPK: P473019 BKG: P473019								
Total Dissolved Solids	98		66-131			316	311	2	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1475873
Reported: 06/03/14 at 06:20 AM

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Chain of Custody Record

10634
1475873
7471432

Sampler ID _____

Temperature on Receipt 2.4°C

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Corrections

TAL-4124-280 (0508)

Client: Geosyntec Consultants	Project Manager: Beau Hodge	Date: 5-20-14	Chain of Custody Number: 183850
Address: 2501 Blue Ridge RD Suite 430	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of 1
City: Raleigh / State: NC / Zip Code: 27607	Site Contact: Rachel Donahue	Lab Contact: Barbara Wiegandt	
Project Name and Location (State): DUK - Sutton (NC)	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis (Attach list if more space is needed): Metals Std List	Cations	Boron, Mn, Fe	Anions	Alkalinity	Nitrate/Nitrite	TDS	Special Instructions/ Conditions of Receipt
PZ-INT-20140520	5-20-14	1535		X			4		1				X	X	X	X	X	X	X	analyze for vanadium

RD 5/20

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By	Date: 5-20-14	Time: 1800	1. Received By	Date	Time
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date: 5/21/14	Time: 0950

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

June 01, 2014

Project: Duke Sutton, NC

Submittal Date: 05/22/2014
Group Number: 1476292
SDG: DUK28
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
MW-36C-20140521 Water Sample	7473017
MW-936C-20140521 Water Sample	7473018
MW-36B-20140521 Water Sample	7473019
MW-36B-20140521MS Water Sample	7473020
MW-36B-20140521MSD Water Sample	7473021
MW-36B-20140521DUP Water Sample	7473022
MW-6B-20140521 Water Sample	7473023
MW-6C-20140521 Water Sample	7473024

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: MW-36C-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473017
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 12:30

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36C SDG#: DUK28-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0337	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.522	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	32.1	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0019 J	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.877	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	5.82	0.0167	0.200	1
07058	Manganese	7439-96-5	0.558	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0133 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	10.8	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0357 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	61.6	0.835	10.0	5
08068	Strontium	7440-24-6	0.324	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.0039 J	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0135 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	54.8	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	0.35 J	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	117	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	41.0	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	327	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-36C-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473017
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 12:30

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36C SDG#: DUK28-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/30/2014 08:54	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/30/2014 17:46	Katlin N Cataldi	5
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:05	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 08:46	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14142347602A	05/23/2014 03:10	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14142347602A	05/23/2014 20:08	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 03:10	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 03:10	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14142347602A	05/23/2014 20:08	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	1	14144002102A	05/24/2014 15:18	Kenneth A Bell	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14143021201A	05/23/2014 08:43	Yolunder Y Bunch	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-936C-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473018
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 12:30

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS936 SDG#: DUK28-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0336	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.519	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	32.0	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0024 J	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.765	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	5.82	0.0167	0.200	1
07058	Manganese	7439-96-5	0.559	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0130 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0016 J	0.0015	0.0200	1
01762	Potassium	7440-09-7	10.6	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0363 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	61.0	0.835	10.0	5
08068	Strontium	7440-24-6	0.325	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.0035 J	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0117 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	54.5	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	0.31 J	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	115	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	40.5	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	324	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: MW-936C-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473018
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 12:30

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS936 SDG#: DUK28-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07061	Nickel	SW-846 6010C	2	141470635001	05/30/2014 17:50	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/30/2014 17:54	Katlin N Cataldi	5
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:17	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 08:49	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14142347602A	05/23/2014 03:26	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14142347602A	05/23/2014 20:24	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 03:26	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 03:26	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14142347602A	05/23/2014 20:24	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	2	14144002102B	05/24/2014 15:50	Kenneth A Bell	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14143021201A	05/23/2014 08:43	Yolunder Y Bunch	1

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Analysis Report

Sample Description: MW-36B-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473019
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 13:47

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36B SDG#: DUK28-03BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.153	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.528	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	44.1	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.276 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	6.83	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0016 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.132	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	10.9	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0268 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	46.3	0.167	2.00	1
08068	Strontium	7440-24-6	0.546	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.0023 J	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0077 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	51.9	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	0.63	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	90.4	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	72.4	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	316	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

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Analysis Report

Sample Description: MW-36B-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473019
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 13:47

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36B SDG#: DUK28-03BKG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 11:45	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 08:51	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14142347602A	05/23/2014 01:49	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14142347602A	05/23/2014 18:47	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 01:49	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 01:49	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14142347602A	05/23/2014 18:47	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	1	14144002102A	05/24/2014 13:39	Kenneth A Bell	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14143021201A	05/23/2014 08:43	Yolunder Y Bunch	1

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Analysis Report

Sample Description: MW-36B-20140521MS Water Sample
Duke Sutton

LL Sample # WW 7473020
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 13:47

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36B SDG#: DUK28-03MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	mg/l	
07044	Antimony	7440-36-0	0.524	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.160	0.0068	0.0400	1
07046	Barium	7440-39-3	2.15	0.00033	0.0100	1
07047	Beryllium	7440-41-7	0.0504	0.00067	0.0100	1
08014	Boron	7440-42-8	2.45	0.0084	0.100	1
07049	Cadmium	7440-43-9	0.0526	0.00076	0.0100	1
01750	Calcium	7440-70-2	47.3	0.0334	0.400	1
07051	Chromium	7440-47-3	0.200	0.0016	0.0300	1
07053	Copper	7440-50-8	0.259	0.0027	0.0200	1
01754	Iron	7439-89-6	1.32	0.0430	0.400	1
07055	Lead	7439-92-1	0.163	0.0047	0.0300	1
01757	Magnesium	7439-95-4	8.63	0.0167	0.200	1
07058	Manganese	7439-96-5	0.509	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	2.22	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.545	0.0015	0.0200	1
01762	Potassium	7440-09-7	20.9	0.0980	1.00	1
07036	Selenium	7782-49-2	0.176	0.0084	0.0400	1
07066	Silver	7440-22-4	0.0537	0.0021	0.0100	1
01767	Sodium	7440-23-5	55.7	0.167	2.00	1
08068	Strontium	7440-24-6	1.55	0.00033	0.0100	1
07022	Thallium	7440-28-0	0.155	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.519	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.530	0.0020	0.0400	1
	SW-846 7470A		mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	0.00094	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	mg/l	
01505	Bromide	24959-67-9	52.0	4.0	5.0	10
00224	Chloride	16887-00-6	145	10.0	20.0	50
00368	Nitrate Nitrogen	14797-55-8	11.1	0.50	1.0	10
01506	Nitrite Nitrogen	14797-65-0	9.9	0.80	1.0	10
00228	Sulfate	14808-79-8	148	3.0	10.0	10
	EPA 310.1		mg/l as CaCO3	mg/l as CaCO3	mg/l as CaCO3	
12150	Total Alkalinity	n.a.	215	0.70	2.0	1
	SM 2540 C-1997		mg/l	mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	511	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: MW-36B-20140521MS Water Sample
Duke Sutton

LL Sample # WW 7473020
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 13:47

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36B SDG#: DUK28-03MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 11:57	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 08:55	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14142347602A	05/23/2014 02:54	Sandra J Miller	10
00224	Chloride	EPA 300.0	1	14142347602A	05/23/2014 19:20	Sandra J Miller	50
00368	Nitrate Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 02:54	Sandra J Miller	10
01506	Nitrite Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 02:54	Sandra J Miller	10
00228	Sulfate	EPA 300.0	1	14142347602A	05/23/2014 02:54	Sandra J Miller	10
12150	Total Alkalinity	EPA 310.1	1	14144002102A	05/24/2014 13:45	Kenneth A Bell	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14143021201A	05/23/2014 08:43	Yolunder Y Bunch	1

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Analysis Report

Sample Description: MW-36B-20140521MSD Water Sample
Duke Sutton

LL Sample # WW 7473021
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 13:47

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36B SDG#: DUK28-03MSD

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**		mg/l	mg/l	mg/l	
07044	Antimony		7440-36-0	0.539	0.0053	0.0400	1
07035	Arsenic		7440-38-2	0.165	0.0068	0.0400	1
07046	Barium		7440-39-3	2.23	0.00033	0.0100	1
07047	Beryllium		7440-41-7	0.0520	0.00067	0.0100	1
08014	Boron		7440-42-8	2.51	0.0084	0.100	1
07049	Cadmium		7440-43-9	0.0538	0.00076	0.0100	1
01750	Calcium		7440-70-2	48.6	0.0334	0.400	1
07051	Chromium		7440-47-3	0.206	0.0016	0.0300	1
07053	Copper		7440-50-8	0.267	0.0027	0.0200	1
01754	Iron		7439-89-6	1.37	0.0430	0.400	1
07055	Lead		7439-92-1	0.168	0.0047	0.0300	1
01757	Magnesium		7439-95-4	8.93	0.0167	0.200	1
07058	Manganese		7439-96-5	0.527	0.00083	0.0100	1
07060	Molybdenum		7439-98-7	2.29	0.0017	0.0200	1
07061	Nickel		7440-02-0	0.562	0.0015	0.0200	1
01762	Potassium		7440-09-7	21.6	0.0980	1.00	1
07036	Selenium		7782-49-2	0.181	0.0084	0.0400	1
07066	Silver		7440-22-4	0.0556	0.0021	0.0100	1
01767	Sodium		7440-23-5	57.0	0.167	2.00	1
08068	Strontium		7440-24-6	1.59	0.00033	0.0100	1
07022	Thallium		7440-28-0	0.160	0.0054	0.0600	1
07071	Vanadium		7440-62-2	0.534	0.0020	0.0100	1
07072	Zinc		7440-66-6	0.546	0.0020	0.0400	1
		SW-846 7470A		mg/l	mg/l	mg/l	
00259	Mercury		7439-97-6	0.00092	0.000060	0.00020	1
Wet Chemistry		**EPA 310.1**		mg/l as CaCO3	mg/l as CaCO3	mg/l as CaCO3	
12150	Total Alkalinity		n.a.	212	0.70	2.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-36B-20140521MSD Water Sample
Duke Sutton

LL Sample # WW 7473021
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 13:47

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36B SDG#: DUK28-03MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 12:01	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 08:57	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
12150	Total Alkalinity	EPA 310.1	1	14144002102A	05/24/2014 13:53	Kenneth A Bell	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-36B-20140521DUP Water Sample
Duke Sutton

LL Sample # WW 7473022
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 13:47

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36B SDG#: DUK28-03DUP

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.167	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.574	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	43.8	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.287 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	6.75	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0019 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.129	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	10.8	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0261 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	45.8	0.167	2.00	1
08068	Strontium	7440-24-6	0.597	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.0025 J	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0059 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	54.1	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	0.59	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	97.1	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	73.0	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	311	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: MW-36B-20140521DUP Water Sample
Duke Sutton

LL Sample # WW 7473022
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 13:47

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS36B SDG#: DUK28-03DUP

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 11:53	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 08:53	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14142347602A	05/23/2014 02:05	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14142347602A	05/23/2014 19:04	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 02:05	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 02:05	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14142347602A	05/23/2014 19:04	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	1	14144002102A	05/24/2014 13:59	Kenneth A Bell	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14143021201A	05/23/2014 08:43	Yolunder Y Bunch	1

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Analysis Report

Sample Description: MW-6B-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473023
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 15:08

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM6C SDG#: DUK28-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0349	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	1.13	0.0420	0.500	5
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	53.9	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.121 J	0.0430	0.400	1
07055	Lead	7439-92-1	0.0057 J	0.0047	0.0300	1
01757	Magnesium	7439-95-4	13.4	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0682	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.256	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	11.7	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	52.3	0.835	10.0	5
08068	Strontium	7440-24-6	1.93	0.0017	0.0500	5
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0026 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	71.5	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	91.8	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	105	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	374	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-6B-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473023
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 15:08

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM6C SDG#: DUK28-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/30/2014 09:05	Eric L Eby	5
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/30/2014 17:58	Katlin N Cataldi	5
08068	Strontium	SW-846 6010C	1	141470635001	05/30/2014 09:05	Eric L Eby	5
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:20	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 08:59	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14142347602A	05/23/2014 03:42	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14142347602A	05/23/2014 20:41	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 03:42	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 03:42	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14142347602A	05/23/2014 20:41	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	1	14144002102A	05/24/2014 14:05	Kenneth A Bell	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14143021201A	05/23/2014 08:43	Yolunder Y Bunch	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-6C-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473024
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 15:52

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM6B SDG#: DUK28-05*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0282	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	1.27	0.0420	0.500	5
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	30.1	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.514	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	8.92	0.0167	0.200	1
07058	Manganese	7439-96-5	0.857	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	6.16	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	67.2	0.835	10.0	5
08068	Strontium	7440-24-6	0.431	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0135 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	85.1	5.0	10.0	25
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	112	7.5	25.0	25
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	2.8	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	338	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-6C-20140521 Water Sample
Duke Sutton

LL Sample # WW 7473024
LL Group # 1476292
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 15:52

Submitted: 05/22/2014 09:25
Reported: 06/01/2014 11:56

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM6B SDG#: DUK28-05*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/30/2014 09:09	Eric L Eby	5
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/30/2014 18:02	Katlin N Cataldi	5
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:24	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 09:05	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14142347602A	05/23/2014 03:59	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14142347602A	05/23/2014 20:57	Sandra J Miller	25
00368	Nitrate Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 03:59	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14142347602A	05/23/2014 03:59	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14142347602A	05/23/2014 20:57	Sandra J Miller	25
12150	Total Alkalinity	EPA 310.1	1	14144002102A	05/24/2014 14:20	Kenneth A Bell	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14143021201A	05/23/2014 08:43	Yolunder Y Bunch	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476292
Reported: 06/01/14 at 11:56 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141470635001	Sample number(s): 7473017-7473024								
Antimony	N.D.	0.0053	0.0400	mg/l	107		88-111		
Arsenic	N.D.	0.0068	0.0400	mg/l	108		90-113		
Barium	N.D.	0.00033	0.0100	mg/l	106		90-110		
Beryllium	N.D.	0.00067	0.0100	mg/l	104		90-111		
Boron	N.D.	0.0084	0.100	mg/l	98		90-110		
Cadmium	N.D.	0.00076	0.0100	mg/l	110		90-112		
Calcium	N.D.	0.0334	0.400	mg/l	107		90-112		
Chromium	N.D.	0.0016	0.0300	mg/l	104		90-110		
Copper	N.D.	0.0027	0.0200	mg/l	108		90-112		
Iron	N.D.	0.0430	0.400	mg/l	108		90-112		
Lead	N.D.	0.0047	0.0300	mg/l	115		88-116		
Magnesium	N.D.	0.0167	0.200	mg/l	105		89-110		
Manganese	N.D.	0.00083	0.0100	mg/l	107		90-110		
Molybdenum	N.D.	0.0017	0.0200	mg/l	108		90-110		
Nickel	N.D.	0.0015	0.0200	mg/l	116*		90-111		
Potassium	N.D.	0.0980	1.00	mg/l	103		90-110		
Selenium	N.D.	0.0084	0.0400	mg/l	110		89-113		
Silver	N.D.	0.0021	0.0100	mg/l	114		80-120		
Sodium	N.D.	0.167	2.00	mg/l	105		87-114		
Strontium	N.D.	0.00033	0.0100	mg/l	107		90-110		
Thallium	N.D.	0.0054	0.0600	mg/l	112		90-118		
Vanadium	N.D.	0.0020	0.0100	mg/l	106		90-110		
Zinc	0.0024 J	0.0020	0.0400	mg/l	110		90-110		
Batch number: 141475713002	Sample number(s): 7473017-7473024								
Mercury	N.D.	0.00006 0	0.00020	mg/l	94		80-120		
Batch number: 14142347602A	Sample number(s): 7473017-7473020,7473022-7473024								
Bromide	N.D.	0.40	0.50	mg/l	96	96	90-110	0	20
Chloride	N.D.	0.20	0.40	mg/l	98	98	90-110	0	20
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	98	98	90-110	0	20
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	95	95	90-110	0	20
Sulfate	N.D.	0.30	1.0	mg/l	98	97	90-110	0	20
Batch number: 14143021201A	Sample number(s): 7473017-7473020,7473022-7473024								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	105		80-120		
Batch number: 14144002102A	Sample number(s): 7473017,7473019-7473024								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	97		90-110		
Batch number: 14144002102B	Sample number(s): 7473018								

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476292
Reported: 06/01/14 at 11:56 AM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	97		90-110		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141470635001	Sample number(s): 7473017-7473024 UNSPK: 7473019 BKG: 7473019								
Antimony	105	108	76-122	3	20	N.D.	N.D.	0 (1)	20
Arsenic	107	110	81-123	3	20	N.D.	N.D.	0 (1)	20
Barium	100	104	78-125	4	20	0.153	0.167	9	20
Beryllium	101	104	87-114	3	20	N.D.	N.D.	0 (1)	20
Boron	96	99	87-111	3	20	0.528	0.574	8	20
Cadmium	105	108	75-122	2	20	N.D.	N.D.	0 (1)	20
Calcium	78 (2)	113 (2)	75-125	3	20	44.1	43.8	1	20
Chromium	100	103	76-120	3	20	N.D.	N.D.	0 (1)	20
Copper	103	107	86-122	3	20	N.D.	N.D.	0 (1)	20
Iron	104	110	75-125	4	20	0.276 J	0.287 J	4 (1)	20
Lead	109	112	75-125	3	20	N.D.	N.D.	0 (1)	20
Magnesium	90	105	81-118	3	20	6.83	6.75	1	20
Manganese	101	105	75-125	4	20	0.0016 J	0.0019 J	13 (1)	20
Molybdenum	104	108	89-117	3	20	0.132	0.129	2	20
Nickel	109	112	79-123	3	20	N.D.	N.D.	0 (1)	20
Potassium	100	107	77-128	3	20	10.9	10.8	0	20
Selenium	99	103	75-125	3	20	0.0268 J	0.0261 J	2 (1)	20
Silver	107	111	75-125	4	20	N.D.	N.D.	0 (1)	20
Sodium	94 (2)	107 (2)	84-117	2	20	46.3	45.8	1	20
Strontium	100	104	88-117	3	20	0.546	0.597	9	20
Thallium	104	107	75-125	3	20	N.D.	N.D.	0 (1)	20
Vanadium	103	106	90-117	3	20	0.0023 J	0.0025 J	9 (1)	20
Zinc	105	108	85-117	3	20	0.0077 J	0.0059 J	27* (1)	20
Batch number: 141475713002	Sample number(s): 7473017-7473024 UNSPK: 7473019 BKG: 7473019								
Mercury	94	92	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: 14142347602A	Sample number(s): 7473017-7473020,7473022-7473024 UNSPK: 7473019 BKG: 7473019								
Bromide	104		90-110			N.D.	N.D.	0 (1)	20
Chloride	93		90-110			51.9	54.1	4	20
Nitrate Nitrogen	104		90-110			0.63	0.59	7 (1)	20
Nitrite Nitrogen	99		90-110			N.D.	N.D.	0 (1)	20
Sulfate	115*		90-110			90.4	97.1	7 (1)	20
Batch number: 14143021201A	Sample number(s): 7473017-7473020,7473022-7473024 UNSPK: 7473019 BKG: 7473019								
Total Dissolved Solids	98		66-131			316	311	2	5
Batch number: 14144002102A	Sample number(s): 7473017,7473019-7473024 UNSPK: 7473019 BKG: 7473019								
Total Alkalinity	76	75	17-146	1	5	72.4	73.0	1	5
Batch number: 14144002102B	Sample number(s): 7473018 UNSPK: 7473019 BKG: 7473018								
Total Alkalinity	76	75	17-146	1	5	40.5	41.1	2	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476292
Reported: 06/01/14 at 11:56 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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[redacted]

Chain of Custody Record

10634
1476292
7473017-24

Sampler ID _____

Temperature on Receipt 0.8°-3.1°C

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Wiggins

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
Grosyntec Consultants	Beau Hodge	5-21-14	183849
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
2501 Blue Ridge Rd Suite 430	919-412-5118		
City / **State** / **Zip Code**	**Site Contact** / **Lab Contact**	**Analysis (Attach list if more space is needed)**	
Raleigh / NC	Rachel Donahue / Barbara Wyandt		
Project Name and Location (State)	**Carrier/Waybill Number**		
Duke - Sutton (NC)			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	metals-6010C	Hg-7471B	Ca,Diss-6010C	Sr,Ba,Mo,Fe-6010C	V-6010C	Cations-3660	Alkalinity-310.1	Nitrate/Nitrite-300	TDS-160.1	Special Instructions/ Conditions of Receipt
MW-36C-20140521	5/21/14	1230		X			4		1				X	X	X	X	X	X	X	X	X	include vanadium
MW-93C-20140521	5/21/14	1230		X			4		1				X	X	X	X	X	X	X	X	X	
MW-36B-20140521	5/21/14	1347		X			4		1				X	X	X	X	X	X	X	X	X	
MW-36B-20140521MS	5/21/14	1347		X			4		1				X	X	X	X	X	X	X	X	X	
MW-36B-20140521MSD	5/21/14	1347		X			4		1				X	X	X	X	X	X	X	X	X	
MW-6B-20140521	5/21/14	1508		X			4		1				X	X	X	X	X	X	X	X	X	
MW-6C-20140521	5/21/14	1552		X			4		1				X	X	X	X	X	X	X	X	X	
																						Samples in 2 coolers

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	5-21-14	1830	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By	5.22.14	925

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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Explanation of Symbols and Abbreviations

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The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

June 05, 2014

Project: Duke Sutton, NC

Submittal Date: 05/23/2014
Group Number: 1476634
SDG: DUK29
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
MW-27C-20140522 Groundwater Sample	7474661

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

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Analysis Report

Sample Description: MW-27C-20140522 Groundwater Sample
Duke Sutton

LL Sample # WW 7474661
LL Group # 1476634
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/22/2014 17:25

Submitted: 05/23/2014 09:50
Reported: 06/05/2014 12:40

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS27C SDG#: DUK29-01*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0456	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.517	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	25.2	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0022 J	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	1.09	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	5.05	0.0167	0.200	1
07058	Manganese	7439-96-5	0.342	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0019 J	0.0015	0.0200	1
01762	Potassium	7440-09-7	8.44	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0550	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	50.2	0.835	10.0	5
08068	Strontium	7440-24-6	0.294	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.0039 J	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0174 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	52.3	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	0.74	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	96.9	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	8.1	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	258	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-27C-20140522 Groundwater Sample
Duke Sutton

LL Sample # WW 7474661
LL Group # 1476634
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/22/2014 17:25

Submitted: 05/23/2014 09:50
Reported: 06/05/2014 12:40

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS27C SDG#: DUK29-01*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07061	Nickel	SW-846 6010C	3	141540635003	06/04/2014 13:04	Joanne M Gates	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/30/2014 18:14	Katlin N Cataldi	5
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:29	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 09:07	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	2	141540635003	06/04/2014 07:00	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14143347602A	05/23/2014 22:34	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14143347602A	05/24/2014 23:28	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14143347602A	05/23/2014 22:34	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14143347602A	05/23/2014 22:34	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14143347602A	05/24/2014 23:28	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	1	14147002102B	05/27/2014 16:39	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14147021201A	05/27/2014 08:54	Yolunder Y Bunch	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476634
Reported: 06/05/14 at 12:40 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141470635001	Sample number(s): 7474661								
Antimony	N.D.	0.0053	0.0400	mg/l	107		88-111		
Arsenic	N.D.	0.0068	0.0400	mg/l	108		90-113		
Barium	N.D.	0.00033	0.0100	mg/l	106		90-110		
Beryllium	N.D.	0.00067	0.0100	mg/l	104		90-111		
Boron	N.D.	0.0084	0.100	mg/l	98		90-110		
Cadmium	N.D.	0.00076	0.0100	mg/l	110		90-112		
Calcium	N.D.	0.0334	0.400	mg/l	107		90-112		
Chromium	N.D.	0.0016	0.0300	mg/l	104		90-110		
Copper	N.D.	0.0027	0.0200	mg/l	108		90-112		
Iron	N.D.	0.0430	0.400	mg/l	108		90-112		
Lead	N.D.	0.0047	0.0300	mg/l	115		88-116		
Magnesium	N.D.	0.0167	0.200	mg/l	105		89-110		
Manganese	N.D.	0.00083	0.0100	mg/l	107		90-110		
Molybdenum	N.D.	0.0017	0.0200	mg/l	108		90-110		
Potassium	N.D.	0.0980	1.00	mg/l	103		90-110		
Selenium	N.D.	0.0084	0.0400	mg/l	110		89-113		
Silver	N.D.	0.0021	0.0100	mg/l	114		80-120		
Sodium	N.D.	0.167	2.00	mg/l	105		87-114		
Strontium	N.D.	0.00033	0.0100	mg/l	107		90-110		
Thallium	N.D.	0.0054	0.0600	mg/l	112		90-118		
Vanadium	N.D.	0.0020	0.0100	mg/l	106		90-110		
Zinc	0.0024 J	0.0020	0.0400	mg/l	110		90-110		
Batch number: 141475713002	Sample number(s): 7474661								
Mercury	N.D.	0.00006 0	0.00020	mg/l	94		80-120		
Batch number: 141540635003	Sample number(s): 7474661								
Nickel	N.D.	0.0015	0.0200	mg/l	103		90-111		
Batch number: 14143347602A	Sample number(s): 7474661								
Bromide	N.D.	0.40	0.50	mg/l	96		90-110		
Chloride	N.D.	0.20	0.40	mg/l	96		90-110		
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	97		90-110		
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	97		90-110		
Sulfate	N.D.	0.30	1.0	mg/l	97		90-110		
Batch number: 14147002102B	Sample number(s): 7474661								
Total Alkalinity	0.73 J	0.70	2.0	mg/l as CaCO3	97		90-110		
Batch number: 14147021201A	Sample number(s): 7474661								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	93		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476634
Reported: 06/05/14 at 12:40 PM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141470635001	Sample number(s): 7474661 UNSPK: P473019 BKG: P473019								
Antimony	105	108	76-122	3	20	N.D.	N.D.	0 (1)	20
Arsenic	107	110	81-123	3	20	N.D.	N.D.	0 (1)	20
Barium	100	104	78-125	4	20	0.153	0.167	9	20
Beryllium	101	104	87-114	3	20	N.D.	N.D.	0 (1)	20
Boron	96	99	87-111	3	20	0.528	0.574	8	20
Cadmium	105	108	75-122	2	20	N.D.	N.D.	0 (1)	20
Calcium	78 (2)	113 (2)	75-125	3	20	44.1	43.8	1	20
Chromium	100	103	76-120	3	20	N.D.	N.D.	0 (1)	20
Copper	103	107	86-122	3	20	N.D.	N.D.	0 (1)	20
Iron	104	110	75-125	4	20	0.276 J	0.287 J	4 (1)	20
Lead	109	112	75-125	3	20	N.D.	N.D.	0 (1)	20
Magnesium	90	105	81-118	3	20	6.83	6.75	1	20
Manganese	101	105	75-125	4	20	0.0016 J	0.0019 J	13 (1)	20
Molybdenum	104	108	89-117	3	20	0.132	0.129	2	20
Potassium	100	107	77-128	3	20	10.9	10.8	0	20
Selenium	99	103	75-125	3	20	0.0268 J	0.0261 J	2 (1)	20
Silver	107	111	75-125	4	20	N.D.	N.D.	0 (1)	20
Sodium	94 (2)	107 (2)	84-117	2	20	46.3	45.8	1	20
Strontium	100	104	88-117	3	20	0.546	0.597	9	20
Thallium	104	107	75-125	3	20	N.D.	N.D.	0 (1)	20
Vanadium	103	106	90-117	3	20	0.0023 J	0.0025 J	9 (1)	20
Zinc	105	108	85-117	3	20	0.0077 J	0.0059 J	27* (1)	20
Batch number: 141475713002	Sample number(s): 7474661 UNSPK: P473019 BKG: P473019								
Mercury	94	92	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: 141540635003	Sample number(s): 7474661 UNSPK: 7474661 BKG: 7474661								
Nickel	99	102	79-123	2	20	0.0019 J	0.0025 J	27* (1)	20
Batch number: 14143347602A	Sample number(s): 7474661 UNSPK: P474569 BKG: P474569								
Bromide	97		90-110			N.D.	N.D.	0 (1)	20
Chloride	90		90-110			290	292	1	20
Nitrate Nitrogen	98		90-110			N.D.	N.D.	0 (1)	20
Nitrite Nitrogen	91		90-110			N.D.	N.D.	0 (1)	20
Sulfate	92		90-110			219	216	1 (1)	20
Batch number: 14147002102B	Sample number(s): 7474661 UNSPK: P474252 BKG: 7474661								
Total Alkalinity	46	42	17-146	5	5	8.1	8.4	3 (1)	5
Batch number: 14147021201A	Sample number(s): 7474661 UNSPK: P474252 BKG: P474252								
Total Dissolved Solids	80		66-131			547	573	5	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476634
Reported: 06/05/14 at 12:40 PM

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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[redacted]

10634
14766 34
7474661

Chain of Custody Record

Sampler ID _____

Temperature on Receipt 2.3 °C

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client: Geosyntec Consultants	Project Manager: Beau Hodge	Date: 5-22-14	Chain of Custody Number: 183839
Address: 2501 Blue Ridge Rd Suite 430	Telephone Number (Area Code)/Fax Number: 919-412-5118	Lab Number:	Page 1 of 1
City: Raleigh / State: NC / Zip Code: 27607	Site Contact: Rachel Donahue	Lab Contact: Barbara Weyandt	
Project Name and Location (State): Duke-Sutton (NC)	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis (Attach list if more space is needed): Metals-6010B	Hg-7470A	Major cations-6010B	Major anions (Unf)-300.0	Sr-90, Ra-226, Ra-228	TDS	Tritium	Nitrate / Nitrite	Alkalinity
MW-27C-20140522	5-22-14	1715		X			4		1				X	X	X	X	X	X	X	X	X

Special Instructions/ Conditions of Receipt

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	5-22-14	1845	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By	5/23/14	0950

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

May 30, 2014

Project: Duke Sutton, NC

Submittal Date: 05/24/2014
Group Number: 1476947
SDG: DUK30
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
MW-5B-20140523 Groundwater Sample	7476605
MW-2B-20140523 Groundwater Sample	7476606
MW-2C-20140523 Groundwater Sample	7476607

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: MW-5B-20140523 Groundwater Sample
Duke Sutton

LL Sample # WW 7476605
LL Group # 1476947
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/23/2014 12:12

Submitted: 05/24/2014 09:30
Reported: 05/30/2014 18:07

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM5B SDG#: DUK30-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0445	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0134 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	0.948	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.700	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.444	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0320	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	1.02	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	2.02	0.167	2.00	1
08068	Strontium	7440-24-6	0.0099 J	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0087 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	3.7	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	5.4	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	N.D.	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	10.0 J	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-5B-20140523 Groundwater Sample
Duke Sutton

LL Sample # WW 7476605
LL Group # 1476947
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/23/2014 12:12

Submitted: 05/24/2014 09:30
Reported: 05/30/2014 18:07

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM5B SDG#: DUK30-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
08068	Strontium	SW-846 6010C	1	141470635001	05/30/2014 09:16	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:32	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 09:09	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14144987601A	05/24/2014 21:02	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14144987601A	05/24/2014 21:02	Sandra J Miller	5
00368	Nitrate Nitrogen	EPA 300.0	1	14144987601A	05/24/2014 21:02	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14144987601A	05/24/2014 21:02	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14144987601A	05/24/2014 21:02	Sandra J Miller	5
12150	Total Alkalinity	EPA 310.1	1	14147002102A	05/27/2014 17:05	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14149021202B	05/29/2014 11:47	Noah M Rainbow	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-2B-20140523 Groundwater Sample
Duke Sutton

LL Sample # WW 7476606
LL Group # 1476947
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/23/2014 11:30

Submitted: 05/24/2014 09:30
Reported: 05/30/2014 18:07

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM2B SDG#: DUK30-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0026 J	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0185 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	2.87	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.0781 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.574	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0080 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0080 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.851 J	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	2.58	0.167	2.00	1
08068	Strontium	7440-24-6	0.0526	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0021 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	4.2	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	0.41 J	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	3.6 J	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	5.3	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	18.0 J	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-2B-20140523 Groundwater Sample
Duke Sutton

LL Sample # WW 7476606
LL Group # 1476947
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/23/2014 11:30

Submitted: 05/24/2014 09:30
Reported: 05/30/2014 18:07

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM2B SDG#: DUK30-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
08068	Strontium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:36	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 09:11	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14144987601A	05/24/2014 20:14	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14144987601A	05/24/2014 20:14	Sandra J Miller	5
00368	Nitrate Nitrogen	EPA 300.0	1	14144987601A	05/24/2014 20:14	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14144987601A	05/24/2014 20:14	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14144987601A	05/24/2014 20:14	Sandra J Miller	5
12150	Total Alkalinity	EPA 310.1	1	14147002102A	05/27/2014 17:12	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14149021202B	05/29/2014 11:47	Noah M Rainbow	1

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Analysis Report

Sample Description: MW-2C-20140523 Groundwater Sample
Duke Sutton

LL Sample # WW 7476607
LL Group # 1476947
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/23/2014 11:22

Submitted: 05/24/2014 09:30
Reported: 05/30/2014 18:07

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM2C SDG#: DUK30-03*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.278	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0806	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	3.02	0.0420	0.500	5
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	109	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	9.51	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	28.5	0.0167	0.200	1
07058	Manganese	7439-96-5	0.375	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.294	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	19.5	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	36.6	0.167	2.00	1
08068	Strontium	7440-24-6	3.10	0.0017	0.0500	5
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0087 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	42.1	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	130	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	269	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	542	19.4	60.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-2C-20140523 Groundwater Sample
Duke Sutton

LL Sample # WW 7476607
LL Group # 1476947
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/23/2014 11:22

Submitted: 05/24/2014 09:30
Reported: 05/30/2014 18:07

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM2C SDG#: DUK30-03*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07035	Arsenic	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07046	Barium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07047	Beryllium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
08014	Boron	SW-846 6010C	1	141470635001	05/30/2014 09:28	Eric L Eby	5
07049	Cadmium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
01750	Calcium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07051	Chromium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07053	Copper	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
01754	Iron	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07055	Lead	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
01757	Magnesium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07058	Manganese	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07060	Molybdenum	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07061	Nickel	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
01762	Potassium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07036	Selenium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07066	Silver	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
01767	Sodium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
08068	Strontium	SW-846 6010C	1	141470635001	05/30/2014 09:28	Eric L Eby	5
07022	Thallium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07071	Vanadium	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
07072	Zinc	SW-846 6010C	1	141470635001	05/29/2014 13:40	Eric L Eby	1
00259	Mercury	SW-846 7470A	1	141475713002	05/29/2014 09:13	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141470635001	05/28/2014 10:00	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141475713002	05/28/2014 11:32	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14144987601A	05/24/2014 21:18	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14144987601A	05/27/2014 19:31	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14144987601A	05/24/2014 21:18	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14144987601A	05/24/2014 21:18	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14144987601A	05/27/2014 19:31	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	1	14147002102A	05/27/2014 15:37	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14149021202B	05/29/2014 11:47	Noah M Rainbow	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476947
Reported: 05/30/14 at 06:07 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141470635001	Sample number(s): 7476605-7476607								
Antimony	N.D.	0.0053	0.0400	mg/l	107		88-111		
Arsenic	N.D.	0.0068	0.0400	mg/l	108		90-113		
Barium	N.D.	0.00033	0.0100	mg/l	106		90-110		
Beryllium	N.D.	0.00067	0.0100	mg/l	104		90-111		
Boron	N.D.	0.0084	0.100	mg/l	98		90-110		
Cadmium	N.D.	0.00076	0.0100	mg/l	110		90-112		
Calcium	N.D.	0.0334	0.400	mg/l	107		90-112		
Chromium	N.D.	0.0016	0.0300	mg/l	104		90-110		
Copper	N.D.	0.0027	0.0200	mg/l	108		90-112		
Iron	N.D.	0.0430	0.400	mg/l	108		90-112		
Lead	N.D.	0.0047	0.0300	mg/l	115		88-116		
Magnesium	N.D.	0.0167	0.200	mg/l	105		89-110		
Manganese	N.D.	0.00083	0.0100	mg/l	107		90-110		
Molybdenum	N.D.	0.0017	0.0200	mg/l	108		90-110		
Nickel	N.D.	0.0015	0.0200	mg/l	116*		90-111		
Potassium	N.D.	0.0980	1.00	mg/l	103		90-110		
Selenium	N.D.	0.0084	0.0400	mg/l	110		89-113		
Silver	N.D.	0.0021	0.0100	mg/l	114		80-120		
Sodium	N.D.	0.167	2.00	mg/l	105		87-114		
Strontium	N.D.	0.00033	0.0100	mg/l	107		90-110		
Thallium	N.D.	0.0054	0.0600	mg/l	112		90-118		
Vanadium	N.D.	0.0020	0.0100	mg/l	106		90-110		
Zinc	0.0024 J	0.0020	0.0400	mg/l	110		90-110		
Batch number: 141475713002	Sample number(s): 7476605-7476607								
Mercury	N.D.	0.00006 0	0.00020	mg/l	94		80-120		
Batch number: 14144987601A	Sample number(s): 7476605-7476607								
Bromide	N.D.	0.40	0.50	mg/l	96	96	90-110	0	20
Chloride	N.D.	0.20	0.40	mg/l	97	97	90-110	0	20
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	99	99	90-110	0	20
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	96	96	90-110	0	20
Sulfate	N.D.	0.30	1.0	mg/l	98	97	90-110	1	20
Batch number: 14147002102A	Sample number(s): 7476605-7476607								
Total Alkalinity	0.73 J	0.70	2.0	mg/l as CaCO3	97		90-110		
Batch number: 14149021202B	Sample number(s): 7476605-7476607								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	95		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476947
Reported: 05/30/14 at 06:07 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141470635001	Sample number(s): 7476605-7476607 UNSPK: P473019 BKG: P473019								
Antimony	105	108	76-122	3	20	N.D.	N.D.	0 (1)	20
Arsenic	107	110	81-123	3	20	N.D.	N.D.	0 (1)	20
Barium	100	104	78-125	4	20	0.153	0.167	9	20
Beryllium	101	104	87-114	3	20	N.D.	N.D.	0 (1)	20
Boron	96	99	87-111	3	20	0.528	0.574	8	20
Cadmium	105	108	75-122	2	20	N.D.	N.D.	0 (1)	20
Calcium	78 (2)	113 (2)	75-125	3	20	44.1	43.8	1	20
Chromium	100	103	76-120	3	20	N.D.	N.D.	0 (1)	20
Copper	103	107	86-122	3	20	N.D.	N.D.	0 (1)	20
Iron	104	110	75-125	4	20	0.276 J	0.287 J	4 (1)	20
Lead	109	112	75-125	3	20	N.D.	N.D.	0 (1)	20
Magnesium	90	105	81-118	3	20	6.83	6.75	1	20
Manganese	101	105	75-125	4	20	0.0016 J	0.0019 J	13 (1)	20
Molybdenum	104	108	89-117	3	20	0.132	0.129	2	20
Nickel	109	112	79-123	3	20	N.D.	N.D.	0 (1)	20
Potassium	100	107	77-128	3	20	10.9	10.8	0	20
Selenium	99	103	75-125	3	20	0.0268 J	0.0261 J	2 (1)	20
Silver	107	111	75-125	4	20	N.D.	N.D.	0 (1)	20
Sodium	94 (2)	107 (2)	84-117	2	20	46.3	45.8	1	20
Strontium	100	104	88-117	3	20	0.546	0.597	9	20
Thallium	104	107	75-125	3	20	N.D.	N.D.	0 (1)	20
Vanadium	103	106	90-117	3	20	0.0023 J	0.0025 J	9 (1)	20
Zinc	105	108	85-117	3	20	0.0077 J	0.0059 J	27* (1)	20
Batch number: 141475713002	Sample number(s): 7476605-7476607 UNSPK: P473019 BKG: P473019								
Mercury	94	92	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: 14144987601A	Sample number(s): 7476605-7476607 UNSPK: 7476606 BKG: 7476606								
Bromide	90		90-110			N.D.	N.D.	0 (1)	20
Chloride	89*		90-110			4.2	4.1	2 (1)	20
Nitrate Nitrogen	90		90-110			0.41 J	0.39 J	5 (1)	20
Nitrite Nitrogen	92		90-110			N.D.	N.D.	0 (1)	20
Sulfate	90		90-110			3.6 J	3.6 J	1 (1)	20
Batch number: 14147002102A	Sample number(s): 7476605-7476607 UNSPK: P474252 BKG: P474252								
Total Alkalinity	46	42	17-146	5	5	38.9	39.3	1	5
Batch number: 14149021202B	Sample number(s): 7476605-7476607 UNSPK: P476603 BKG: 7476607								
Total Dissolved Solids	98		66-131			542	543	0	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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[redacted]

Chain of Custody Record

10634
1476947
7476605-07

Sampler ID _____

Temperature on Receipt 1.6

Drinking Water? Yes ☐ No ☒

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TAL-4124-280 (0508)

Client: Geosyntec Consultants	Project Manager: Beau Hodge	Date: 5-23-14	Chain of Custody Number: 183840
Address: 2501 Blue Ridge Rd Suite 430	Telephone Number (Area Code)/Fax Number: 919-412-5718	Lab Number:	Page 1 of 1
City: Raleigh / State: NC / Zip Code: 27607	Site Contact: Rachel Donahue	Lab Contact: Barbara Wainwright	Analysis (Attach list if more space is needed)
Project Name and Location (State): Duke-Sutton (NC)	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: Filtered 45 lab Hg - 7470A	Mn (6010B)	Sr, B, Ba, Mo, Fe	Vanadium	TDS	Cl, sulfate, alkalinity	Major Cations -
MW-5B-20140523	5-23-14	~~0935~~ 1212 PD		X			4		1				X	X	X	X	X	X	X
MW-2B-20140523	5-23-14	1130		X			4		1				X	X	X	X	X	X	X
MW-2C-20140523	5-23-14	1122		X			4		1				X	X	X	X	X	X	X

Special Instructions/ Conditions of Receipt

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	5-23-14	1600	1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By	5/24/14	930

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

June 04, 2014

Project: Duke Sutton, NC

Submittal Date: 05/24/2014
Group Number: 1476968
SDG: DUK31
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
SS-GP3(76.0-80.0)-20140520 Grab Solid Sample	7476720
SS-GP3(76.0-80.0)-20140520 Grab Solid Sample	7476721
SS-GP3(80.0-84.0)-20140520 Grab Solid Sample	7476722
SS-GP3(80.0-84.0)-20140520 Grab Solid Sample	7476723
SS-GP3(72.0-76.0)-20140520 Grab Solid Sample	7476724
SS-GP3(72.0-76.0)-20140520 Grab Solid Sample	7476725
SS-GP3(24.0-28.0)-20140520 Grab Solid Sample	7476726
SS-GP3(24.0-28.0)-20140520 Grab Solid Sample	7476727
SS-GP2(72.0-76.0)-20140519 Grab Solid Sample	7476728
SS-GP2(72.0-76.0)-20140519 Grab Solid Sample	7476729
SS-GP2(52.0-56.0)-20140516 Grab Solid Sample	7476730
SS-GP2(52.0-56.0)-20140516 Grab Solid Sample	7476731
SS-GP5(20.0-24.0)-20140521 Grab Solid Sample	7476732
SS-GP5(20.0-24.0)-20140521 Grab Solid Sample	7476733
SS-GP6(24.0-28.0)-20140521 Grab Solid Sample	7476734
SS-GP6(24.0-28.0)-20140521 Grab Solid Sample	7476735

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: SS-GP3(76.0-80.0)-20140520 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476720
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 10:00 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3101 SDG#: DUK31-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	1.07	J	1.04	5.64	1
06935	Arsenic	7440-38-2	115		0.988	5.64	1
06946	Barium	7440-39-3	599		0.233	7.06	5
06947	Beryllium	7440-41-7	5.28		0.0945	1.41	1
07914	Boron	7440-42-8	57.1		1.19	14.1	1
06949	Cadmium	7440-43-9	N.D.		0.107	1.41	1
01650	Calcium	7440-70-2	3,270		4.62	55.4	1
06951	Chromium	7440-47-3	49.9		0.226	4.23	1
06953	Copper	7440-50-8	76.4		0.409	2.82	1
01654	Iron	7439-89-6	23,500		5.11	56.4	1
06955	Lead	7439-92-1	32.8		0.706	4.23	1
01657	Magnesium	7439-95-4	2,260		2.36	28.2	1
06958	Manganese	7439-96-5	107		0.117	1.41	1
06960	Molybdenum	7439-98-7	2.61	J	0.240	2.82	1
06961	Nickel	7440-02-0	46.0		0.183	2.82	1
01662	Potassium	7440-09-7	5,720		11.8	141	1
06936	Selenium	7782-49-2	7.34		1.13	5.64	1
06966	Silver	7440-22-4	N.D.		0.240	1.41	1
01667	Sodium	7440-23-5	699		23.6	282	1
07968	Strontium	7440-24-6	418		0.233	7.06	5
06925	Thallium	7440-28-0	1.58	J	0.734	8.47	1
06972	Zinc	7440-66-6	55.9		0.282	5.64	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.230	J	0.0143	0.285	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		5.8	7.3	1
07333	Chloride by IC (solid)	16887-00-6	15.4		7.3	14.5	1
07338	Sulfate by IC (solid)	14808-79-8	53.4		7.3	21.8	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.58		0.0100	0.0100	1
	The pH was measured in water at 22.2 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	31.2		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP3(76.0-80.0)-20140520 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476720
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 10:00 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3101 SDG#: DUK31-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06946	Barium	SW-846 6010C	1	141480637001	05/30/2014 10:24	Joanne M Gates	5
06947	Beryllium	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141510637001	06/02/2014 15:50	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06955	Lead	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141480637001	05/30/2014 10:24	Joanne M Gates	5
06925	Thallium	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141480637001	05/29/2014 16:57	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141470638002	05/29/2014 10:14	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141480637001	05/28/2014 22:42	Annamaria Kuhns	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	2	141510637001	06/02/2014 07:56	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141470638002	05/28/2014 11:05	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:04	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:04	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:04	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14149149202A	05/29/2014 20:45	James S Mathiot	1
00394	pH	SW-846 9045D modified	1	14148039401B	05/28/2014 21:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14149820002B	05/29/2014 18:33	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP3(76.0-80.0)-20140520 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476721
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 10:00 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3102 SDG#: DUK31-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0053 J	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.192	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0444	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.113	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	3.97	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0026 J	0.0016	0.0300	1
07053	Copper	7440-50-8	0.0031 J	0.0027	0.0200	1
01754	Iron	7439-89-6	0.117 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	1.33	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0050 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0054 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.278 J	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0340 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	4.64	0.167	2.00	1
08068	Strontium	7440-24-6	0.241	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	0.0044 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1

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Analysis Report

Sample Description: SS-GP3(76.0-80.0)-20140520 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476721
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 10:00 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3102 SDG#: DUK31-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 01:34	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 01:34	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:13	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 17:18	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP3(80.0-84.0)-20140520 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476722
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 10:20 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3103 SDG#: DUK31-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	1.15	J	0.907	4.90	1
06935	Arsenic	7440-38-2	58.9		0.858	4.90	1
06946	Barium	7440-39-3	477		0.404	12.3	10
06947	Beryllium	7440-41-7	3.62		0.0821	1.23	1
07914	Boron	7440-42-8	41.1		1.03	12.3	1
06949	Cadmium	7440-43-9	N.D.		0.0931	1.23	1
01650	Calcium	7440-70-2	3,000		4.05	48.5	1
06951	Chromium	7440-47-3	38.7		0.196	3.68	1
06953	Copper	7440-50-8	49.6		0.355	2.45	1
01654	Iron	7439-89-6	30,800		44.4	490	10
06955	Lead	7439-92-1	20.1		0.613	3.68	1
01657	Magnesium	7439-95-4	1,650		2.05	24.5	1
06958	Manganese	7439-96-5	105		0.102	1.23	1
06960	Molybdenum	7439-98-7	1.58	J	0.208	2.45	1
06961	Nickel	7440-02-0	33.1		0.159	2.45	1
01662	Potassium	7440-09-7	3,860		10.2	123	1
06936	Selenium	7782-49-2	3.89	J	0.980	4.90	1
06966	Silver	7440-22-4	N.D.		0.208	1.23	1
01667	Sodium	7440-23-5	475		20.5	245	1
07968	Strontium	7440-24-6	317		0.404	12.3	10
06925	Thallium	7440-28-0	1.22	J	0.637	7.35	1
06972	Zinc	7440-66-6	35.9		0.245	4.90	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.101	J	0.0118	0.235	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		5.0	6.3	1
07333	Chloride by IC (solid)	16887-00-6	7.0	J	6.3	12.6	1
07338	Sulfate by IC (solid)	14808-79-8	22.3		6.3	18.9	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.49		0.0100	0.0100	1
	The pH was measured in water at 22.2 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	20.0		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP3(80.0-84.0)-20140520 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476722
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 10:20 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3103 SDG#: DUK31-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06946	Barium	SW-846 6010C	1	141480637001	05/30/2014 10:36	Joanne M Gates	10
06947	Beryllium	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141510637001	06/02/2014 16:35	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141480637001	05/30/2014 10:36	Joanne M Gates	10
06955	Lead	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141480637001	05/30/2014 10:36	Joanne M Gates	10
06925	Thallium	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141480637001	05/29/2014 17:01	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141470638002	05/29/2014 10:32	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141480637001	05/28/2014 22:42	Annamaria Kuhns	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	2	141510637001	06/02/2014 07:56	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141470638002	05/28/2014 11:05	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:20	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:20	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:20	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14149149202A	05/29/2014 20:45	James S Mathiot	1
00394	pH	SW-846 9045D modified	1	14148039401B	05/28/2014 21:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14149820002B	05/29/2014 18:33	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP3(80.0-84.0)-20140520 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476723
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 10:20 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3104 SDG#: DUK31-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.151	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0547	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.125	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	3.55	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0055 J	0.0016	0.0300	1
07053	Copper	7440-50-8	0.0074 J	0.0027	0.0200	1
01754	Iron	7439-89-6	0.546	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	1.17	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0039 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0098 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0017 J	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.123 J	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0187 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	5.56	0.167	2.00	1
08068	Strontium	7440-24-6	0.175	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	0.0077 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1

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Analysis Report

Sample Description: SS-GP3(80.0-84.0)-20140520 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476723
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 10:20 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3104 SDG#: DUK31-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 01:45	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 01:45	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:16	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 17:20	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP3(72.0-76.0)-20140520 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476724
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 09:50 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3105 SDG#: DUK31-05

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	1.19	J	1.04	5.64	1
06935	Arsenic	7440-38-2	104		0.987	5.64	1
06946	Barium	7440-39-3	785		0.465	14.1	10
06947	Beryllium	7440-41-7	5.68		0.0945	1.41	1
07914	Boron	7440-42-8	58.5		1.18	14.1	1
06949	Cadmium	7440-43-9	N.D.		0.107	1.41	1
01650	Calcium	7440-70-2	3,670		4.76	57.0	1
06951	Chromium	7440-47-3	44.3		0.226	4.23	1
06953	Copper	7440-50-8	68.5		0.409	2.82	1
01654	Iron	7439-89-6	23,700		5.11	56.4	1
06955	Lead	7439-92-1	28.4		0.705	4.23	1
01657	Magnesium	7439-95-4	2,350		2.36	28.2	1
06958	Manganese	7439-96-5	103		0.117	1.41	1
06960	Molybdenum	7439-98-7	2.24	J	0.240	2.82	1
06961	Nickel	7440-02-0	49.1		0.183	2.82	1
01662	Potassium	7440-09-7	6,410		11.8	141	1
06936	Selenium	7782-49-2	8.73		1.13	5.64	1
06966	Silver	7440-22-4	N.D.		0.240	1.41	1
01667	Sodium	7440-23-5	765		23.6	282	1
07968	Strontium	7440-24-6	426		0.233	7.05	5
06925	Thallium	7440-28-0	1.31	J	0.733	8.46	1
06972	Zinc	7440-66-6	48.2		0.282	5.64	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.173	J	0.0136	0.272	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		5.7	7.2	1
07333	Chloride by IC (solid)	16887-00-6	14.2	J	7.2	14.3	1
07338	Sulfate by IC (solid)	14808-79-8	34.5		7.2	21.5	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.50		0.0100	0.0100	1
	The pH was measured in water at 22.3 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	29.8		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: SS-GP3(72.0-76.0)-20140520 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476724
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 09:50 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3105 SDG#: DUK31-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06946	Barium	SW-846 6010C	1	141480637001	05/30/2014 11:01	Joanne M Gates	10
06947	Beryllium	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141510637001	06/02/2014 16:39	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06955	Lead	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141480637001	05/30/2014 10:49	Joanne M Gates	5
06925	Thallium	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141480637001	05/29/2014 17:06	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141470638002	05/29/2014 10:34	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141480637001	05/28/2014 22:42	Annamaria Kuhns	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	2	141510637001	06/02/2014 07:56	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141470638002	05/28/2014 11:05	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:36	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:36	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:36	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14149149202A	05/29/2014 20:45	James S Mathiot	1
00394	pH	SW-846 9045D modified	1	14148039401B	05/28/2014 21:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14149820002B	05/29/2014 18:33	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP3(72.0-76.0)-20140520 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476725
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 09:50 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3106 SDG#: DUK31-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0072 J	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.208	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0766	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.120	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	4.10	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0026 J	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.0891 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	1.02	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0012 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0034 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.197 J	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0333 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	4.65	0.167	2.00	1
08068	Strontium	7440-24-6	0.277	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	0.0025 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1

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Analysis Report

Sample Description: SS-GP3(72.0-76.0)-20140520 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476725
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 09:50 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3106 SDG#: DUK31-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 01:49	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 01:49	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:20	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 17:22	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP3(24.0-28.0)-20140520 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476726
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 08:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3107 SDG#: DUK31-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	1.54	J	1.02	5.49	1
06935	Arsenic	7440-38-2	60.4		0.961	5.49	1
06946	Barium	7440-39-3	384		0.227	6.87	5
06947	Beryllium	7440-41-7	7.55		0.0920	1.37	1
07914	Boron	7440-42-8	36.4		1.15	13.7	1
06949	Cadmium	7440-43-9	N.D.		0.104	1.37	1
01650	Calcium	7440-70-2	2,890		4.41	52.8	1
06951	Chromium	7440-47-3	41.3		0.220	4.12	1
06953	Copper	7440-50-8	74.7		0.398	2.75	1
01654	Iron	7439-89-6	15,300		4.97	54.9	1
06955	Lead	7439-92-1	32.4		0.687	4.12	1
01657	Magnesium	7439-95-4	1,700		2.29	27.5	1
06958	Manganese	7439-96-5	64.7		0.114	1.37	1
06960	Molybdenum	7439-98-7	5.92		0.233	2.75	1
06961	Nickel	7440-02-0	39.7		0.179	2.75	1
01662	Potassium	7440-09-7	3,610		11.5	137	1
06936	Selenium	7782-49-2	14.6		1.10	5.49	1
06966	Silver	7440-22-4	N.D.		0.233	1.37	1
01667	Sodium	7440-23-5	551		22.9	275	1
07968	Strontium	7440-24-6	327		0.227	6.87	5
06925	Thallium	7440-28-0	N.D.		0.714	8.24	1
06972	Zinc	7440-66-6	51.9		0.275	5.49	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.175	J	0.0130	0.261	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		5.6	7.0	1
07333	Chloride by IC (solid)	16887-00-6	13.9	J	7.0	13.9	1
07338	Sulfate by IC (solid)	14808-79-8	39.1		7.0	20.9	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.81		0.0100	0.0100	1
	The pH was measured in water at 22.4 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	27.9		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: SS-GP3(24.0-28.0)-20140520 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476726
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 08:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3107 SDG#: DUK31-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06946	Barium	SW-846 6010C	1	141480637001	05/30/2014 11:09	Joanne M Gates	5
06947	Beryllium	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141510637001	06/02/2014 16:43	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06955	Lead	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141480637001	05/30/2014 11:09	Joanne M Gates	5
06925	Thallium	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141480637001	05/29/2014 17:10	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141470638002	05/29/2014 10:36	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141480637001	05/28/2014 22:42	Annamaria Kuhns	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	2	141510637001	06/02/2014 07:56	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141470638002	05/28/2014 11:05	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:52	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:52	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 08:52	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14149149202A	05/29/2014 20:45	James S Mathiot	1
00394	pH	SW-846 9045D modified	1	14148039401B	05/28/2014 21:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14149820002B	05/29/2014 18:33	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP3(24.0-28.0)-20140520 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476727
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 08:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3108 SDG#: DUK31-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0140 J	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.0561	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0957	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0704 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	5.87	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.836	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0011 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.153	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.319 J	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0172 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	3.62	0.167	2.00	1
08068	Strontium	7440-24-6	0.179	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	0.0021 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1

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Analysis Report

Sample Description: SS-GP3(24.0-28.0)-20140520 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476727
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/20/2014 08:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3108 SDG#: DUK31-08

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 01:53	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 01:53	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:24	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 17:24	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP2(72.0-76.0)-20140519 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476728
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/19/2014 09:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3109 SDG#: DUK31-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	1.37	J	1.02	5.50	1
06935	Arsenic	7440-38-2	136		0.963	5.50	1
06946	Barium	7440-39-3	632		0.454	13.8	10
06947	Beryllium	7440-41-7	5.28		0.0921	1.38	1
07914	Boron	7440-42-8	66.4		1.16	13.8	1
06949	Cadmium	7440-43-9	N.D.		0.105	1.38	1
01650	Calcium	7440-70-2	5,210		4.68	56.1	1
06951	Chromium	7440-47-3	62.5		0.220	4.13	1
06953	Copper	7440-50-8	74.9		0.399	2.75	1
01654	Iron	7439-89-6	36,300		49.8	550	10
06955	Lead	7439-92-1	32.2		0.688	4.13	1
01657	Magnesium	7439-95-4	2,580		2.30	27.5	1
06958	Manganese	7439-96-5	126		0.114	1.38	1
06960	Molybdenum	7439-98-7	27.3		0.234	2.75	1
06961	Nickel	7440-02-0	85.2		0.179	2.75	1
01662	Potassium	7440-09-7	5,720		11.5	138	1
06936	Selenium	7782-49-2	6.44		1.10	5.50	1
06966	Silver	7440-22-4	N.D.		0.234	1.38	1
01667	Sodium	7440-23-5	822		23.0	275	1
07968	Strontium	7440-24-6	564		0.454	13.8	10
06925	Thallium	7440-28-0	N.D.		0.715	8.25	1
06972	Zinc	7440-66-6	66.3		0.275	5.50	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.109	J	0.0141	0.282	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		5.6	7.0	1
07333	Chloride by IC (solid)	16887-00-6	18.4		7.0	14.1	1
07338	Sulfate by IC (solid)	14808-79-8	85.5		7.0	21.1	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.56		0.0100	0.0100	1
	The pH was measured in water at 22.3 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	29.4		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP2(72.0-76.0)-20140519 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476728
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/19/2014 09:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3109 SDG#: DUK31-09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06946	Barium	SW-846 6010C	1	141480637001	05/30/2014 11:26	Joanne M Gates	10
06947	Beryllium	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141510637001	06/02/2014 16:47	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141480637001	05/30/2014 11:26	Joanne M Gates	10
06955	Lead	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141480637001	05/30/2014 11:26	Joanne M Gates	10
06925	Thallium	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141480637001	05/29/2014 17:14	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141470638002	05/29/2014 10:38	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141480637001	05/28/2014 22:42	Annamaria Kuhns	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	2	141510637001	06/02/2014 07:56	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141470638002	05/28/2014 11:05	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 09:08	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 09:08	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 09:08	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14149149202A	05/29/2014 20:45	James S Mathiot	1
00394	pH	SW-846 9045D modified	1	14148039401B	05/28/2014 21:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14149820002B	05/29/2014 18:33	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP2(72.0-76.0)-20140519 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476729
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/19/2014 09:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3110 SDG#: DUK31-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0060 J	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.258	0.0068	0.0400	1
07046	Barium	7440-39-3	0.146	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.340	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	8.24	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0204 J	0.0016	0.0300	1
07053	Copper	7440-50-8	0.0146 J	0.0027	0.0200	1
01754	Iron	7439-89-6	4.95	0.0430	0.400	1
07055	Lead	7439-92-1	0.0069 J	0.0047	0.0300	1
01757	Magnesium	7439-95-4	1.66	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0177	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.688	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0185 J	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.796 J	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	15.1	0.167	2.00	1
08068	Strontium	7440-24-6	0.228	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	0.0307 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1

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Analysis Report

Sample Description: SS-GP2(72.0-76.0)-20140519 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476729
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/19/2014 09:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3110 SDG#: DUK31-10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 01:56	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 01:56	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:27	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 17:26	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP2(52.0-56.0)-20140516 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476730
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/16/2014 15:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3111 SDG#: DUK31-11

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	1.16	J	1.01	5.45	1
06935	Arsenic	7440-38-2	119		0.953	5.45	1
06946	Barium	7440-39-3	954		0.449	13.6	10
06947	Beryllium	7440-41-7	6.99		0.0912	1.36	1
07914	Boron	7440-42-8	54.3		1.14	13.6	1
06949	Cadmium	7440-43-9	N.D.		0.103	1.36	1
01650	Calcium	7440-70-2	3,710		4.50	53.9	1
06951	Chromium	7440-47-3	54.2		0.218	4.09	1
06953	Copper	7440-50-8	72.7		0.395	2.72	1
01654	Iron	7439-89-6	33,900		24.6	272	5
06955	Lead	7439-92-1	34.9		0.681	4.09	1
01657	Magnesium	7439-95-4	2,890		2.27	27.2	1
06958	Manganese	7439-96-5	127		0.113	1.36	1
06960	Molybdenum	7439-98-7	1.85	J	0.231	2.72	1
06961	Nickel	7440-02-0	40.8		0.177	2.72	1
01662	Potassium	7440-09-7	7,690		56.8	681	5
06936	Selenium	7782-49-2	7.99		1.09	5.45	1
06966	Silver	7440-22-4	N.D.		0.231	1.36	1
01667	Sodium	7440-23-5	920		22.7	272	1
07968	Strontium	7440-24-6	493		0.225	6.81	5
06925	Thallium	7440-28-0	1.88	J	0.708	8.17	1
06972	Zinc	7440-66-6	57.9		0.272	5.45	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.110	J	0.0134	0.267	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		5.5	6.9	1
07333	Chloride by IC (solid)	16887-00-6	27.7		6.9	13.8	1
07338	Sulfate by IC (solid)	14808-79-8	41.5		6.9	20.6	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.23		0.0100	0.0100	1
	The pH was measured in water at 22.3 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	28.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: SS-GP2(52.0-56.0)-20140516 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476730
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/16/2014 15:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3111 SDG#: DUK31-11

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06946	Barium	SW-846 6010C	1	141480637001	05/30/2014 11:50	Joanne M Gates	10
06947	Beryllium	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141510637001	06/02/2014 16:51	Maria A Orrs	1
06951	Chromium	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141480637001	05/30/2014 11:38	Joanne M Gates	5
06955	Lead	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141480637001	05/30/2014 11:38	Joanne M Gates	5
06936	Selenium	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141480637001	05/30/2014 11:38	Joanne M Gates	5
06925	Thallium	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141480637001	05/29/2014 17:18	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141470638002	05/29/2014 10:40	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141480637001	05/28/2014 22:42	Annamaria Kuhns	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	2	141510637001	06/02/2014 07:56	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141470638002	05/28/2014 11:05	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 09:57	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 09:57	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 09:57	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14149149202A	05/29/2014 20:45	James S Mathiot	1
00394	pH	SW-846 9045D modified	1	14148039401B	05/28/2014 21:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14149820002B	05/29/2014 18:33	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP2(52.0-56.0)-20140516 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476731
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/16/2014 15:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3112 SDG#: DUK31-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.188	0.0068	0.0400	1
07046	Barium	7440-39-3	0.172	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0708 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	4.69	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0036 J	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.0492 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.584	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0021 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0039 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.680 J	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0327 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	3.02	0.167	2.00	1
08068	Strontium	7440-24-6	0.194	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	0.0034 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1

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Analysis Report

Sample Description: SS-GP2(52.0-56.0)-20140516 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476731
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/16/2014 15:30 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3112 SDG#: DUK31-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 02:00	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 02:00	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:31	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 18:40	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP5(20.0-24.0)-20140521 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476732
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 11:50 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3113 SDG#: DUK31-13

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.868	4.69	1
06935	Arsenic	7440-38-2	50.2		0.821	4.69	1
06946	Barium	7440-39-3	18.0		0.0387	1.17	1
06947	Beryllium	7440-41-7	2.97		0.0786	1.17	1
07914	Boron	7440-42-8	25.1		0.985	11.7	1
06949	Cadmium	7440-43-9	0.366	J	0.0892	1.17	1
01650	Calcium	7440-70-2	242		3.88	46.5	1
06951	Chromium	7440-47-3	24.6		0.188	3.52	1
06953	Copper	7440-50-8	27.7		0.340	2.35	1
01654	Iron	7439-89-6	216		4.25	46.9	1
06955	Lead	7439-92-1	14.1		0.587	3.52	1
01657	Magnesium	7439-95-4	1,290		1.96	23.5	1
06958	Manganese	7439-96-5	56.1		0.0974	1.17	1
06960	Molybdenum	7439-98-7	0.704	J	0.199	2.35	1
06961	Nickel	7440-02-0	17.3		0.153	2.35	1
01662	Potassium	7440-09-7	57.0	J	9.78	117	1
06936	Selenium	7782-49-2	N.D.		0.938	4.69	1
06966	Silver	7440-22-4	0.377	J	0.199	1.17	1
01667	Sodium	7440-23-5	415		19.6	235	1
07968	Strontium	7440-24-6	11.3		0.0387	1.17	1
06925	Thallium	7440-28-0	1.88	J	0.610	7.04	1
06972	Zinc	7440-66-6	25.8		0.235	4.69	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0113	0.226	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		4.8	5.9	1
07333	Chloride by IC (solid)	16887-00-6	35.6		5.9	11.9	1
07338	Sulfate by IC (solid)	14808-79-8	6.0	J	5.9	17.8	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.58		0.0100	0.0100	1
	The pH was measured in water at 22.3 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	15.6		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP5(20.0-24.0)-20140521 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476732
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 11:50 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3113 SDG#: DUK31-13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
06946	Barium	SW-846 6010C	2	141480637001	05/31/2014 09:19	Katlin N Cataldi	1
06947	Beryllium	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
07914	Boron	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	141510637001	06/03/2014 11:06	Eric L Eby	1
06951	Chromium	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
06953	Copper	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
01654	Iron	SW-846 6010C	2	141480637001	05/31/2014 09:19	Katlin N Cataldi	1
06955	Lead	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
01657	Magnesium	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
06958	Manganese	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
06961	Nickel	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
01662	Potassium	SW-846 6010C	2	141480637001	05/31/2014 09:19	Katlin N Cataldi	1
06936	Selenium	SW-846 6010C	2	141480637001	05/31/2014 09:19	Katlin N Cataldi	1
06966	Silver	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
01667	Sodium	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
07968	Strontium	SW-846 6010C	2	141480637001	05/31/2014 09:19	Katlin N Cataldi	1
06925	Thallium	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
06972	Zinc	SW-846 6010C	2	141480637001	05/30/2014 11:58	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141470638002	05/29/2014 10:42	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141480637001	05/28/2014 22:42	Annamaria Kuhns	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	2	141510637001	06/02/2014 07:56	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141470638002	05/28/2014 11:05	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 10:13	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 10:13	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 10:13	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14149149202A	05/29/2014 20:45	James S Mathiot	1
00394	pH	SW-846 9045D modified	1	14148039401B	05/28/2014 21:10	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14149820002B	05/29/2014 18:33	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP5(20.0-24.0)-20140521 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476733
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 11:50 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3114 SDG#: DUK31-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.0120 J	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0366	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0699 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	1.88	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0019 J	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.227 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.536	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0040 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0084 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.136 J	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	6.62	0.167	2.00	1
08068	Strontium	7440-24-6	0.0323	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	0.0064 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1

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Analysis Report

Sample Description: SS-GP5(20.0-24.0)-20140521 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476733
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 11:50 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3114 SDG#: DUK31-14

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 02:04	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 02:04	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:35	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 18:42	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP6(24.0-28.0)-20140521 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476734
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 14:00 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3115 SDG#: DUK31-15

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.837	4.52	1
06935	Arsenic	7440-38-2	2.06	J	0.792	4.52	1
06946	Barium	7440-39-3	1.92		0.0373	1.13	1
06947	Beryllium	7440-41-7	N.D.		0.0758	1.13	1
07914	Boron	7440-42-8	7.79	J	0.950	11.3	1
06949	Cadmium	7440-43-9	N.D.		0.0859	1.13	1
01650	Calcium	7440-70-2	64.7		3.67	43.9	1
06951	Chromium	7440-47-3	0.727	J	0.181	3.39	1
06953	Copper	7440-50-8	N.D.		0.328	2.26	1
01654	Iron	7439-89-6	424		4.09	45.2	1
01657	Magnesium	7439-95-4	37.1		1.89	22.6	1
06958	Manganese	7439-96-5	2.45		0.0939	1.13	1
06960	Molybdenum	7439-98-7	N.D.		0.192	2.26	1
06961	Nickel	7440-02-0	0.401	J	0.147	2.26	1
01662	Potassium	7440-09-7	42.9	J	9.43	113	1
06936	Selenium	7782-49-2	N.D.		0.905	4.52	1
06966	Silver	7440-22-4	N.D.		0.192	1.13	1
01667	Sodium	7440-23-5	N.D.		18.9	226	1
07968	Strontium	7440-24-6	2.12		0.0362	1.10	1
06925	Thallium	7440-28-0	N.D.		0.588	6.78	1
06972	Zinc	7440-66-6	1.10	J	0.226	4.52	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0115	0.230	1
Wet Chemistry	**EPA 300.0**		**mg/kg**		**mg/kg**	**mg/kg**	
07335	Bromide by IC (solid)	24959-67-9	N.D.		4.7	5.8	1
07333	Chloride by IC (solid)	16887-00-6	17.0		5.8	11.7	1
07338	Sulfate by IC (solid)	14808-79-8	18.2		5.8	17.5	1
	SW-846 9045D modified		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.87		0.0100	0.0100	1
	The pH was measured in water at 21.9 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	13.3		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP6(24.0-28.0)-20140521 Grab Solid Sample
Duke Sutton

LL Sample # SW 7476734
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 14:00 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3115 SDG#: DUK31-15

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06935	Arsenic	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06946	Barium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06947	Beryllium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
07914	Boron	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06949	Cadmium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
01650	Calcium	SW-846 6010C	1	141510637001	06/03/2014 11:10	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06953	Copper	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
01654	Iron	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
01657	Magnesium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06958	Manganese	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06960	Molybdenum	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06961	Nickel	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
01662	Potassium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06936	Selenium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06966	Silver	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
01667	Sodium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
07968	Strontium	SW-846 6010C	1	141510637001	06/02/2014 16:59	Maria A Orrs	1
06925	Thallium	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
06972	Zinc	SW-846 6010C	1	141480637001	05/29/2014 17:27	Maria A Orrs	1
00159	Mercury	SW-846 7471B	1	141470638002	05/29/2014 10:44	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141480637001	05/28/2014 22:42	Annamaria Kuhns	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	2	141510637001	06/02/2014 07:56	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141470638002	05/28/2014 11:05	Denise K Conners	1
07335	Bromide by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 07:15	Sandra J Miller	1
07333	Chloride by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 07:15	Sandra J Miller	1
07338	Sulfate by IC (solid)	EPA 300.0	1	14149149202A	05/30/2014 07:15	Sandra J Miller	1
01352	Deionized Water Extraction	EPA 300.0	1	14149149202A	05/29/2014 20:45	James S Mathiot	1
00394	pH	SW-846 9045D modified	1	14148039402A	05/28/2014 22:00	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14149820002B	05/29/2014 18:33	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP6(24.0-28.0)-20140521 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476735
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 14:00 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3116 SDG#: DUK31-16*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	0.0102 J	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0327	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0498 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	1.23	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.552	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.487	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0018 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.124 J	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	3.40	0.167	2.00	1
08068	Strontium	7440-24-6	0.0255	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07072	Zinc	7440-66-6	0.0062 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07035	Arsenic	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07046	Barium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07047	Beryllium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
08014	Boron	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07049	Cadmium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
01750	Calcium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07051	Chromium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP6(24.0-28.0)-20140521 Grab Solid Sample
SPLP Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7476735
LL Group # 1476968
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/21/2014 14:00 by WS

Submitted: 05/24/2014 09:30
Reported: 06/04/2014 13:01

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

D3116 SDG#: DUK31-16*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
01754	Iron	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07055	Lead	SW-846 6010C	1	141500636002	06/04/2014 02:07	John W Yanzuk II	1
01757	Magnesium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07058	Manganese	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07060	Molybdenum	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07061	Nickel	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
01762	Potassium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07036	Selenium	SW-846 6010C	1	141500636002	06/04/2014 02:07	John W Yanzuk II	1
07066	Silver	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
01767	Sodium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
08068	Strontium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07022	Thallium	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
07072	Zinc	SW-846 6010C	1	141500636002	06/02/2014 22:38	John W Yanzuk II	1
00259	Mercury	SW-846 7470A	1	141505713007	06/03/2014 18:44	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141500636002	06/02/2014 09:08	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713007	06/02/2014 11:37	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14149-2486-1567	05/29/2014 12:00	Christina A Huber	n.a.

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476968
Reported: 06/04/14 at 01:01 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141470638002	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734								
Mercury	N.D.	0.0100	0.200	mg/kg	92		80-120		
Batch number: 141480637001	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734								
Antimony	N.D.	0.740	4.00	mg/kg	106		80-120		
Arsenic	N.D.	0.700	4.00	mg/kg	106		80-120		
Barium	0.0830 J	0.0330	1.00	mg/kg	102		80-120		
Beryllium	N.D.	0.0670	1.00	mg/kg	102		80-120		
Boron	4.92 J	0.840	10.0	mg/kg	101		80-120		
Cadmium	N.D.	0.0760	1.00	mg/kg	105		80-120		
Chromium	N.D.	0.160	3.00	mg/kg	101		80-120		
Copper	N.D.	0.290	2.00	mg/kg	106		80-120		
Iron	N.D.	3.62	40.0	mg/kg	106		80-120		
Lead	N.D.	0.500	3.00	mg/kg	111		80-120		
Magnesium	N.D.	1.67	20.0	mg/kg	100		80-120		
Manganese	N.D.	0.0830	1.00	mg/kg	105		80-120		
Molybdenum	N.D.	0.170	2.00	mg/kg	104		80-120		
Nickel	N.D.	0.130	2.00	mg/kg	110		80-120		
Potassium	N.D.	8.34	100	mg/kg	99		80-120		
Selenium	N.D.	0.800	4.00	mg/kg	102		80-120		
Silver	N.D.	0.170	1.00	mg/kg	110		80-120		
Sodium	N.D.	16.7	200	mg/kg	99		80-120		
Strontium	0.593 J	0.0330	1.00	mg/kg	105		80-120		
Thallium	N.D.	0.520	6.00	mg/kg	107		80-120		
Zinc	N.D.	0.200	4.00	mg/kg	104		80-120		
Batch number: 141500636002	Sample number(s): 7476721,7476723,7476725,7476727,7476729,7476731,7476733,7476735								
Antimony	N.D.	0.0053	0.0400	mg/l	104		80-120		
Arsenic	N.D.	0.0068	0.0400	mg/l	103		80-120		
Barium	N.D.	0.00033	0.0100	mg/l	99		80-120		
Beryllium	N.D.	0.00067	0.0100	mg/l	99		80-120		
Boron	N.D.	0.0084	0.100	mg/l	94		80-120		
Cadmium	N.D.	0.00076	0.0100	mg/l	102		80-120		
Calcium	N.D.	0.0334	0.400	mg/l	103		80-120		
Chromium	N.D.	0.0016	0.0300	mg/l	100		80-120		
Copper	N.D.	0.0027	0.0200	mg/l	102		80-120		
Iron	N.D.	0.0430	0.400	mg/l	102		80-120		
Lead	N.D.	0.0047	0.0300	mg/l	109		80-120		
Magnesium	N.D.	0.0167	0.200	mg/l	100		80-120		
Manganese	N.D.	0.00083	0.0100	mg/l	100		80-120		
Molybdenum	N.D.	0.0017	0.0200	mg/l	103		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476968
Reported: 06/04/14 at 01:01 PM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Nickel	N.D.	0.0015	0.0200	mg/l	106		80-120		
Potassium	N.D.	0.0980	1.00	mg/l	102		80-120		
Selenium	N.D.	0.0084	0.0400	mg/l	98		80-120		
Silver	N.D.	0.0021	0.0100	mg/l	104		80-120		
Sodium	0.479 J	0.167	2.00	mg/l	105		80-120		
Strontium	N.D.	0.00033	0.0100	mg/l	101		80-120		
Thallium	N.D.	0.0054	0.0600	mg/l	104		80-120		
Zinc	N.D.	0.0020	0.0400	mg/l	101		80-120		
Batch number: 141505713007	Sample number(s): 7476721,7476723,7476725,7476727,7476729,7476731,7476733,7476735								
Mercury	N.D.	0.00006 0	0.00020	mg/l	106		80-120		
Batch number: 141510637001	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734								
Calcium	8.72 J	3.34	40.0	mg/kg	110		80-120		
Strontium	0.0440 J	0.0330	1.00	mg/kg	103		80-120		
Batch number: 14149149202A	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734								
Bromide by IC (solid)	N.D.	4.0	5.0	mg/kg	94		90-110		
Chloride by IC (solid)	N.D.	5.0	10.0	mg/kg	93		90-110		
Sulfate by IC (solid)	N.D.	5.0	15.0	mg/kg	96		90-110		
Batch number: 14148039401B	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732								
pH					100		90-110		
Batch number: 14148039402A	Sample number(s): 7476734								
pH					100		90-110		
Batch number: 14149820002B	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734								
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141470638002	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734 UNSPK: P473954 BKG: P473954								
Mercury	97	97	80-120	5	20	0.0367 J	0.0309 J	17 (1)	20
Batch number: 141480637001	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734 UNSPK: P473954 BKG: P473954								
Antimony	99	98	75-125	1	20	N.D.	N.D.	0 (1)	20
Arsenic	94	95	75-125	1	20	8.18	10.9	29* (1)	20
Barium	104	106	75-125	2	20	22.8	38.0	50*	20

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476968
Reported: 06/04/14 at 01:01 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Beryllium	105	102	83-119	3	20	0.178 J	0.229 J	25* (1)	20
Boron	97	96	84-110	0	20	9.11 J	7.18 J	24* (1)	20
Cadmium	101	101	75-120	0	20	N.D.	N.D.	0 (1)	20
Chromium	105	111	75-125	4	20	5.18	5.81	11 (1)	20
Copper	92	119	75-125	13	20	27.4	27.4	0	20
Iron	-13104 (2)	-12352 (2)	75-125	10	20	20,500	10,900	61*	20
Lead	70*	117	75-125	13	20	40.3	53.7	28*	20
Magnesium	81	13*	75-125	16	20	769	608	23*	20
Manganese	-82*	-108*	75-125	9	20	187	108	54*	20
Molybdenum	100	99	82-110	1	20	0.892 J	1.07 J	18 (1)	20
Nickel	107	112	75-125	4	20	12.2	14.0	14	20
Potassium	121	119	75-125	2	20	265	360	31* (1)	20
Selenium	101	102	75-125	1	20	1.30 J	2.89 J	76* (1)	20
Silver	107	107	75-125	0	20	N.D.	N.D.	0 (1)	20
Sodium	117	104	75-125	10	20	239	264	10 (1)	20
Strontium	111	108	81-125	3	20	17.4	20.3	15	20
Thallium	93	96	78-119	3	20	0.881 J	N.D.	200* (1)	20
Zinc	122	108	75-125	8	20	29.3	50.4	53*	20
Batch number: 141500636002	Sample number(s): 7476721,7476723,7476725,7476727,7476729,7476731,7476733,7476735 UNSPK: P462441 BKG: P462441								
Antimony	90	91	75-125	1	20	N.D.	N.D.	0 (1)	20
Arsenic	90	91	75-125	1	20	N.D.	N.D.	0 (1)	20
Barium	87	96	75-125	9	20	0.0056 J	0.0055 J	0 (1)	20
Beryllium	87	86	75-125	0	20	N.D.	N.D.	0 (1)	20
Boron	86	87	75-125	1	20	0.0180 J	0.0145 J	21* (1)	20
Cadmium	87	88	75-125	1	20	N.D.	N.D.	0 (1)	20
Calcium	91	92	75-125	1	20	0.199 J	0.177 J	12 (1)	20
Chromium	87	88	75-125	1	20	N.D.	N.D.	0 (1)	20
Copper	89	89	75-125	0	20	N.D.	N.D.	0 (1)	20
Iron	89	89	75-125	0	20	N.D.	N.D.	0 (1)	20
Lead	85	86	75-125	0	20	N.D.	N.D.	0 (1)	20
Magnesium	89	90	75-125	1	20	0.0366 J	0.0374 J	2 (1)	20
Manganese	87	88	75-125	1	20	0.0014 J	0.0013 J	8 (1)	20
Molybdenum	89	90	75-125	1	20	N.D.	N.D.	0 (1)	20
Nickel	86	87	75-125	1	20	N.D.	N.D.	0 (1)	20
Potassium	93	94	75-125	1	20	N.D.	N.D.	0 (1)	20
Selenium	88	88	75-125	1	20	N.D.	N.D.	0 (1)	20
Silver	76	77	75-125	1	20	N.D.	N.D.	0 (1)	20
Sodium	91	91	75-125	1	20	1.36 J	1.37 J	0 (1)	20
Strontium	84	84	75-125	0	20	0.00083 J	0.00074 J	11 (1)	20
Thallium	83	84	75-125	1	20	N.D.	N.D.	0 (1)	20
Zinc	87	88	75-125	1	20	0.0063 J	0.0050 J	23* (1)	20
Batch number: 141505713007	Sample number(s): 7476721,7476723,7476725,7476727,7476729,7476731,7476733,7476735 UNSPK: P462441 BKG: P462441								
Mercury	82	82	80-120	0	20	N.D.	N.D.	0 (1)	20
Batch number: 141510637001	Sample number(s):								

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1476968
Reported: 06/04/14 at 01:01 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc		DUP RPD	Dup RPD Max
	7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734 UNSPK: 7476720 BKG: 7476720									
Calcium	255 (2)	251 (2)	75-125	0	20	2,250	2,690		18	20
Strontium	148*	150*	81-125	1	20	221	264		17	20
Batch number: 14149149202A	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734 UNSPK: 7476734 BKG: 7476734									
Bromide by IC (solid)	92		90-110			N.D.	N.D.		0 (1)	20
Chloride by IC (solid)	72*		90-110			14.8	12.4		18 (1)	20
Sulfate by IC (solid)	86*		90-110			15.7	13.2	J	17 (1)	20
Batch number: 14148039401B	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732 BKG: P470803									
pH						7.13	7.15		0	3
Batch number: 14148039402A	Sample number(s): 7476734 BKG: 7476734									
pH						7.87	7.90		0	3
Batch number: 14149820002B	Sample number(s): 7476720,7476722,7476724,7476726,7476728,7476730,7476732,7476734 BKG: P476574									
Moisture						17.9	17.1		5	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Acct. # 10634 Group # 1476968 Sample # 7476720-35

Client:	Geosyntec Consultants	PAGE #	1/1
Project Name/#:	Duke Sutton	Site ID #:	
Project Manager:	Herwig Goldemund	P.O. #:	
Sampler:	Weston Shin	PWSID #:	
Phone #:	704-618-2765	Quote #:	
State where sample(s) were collected:	North Carolina		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Matrix: Sediment	Matrix: Water (Potable)	Matrix: Water (Ground)	Matrix: Water (NPDES)	Matrix: Water (Surface)	Matrix: Other:	Total # of Containers	Metals - 6010C	Hg - 7470A	Major Cations - 6010C	Major Anions - 300.0	Sr, B, Ba, Mo, Fe - 6010C	pH - SW-846 9045D Modified	SPLP - Metals - 1312 and 6000/7000 series
SS-GP3 (32.0-36.0)-20140520	5/20/2014	8:40	x		x							2	x	x	x	x	x	x	x
SS-GP3 (76.0-80.0)-20140520	5/20/2014	10:00	x		x							2	x	x	x	x	x	x	x
SS-GP3 (80.0-84.0)-20140520	5/20/2014	10:20	x		x							2	x	x	x	x	x	x	x
SS-GP3 (72.0-76.0)-20140520	5/20/2014	9:50	x		x							2	x	x	x	x	x	x	x
SS-GP3 (24.0-28.0)-20140520	5/20/2014	8:30	x		x							2	x	x	x	x	x	x	x
SS-GP2 (72.0-76.0)-20140519	5/19/2014	9:30	x		x							2	x	x	x	x	x	x	x
SS-GP2 (52.0-56.0)-20140516	5/16/2014	15:30	x		x							2	x	x	x	x	x	x	x
SS-GP5 (20.0-24.0)-20140521	5/21/2014	11:50	x		x							2	x	x	x	x	x	x	x
SS-GP6 (24.0-28.0)-20140521	5/21/2014	14:00	x		x							2	x	x	x	x	x	x	x

Analyses Requested — Preservation Codes

For Lab Use Only
SF #: _____
SCR #: _____

Preservation Codes
H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Remarks

NOTE FOR ALL SOIL SAMPLES : 6010 to analyze for Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, Tl, Zn ONLY.

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐
(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☐ Phone ☐

E-mail Address: HGoldemund@Geosyntec.com; RDonahue@Geosyntec.com

Phone: (919) 424-1831

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐
Type III (Reduced non-CLP) ☐ CT RCP ☐
Type IV (CLP SOW) ☐ TX TRRP-13 ☐
Type VI (Raw Data Only) ☐ **PENDING - TO BE CONFIRMED WITH PM.**

EDD Required? Yes ☑ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
Weston Shin	5/23/2014	21:00			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Relinquished by Commercial Carrier:
UPS _____ FedEx _____ Other _____

Temperature upon receipt _____ °C

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Environmental Analysis Request/Chain of Custody

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Acct. # 10634 Group # 1476968 Sample # 7476720-35

Client:	Geosyntec Consultants	PAGE #	1/1
Project Name/#:	Duke Sutton	Site ID #:	
Project Manager:	Herwig Goldemund	P.O. #:	
Sampler:	Weston Shin	PWSID #:	
Phone #:	704-618-2765	Quote #:	
State where sample(s) were collected:	North Carolina		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Matrix: Sediment	Matrix: Water	Matrix: Ground	Matrix: Potable	Matrix: Surface	Matrix: NPDES	Matrix: Other:	Total # of Containers	Metals - 6010C	Hg - 7470A	Major Cations - 6010C	Major Anions - 300.0	Sr, B, Ba, Mo, Fe - 6010C	pH - SW-846 9045D Modified	SPLP - Metals - 1312 and 6000/7000 series		
SS-GP3 (32.0-36.0)-20140520	5/20/2014	8:40	x		x								2	x	x	x	x	x	x	x		
SS-GP3 (76.0-80.0)-20140520	5/20/2014	10:00	x		x								2	x	x	x	x	x	x	x		
SS-GP3 (80.0-84.0)-20140520	5/20/2014	10:20	x		x								2	x	x	x	x	x	x	x		
SS-GP3 (72.0-76.0)-20140520	5/20/2014	9:50	x		x								2	x	x	x	x	x	x	x		
SS-GP3 (24.0-28.0)-20140520	5/20/2014	8:30	x		x								2	x	x	x	x	x	x	x		
SS-GP2 (72.0-76.0)-20140519	5/19/2014	9:30	x		x								2	x	x	x	x	x	x	x		
SS-GP2 (52.0-56.0)-20140516	5/16/2014	15:30	x		x								2	x	x	x	x	x	x	x		
SS-GP5 (20.0-24.0)-20140521	5/21/2014	11:50	x		x								2	x	x	x	x	x	x	x		
SS-GP6 (24.0-28.0)-20140521	5/21/2014	14:00	x		x								2	x	x	x	x	x	x	x		

Analyses Requested / Preservation Codes

For Lab Use Only
SF #: _____
SCR #: _____

Preservation Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 P = H_3PO_4
O = Other

Remarks

NOTE FOR ALL SOIL SAMPLES : 6010 to analyze for Al, As, B, Cd, Cr, Cu, Pb, Mn, Ni, Sb, Se, Tl, Zn ONLY.

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐
(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☐ Phone ☐

E-mail Address: HGoldemund@Geosyntec.com; RDonahue@Geosyntec.com

Phone: (919) 424-1831

Data Package Options (please check if required)

Type I (Validation/non-CLP)	☐	MA MCP	☐
Type III (Reduced non-CLP)	☐	CT RCP	☐
Type IV (CLP SOW)	☐	TX TRRP-13	☐
Type VI (Raw Data Only)	☐	**PENDING - TO BE CONFIRMED WITH PM.**	

EDD Required? Yes ☑ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
Weston Shin	5/23/2014	21:00			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date 5/24/14	Time 0930

Relinquished by Commercial Carrier:
UPS _____ FedEx ✓ Other _____

Temperature upon receipt 4.3 °C

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Explanation of Symbols and Abbreviations

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The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

June 04, 2014

Project: Duke Sutton, NC

Submittal Date: 05/28/2014
Group Number: 1477503
SDG: DUK32
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
MW-3B-20140527 Groundwater Sample	7479328
MW-31B-20140527 Groundwater Sample	7479329
PZ-25-20140527 Groundwater Sample	7479330
MW-34B-20140527 Groundwater Sample	7479331

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: MW-3B-20140527 Groundwater Sample
Duke Sutton

LL Sample # WW 7479328
LL Group # 1477503
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/27/2014 10:14

Submitted: 05/28/2014 11:15
Reported: 06/04/2014 09:45

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM3B SDG#: DUK32-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0058 J	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.446	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	12.0	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	2.27	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0185	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.329	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	3.58	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	3.06	0.167	2.00	1
08068	Strontium	7440-24-6	0.346	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	3.9	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	0.77	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	16.0	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	27.3	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	61.0	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-3B-20140527 Groundwater Sample
Duke Sutton

LL Sample # WW 7479328
LL Group # 1477503
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/27/2014 10:14

Submitted: 05/28/2014 11:15
Reported: 06/04/2014 09:45

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSM3B SDG#: DUK32-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07047	Beryllium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07053	Copper	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
08068	Strontium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07071	Vanadium	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141510635001	06/02/2014 19:50	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141505713012	06/03/2014 19:21	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141510635001	06/02/2014 10:04	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713012	06/02/2014 14:13	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14149347601A	05/29/2014 07:16	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14149347601A	05/29/2014 07:16	Sandra J Miller	5
00368	Nitrate Nitrogen	EPA 300.0	1	14149347601A	05/29/2014 07:16	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14149347601A	05/29/2014 07:16	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14149347601A	05/29/2014 07:16	Sandra J Miller	5
12150	Total Alkalinity	EPA 310.1	1	14150002104A	05/30/2014 22:06	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14150021201A	05/30/2014 09:14	Yolunder Y Bunch	1

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Analysis Report

Sample Description: MW-31B-20140527 Groundwater Sample
Duke Sutton

LL Sample # WW 7479329
LL Group # 1477503
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/27/2014 14:20

Submitted: 05/28/2014 11:15
Reported: 06/04/2014 09:45

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS31B SDG#: DUK32-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0336	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.268	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	11.8	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	1.39	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	2.35	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0461	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0047 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	2.50	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	8.84	0.167	2.00	1
08068	Strontium	7440-24-6	0.243	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0042 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	15.6	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	19.5	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	15.9	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	81.5	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-31B-20140527 Groundwater Sample
Duke Sutton

LL Sample # WW 7479329
LL Group # 1477503
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/27/2014 14:20

Submitted: 05/28/2014 11:15
Reported: 06/04/2014 09:45

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS31B SDG#: DUK32-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07047	Beryllium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07053	Copper	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
08068	Strontium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07071	Vanadium	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141510635001	06/02/2014 19:24	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141505713012	06/03/2014 19:33	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141510635001	06/02/2014 10:04	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713012	06/02/2014 14:13	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14149347601A	05/29/2014 08:04	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14149347601A	05/29/2014 08:04	Sandra J Miller	5
00368	Nitrate Nitrogen	EPA 300.0	1	14149347601A	05/29/2014 08:04	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14149347601A	05/29/2014 08:04	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14149347601A	05/29/2014 08:04	Sandra J Miller	5
12150	Total Alkalinity	EPA 310.1	1	14150002104A	05/31/2014 00:35	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14150021201A	05/30/2014 09:14	Yolunder Y Bunch	1

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Analysis Report

Sample Description: PZ-25-20140527 Groundwater Sample
Duke Sutton

LL Sample # WW 7479330
LL Group # 1477503
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/27/2014 15:36

Submitted: 05/28/2014 11:15
Reported: 06/04/2014 09:45

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSP25 SDG#: DUK32-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0115	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0093 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	1.18	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.0572 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.324	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0112	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	0.493 J	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	1.33 J	0.167	2.00	1
08068	Strontium	7440-24-6	0.0082 J	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0026 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	3.2	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	5.9	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	N.D.	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	10.0 J	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: PZ-25-20140527 Groundwater Sample
Duke Sutton

LL Sample # WW 7479330
LL Group # 1477503
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/27/2014 15:36

Submitted: 05/28/2014 11:15
Reported: 06/04/2014 09:45

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DSP25 SDG#: DUK32-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07047	Beryllium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07053	Copper	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
08068	Strontium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07071	Vanadium	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141510635001	06/02/2014 20:01	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141505713012	06/03/2014 19:35	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141510635001	06/02/2014 10:04	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713012	06/02/2014 14:13	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14149347601A	05/29/2014 08:20	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14149347601A	05/29/2014 08:20	Sandra J Miller	5
00368	Nitrate Nitrogen	EPA 300.0	1	14149347601A	05/29/2014 08:20	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14149347601A	05/29/2014 08:20	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14149347601A	05/29/2014 08:20	Sandra J Miller	5
12150	Total Alkalinity	EPA 310.1	1	14150002103A	05/30/2014 21:20	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14150021201A	05/30/2014 09:14	Yolunder Y Bunch	1

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Analysis Report

Sample Description: MW-34B-20140527 Groundwater Sample
Duke Sutton

LL Sample # WW 7479331
LL Group # 1477503
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/27/2014 17:50

Submitted: 05/28/2014 11:15
Reported: 06/04/2014 09:45

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS34B SDG#: DUK32-04*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0173	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.223	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	25.9	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.115 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	2.94	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0085 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0376	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	5.25	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0359 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	28.1	0.167	2.00	1
08068	Strontium	7440-24-6	0.230	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0043 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	34.7	2.0	4.0	10
00368	Nitrate Nitrogen	14797-55-8	1.1	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	62.3	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	24.3	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	164	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: MW-34B-20140527 Groundwater Sample
Duke Sutton

LL Sample # WW 7479331
LL Group # 1477503
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/27/2014 17:50

Submitted: 05/28/2014 11:15
Reported: 06/04/2014 09:45

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS34B SDG#: DUK32-04*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07047	Beryllium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07053	Copper	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
08068	Strontium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07071	Vanadium	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141510635001	06/02/2014 20:04	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141505713012	06/03/2014 19:37	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141510635001	06/02/2014 10:04	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141505713012	06/02/2014 14:13	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14149347601A	05/29/2014 08:36	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14149347601A	05/29/2014 18:02	Sandra J Miller	10
00368	Nitrate Nitrogen	EPA 300.0	1	14149347601A	05/29/2014 08:36	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14149347601A	05/29/2014 08:36	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14149347601A	05/29/2014 08:36	Sandra J Miller	5
12150	Total Alkalinity	EPA 310.1	1	14150002103A	05/30/2014 21:26	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14150021201A	05/30/2014 09:14	Yolunder Y Bunch	1

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1477503
Reported: 06/04/14 at 09:45 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141505713012	Sample number(s): 7479328-7479331								
Mercury	N.D.	0.00006 0	0.00020	mg/l	111		80-120		
Batch number: 141510635001	Sample number(s): 7479328-7479331								
Antimony	N.D.	0.0053	0.0400	mg/l	107		88-111		
Arsenic	N.D.	0.0068	0.0400	mg/l	112		90-113		
Barium	N.D.	0.00033	0.0100	mg/l	105		90-110		
Beryllium	N.D.	0.00067	0.0100	mg/l	103		90-111		
Boron	N.D.	0.0084	0.100	mg/l	100		90-110		
Cadmium	N.D.	0.00076	0.0100	mg/l	106		90-112		
Calcium	N.D.	0.0334	0.400	mg/l	105		90-112		
Chromium	N.D.	0.0016	0.0300	mg/l	104		90-110		
Copper	N.D.	0.0027	0.0200	mg/l	106		90-112		
Iron	N.D.	0.0430	0.400	mg/l	106		90-112		
Lead	N.D.	0.0047	0.0300	mg/l	109		88-116		
Magnesium	N.D.	0.0167	0.200	mg/l	105		89-110		
Manganese	N.D.	0.00083	0.0100	mg/l	106		90-110		
Molybdenum	N.D.	0.0017	0.0200	mg/l	108		90-110		
Nickel	N.D.	0.0015	0.0200	mg/l	110		90-111		
Potassium	N.D.	0.0980	1.00	mg/l	106		90-110		
Selenium	N.D.	0.0084	0.0400	mg/l	104		89-113		
Silver	N.D.	0.0021	0.0100	mg/l	85		80-120		
Sodium	N.D.	0.167	2.00	mg/l	106		87-114		
Strontium	N.D.	0.00033	0.0100	mg/l	106		90-110		
Thallium	N.D.	0.0054	0.0600	mg/l	109		90-118		
Vanadium	N.D.	0.0020	0.0100	mg/l	105		90-110		
Zinc	N.D.	0.0020	0.0400	mg/l	105		90-110		
Batch number: 14149347601A	Sample number(s): 7479328-7479331								
Bromide	N.D.	0.40	0.50	mg/l	96		90-110		
Chloride	N.D.	0.20	0.40	mg/l	94		90-110		
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	98		90-110		
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	98		90-110		
Sulfate	N.D.	0.30	1.0	mg/l	98		90-110		
Batch number: 14150002103A	Sample number(s): 7479330-7479331								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	97		90-110		
Batch number: 14150002104A	Sample number(s): 7479328-7479329								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	97		90-110		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1477503
Reported: 06/04/14 at 09:45 AM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 14150021201A	Sample number(s): 7479328-7479331								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	93		80-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141505713012	Sample number(s): 7479328-7479331 UNSPK: 7479328 BKG: 7479328								
Mercury	103	101	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: 141510635001	Sample number(s): 7479328-7479331 UNSPK: 7479329 BKG: 7479329								
Antimony	107	107	76-122	1	20	N.D.	N.D.	0 (1)	20
Arsenic	111	107	81-123	3	20	N.D.	N.D.	0 (1)	20
Barium	105	102	78-125	2	20	0.0336	0.0325	3 (1)	20
Beryllium	103	100	87-114	2	20	N.D.	N.D.	0 (1)	20
Boron	99	98	87-111	1	20	0.268	0.261	3 (1)	20
Cadmium	106	104	75-122	2	20	N.D.	N.D.	0 (1)	20
Calcium	100	98	75-125	0	20	11.8	11.7	1	20
Chromium	104	102	76-120	2	20	N.D.	N.D.	0 (1)	20
Copper	106	105	86-122	1	20	N.D.	N.D.	0 (1)	20
Iron	99	99	75-125	0	20	1.39	1.36	2 (1)	20
Lead	105	105	75-125	0	20	N.D.	N.D.	0 (1)	20
Magnesium	99	99	81-118	0	20	2.35	2.30	2	20
Manganese	105	103	75-125	2	20	0.0461	0.0451	2 (1)	20
Molybdenum	108	108	89-117	0	20	0.0047 J	0.0018 J	88* (1)	20
Nickel	108	107	79-123	2	20	N.D.	N.D.	0 (1)	20
Potassium	104	102	77-128	2	20	2.50	2.45	2 (1)	20
Selenium	107	103	75-125	4	20	N.D.	N.D.	0 (1)	20
Silver	85	85	75-125	0	20	N.D.	N.D.	0 (1)	20
Sodium	101	99	84-117	1	20	8.84	8.68	2 (1)	20
Strontium	106	103	88-117	2	20	0.243	0.235	3	20
Thallium	107	106	75-125	1	20	N.D.	N.D.	0 (1)	20
Vanadium	105	103	90-117	2	20	N.D.	N.D.	0 (1)	20
Zinc	103	102	85-117	1	20	0.0042 J	0.0047 J	11 (1)	20
Batch number: 14149347601A	Sample number(s): 7479328-7479331 UNSPK: 7479328 BKG: 7479328								
Bromide	98		90-110			N.D.	N.D.	0 (1)	20
Chloride	91		90-110			3.9	3.6	8 (1)	20
Nitrate Nitrogen	97		90-110			0.77	0.71	8 (1)	20
Nitrite Nitrogen	95		90-110			N.D.	N.D.	0 (1)	20
Sulfate	212*		90-110			16.0	16.0	0 (1)	20
Batch number: 14150002103A	Sample number(s): 7479330-7479331 UNSPK: P478089 BKG: P478089								
Total Alkalinity	91	93	17-146	1	5	228	234	3	5
Batch number: 14150002104A	Sample number(s): 7479328-7479329 UNSPK: 7479328 BKG: 7479328								
Total Alkalinity	90		17-146			27.3	28.3	3	5
Batch number: 14150021201A	Sample number(s): 7479328-7479331 UNSPK: P478983 BKG: P478983								
Total Dissolved Solids	11*		66-131			112	406	114* (1)	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1477503
Reported: 06/04/14 at 09:45 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Chain of Custody Record

[redacted] 10634
1477503
7479328-31

Sampler ID _____
Temperature on Receipt 2.0°C
Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client: Geosyntec Consultants	Project Manager: Beau Hodge	Date: 5-27-14	Chain of Custody Number: 183841
Address: 2501 Blueridge Rd Suite 430	Telephone Number (Area Code)/Fax Number: 919-412-5118	Lab Number:	Page 1 of 1
City: Raleigh / State: NC / Zip Code: 27607	Site Contact: Rachel Donahue	Lab Contact: Barbara Wojnarski	Analysis (Attach list if more space is needed)
Project Name and Location (State): DUK Sutton (NC)	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Metals-6010C	14-METOH	major cations-6010C	major anions 300.0	Sr, B, Ba, Mn, Fe	TDS	Vanadium	NO3/NO2	ALL	Special Instructions/ Conditions of Receipt
MW-3B-20140527	5-27-14	1014		X			4		1				X	X	X	X	X	X	X	X		
MW-31B-20140527	5-27-14	1420		X			4		1				X	X	X	X	X	X	X	X		
PZ-25-20140527	5-27-14	1536		X			4		1				X	X	X	X	X	X	X	X		
~~MW-34C-20140527~~	5-27-14			X			4		1				X	X	X	X	X	X	X	X		RD 5/27
MW-34B-20140527	5-27-14	1750		X			4		1				X	X	X	X	X	X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By	Date: 5-27-14	Time: 1844	1. Received By	Date:	Time:
2. Relinquished By	Date:	Time:	2. Received By	Date:	Time:
3. Relinquished By	Date:	Time:	3. Received By	Date: 5/28/14	Time: 1115

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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Explanation of Symbols and Abbreviations

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The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

June 06, 2014

Project: Duke Sutton, NC

Submittal Date: 05/30/2014
Group Number: 1478138
SDG: DUK33
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
MW-35B-201405028 Groundwater Sample	7481909
MW-35C-201405028 Groundwater Sample	7481910
MW-34C-201405028 Groundwater Sample	7481911

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: MW-35B-201405028 Groundwater Sample
Duke Sutton

LL Sample # WW 7481909
LL Group # 1478138
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/28/2014 10:40

Submitted: 05/30/2014 09:45
Reported: 06/06/2014 08:04

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS35B SDG#: DUK33-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0420	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0163 J	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	4.11	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.0739 J	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.450	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0247	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0015	0.0200	1
01762	Potassium	7440-09-7	1.03	0.0980	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	17.5	0.167	2.00	1
08068	Strontium	7440-24-6	0.0152	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0031 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	6.4	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	31.8	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	5.7	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	88.5	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-35B-201405028 Groundwater Sample
Duke Sutton

LL Sample # WW 7481909
LL Group # 1478138
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/28/2014 10:40

Submitted: 05/30/2014 09:45
Reported: 06/06/2014 08:04

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS35B SDG#: DUK33-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07047	Beryllium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07053	Copper	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
08068	Strontium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07071	Vanadium	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141510635001	06/02/2014 20:08	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141545713002	06/05/2014 16:36	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141510635001	06/02/2014 10:04	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141545713002	06/04/2014 10:57	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14150347902A	05/30/2014 10:34	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14150347902A	05/30/2014 10:34	Sandra J Miller	5
00368	Nitrate Nitrogen	EPA 300.0	1	14150347902A	05/30/2014 10:34	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14150347902A	05/30/2014 10:34	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14150347902A	05/30/2014 10:34	Sandra J Miller	5
12150	Total Alkalinity	EPA 310.1	1	14154002103A	06/03/2014 13:54	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14153021202A	06/02/2014 11:20	Yolunder Y Bunch	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-35C-201405028 Groundwater Sample
Duke Sutton

LL Sample # WW 7481910
LL Group # 1478138
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/28/2014 11:45

Submitted: 05/30/2014 09:45
Reported: 06/06/2014 08:04

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS35C SDG#: DUK33-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0317	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.412	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	35.9	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0046 J	0.0016	0.0300	1
07053	Copper	7440-50-8	0.0034 J	0.0027	0.0200	1
01754	Iron	7439-89-6	2.81	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	4.50	0.0167	0.200	1
07058	Manganese	7439-96-5	0.345	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0075 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0019 J	0.0015	0.0200	1
01762	Potassium	7440-09-7	4.53	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0550	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	89.4	0.835	10.0	5
08068	Strontium	7440-24-6	0.299	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	0.0074 J	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0172 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	58.4	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	0.29 J	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	131	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	57.3	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	419	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-35C-201405028 Groundwater Sample
Duke Sutton

LL Sample # WW 7481910
LL Group # 1478138
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/28/2014 11:45

Submitted: 05/30/2014 09:45
Reported: 06/06/2014 08:04

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS35C SDG#: DUK33-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07047	Beryllium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07053	Copper	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141510635001	06/03/2014 08:33	Joanne M Gates	5
08068	Strontium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07071	Vanadium	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141510635001	06/02/2014 20:12	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141545713002	06/05/2014 16:38	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141510635001	06/02/2014 10:04	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141545713002	06/04/2014 10:57	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14150347902A	05/30/2014 11:06	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14150347902A	05/31/2014 02:30	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14150347902A	05/30/2014 11:06	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14150347902A	05/30/2014 11:06	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14150347902A	05/31/2014 02:30	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	1	14154002103A	06/03/2014 14:45	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14153021202A	06/02/2014 11:20	Yolunder Y Bunch	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-34C-201405028 Groundwater Sample
Duke Sutton

LL Sample # WW 7481911
LL Group # 1478138
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/28/2014 15:54

Submitted: 05/30/2014 09:45
Reported: 06/06/2014 08:04

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS34C SDG#: DUK33-03*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0053	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0068	0.0400	1
07046	Barium	7440-39-3	0.0471	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.491	0.0084	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00076	0.0100	1
01750	Calcium	7440-70-2	29.4	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0016	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0027	0.0200	1
01754	Iron	7439-89-6	0.613	0.0430	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	5.34	0.0167	0.200	1
07058	Manganese	7439-96-5	0.303	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0031 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0026 J	0.0015	0.0200	1
01762	Potassium	7440-09-7	8.16	0.0980	1.00	1
07036	Selenium	7782-49-2	0.0104 J	0.0084	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0021	0.0100	1
01767	Sodium	7440-23-5	72.2	0.334	4.00	2
08068	Strontium	7440-24-6	0.311	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0054	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0020	0.0100	1
07072	Zinc	7440-66-6	0.0076 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	61.3	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	122	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	28.8	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	339	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-34C-201405028 Groundwater Sample
Duke Sutton

LL Sample # WW 7481911
LL Group # 1478138
Account # 10634

Project Name: Duke Sutton, NC

Collected: 05/28/2014 15:54

Submitted: 05/30/2014 09:45
Reported: 06/06/2014 08:04

GeoSyntec Consultants
4601 Six Forks Road
Suite 340
Raleigh NC 27609

DS34C SDG#: DUK33-03*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07047	Beryllium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07053	Copper	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141510635001	06/03/2014 08:37	Joanne M Gates	2
08068	Strontium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07071	Vanadium	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141510635001	06/02/2014 20:15	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141545713002	06/05/2014 16:40	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141510635001	06/02/2014 10:04	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141545713002	06/04/2014 10:57	Micaela L Dishong	1
01505	Bromide	EPA 300.0	1	14150347902A	05/30/2014 11:23	Sandra J Miller	5
00224	Chloride	EPA 300.0	1	14150347902A	05/31/2014 02:46	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14150347902A	05/30/2014 11:23	Sandra J Miller	5
01506	Nitrite Nitrogen	EPA 300.0	1	14150347902A	05/30/2014 11:23	Sandra J Miller	5
00228	Sulfate	EPA 300.0	1	14150347902A	05/31/2014 02:46	Sandra J Miller	20
12150	Total Alkalinity	EPA 310.1	1	14154002103A	06/03/2014 14:12	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14153021202A	06/02/2014 11:20	Yolunder Y Bunch	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1478138
Reported: 06/06/14 at 08:04 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result		Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141510635001	Sample number(s): 7481909-7481911									
Antimony	N.D.		0.0053	0.0400	mg/l	107		88-111		
Arsenic	N.D.		0.0068	0.0400	mg/l	112		90-113		
Barium	N.D.		0.00033	0.0100	mg/l	105		90-110		
Beryllium	N.D.		0.00067	0.0100	mg/l	103		90-111		
Boron	N.D.		0.0084	0.100	mg/l	100		90-110		
Cadmium	N.D.		0.00076	0.0100	mg/l	106		90-112		
Calcium	N.D.		0.0334	0.400	mg/l	105		90-112		
Chromium	N.D.		0.0016	0.0300	mg/l	104		90-110		
Copper	N.D.		0.0027	0.0200	mg/l	106		90-112		
Iron	N.D.		0.0430	0.400	mg/l	106		90-112		
Lead	N.D.		0.0047	0.0300	mg/l	109		88-116		
Magnesium	N.D.		0.0167	0.200	mg/l	105		89-110		
Manganese	N.D.		0.00083	0.0100	mg/l	106		90-110		
Molybdenum	N.D.		0.0017	0.0200	mg/l	108		90-110		
Nickel	N.D.		0.0015	0.0200	mg/l	110		90-111		
Potassium	N.D.		0.0980	1.00	mg/l	106		90-110		
Selenium	N.D.		0.0084	0.0400	mg/l	104		89-113		
Silver	N.D.		0.0021	0.0100	mg/l	85		80-120		
Sodium	N.D.		0.167	2.00	mg/l	106		87-114		
Strontium	N.D.		0.00033	0.0100	mg/l	106		90-110		
Thallium	N.D.		0.0054	0.0600	mg/l	109		90-118		
Vanadium	N.D.		0.0020	0.0100	mg/l	105		90-110		
Zinc	N.D.		0.0020	0.0400	mg/l	105		90-110		
Batch number: 141545713002	Sample number(s): 7481909-7481911									
Mercury	N.D.		0.00006 0	0.00020	mg/l	99		80-120		
Batch number: 14150347902A	Sample number(s): 7481909-7481911									
Bromide	N.D.		0.40	0.50	mg/l	96		90-110		
Chloride	N.D.		0.20	0.40	mg/l	95		90-110		
Nitrate Nitrogen	N.D.		0.050	0.10	mg/l	98		90-110		
Nitrite Nitrogen	N.D.		0.080	0.10	mg/l	97		90-110		
Sulfate	N.D.		0.30	1.0	mg/l	97		90-110		
Batch number: 14153021202A	Sample number(s): 7481909-7481911									
Total Dissolved Solids	N.D.		9.7	30.0	mg/l	99		80-120		
Batch number: 14154002103A	Sample number(s): 7481909-7481911									
Total Alkalinity	1.2	J	0.70	2.0	mg/l as CaCO3	97		90-110		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1478138
Reported: 06/06/14 at 08:04 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141510635001	Sample number(s): 7481909-7481911 UNSPK: P479329 BKG: P479329								
Antimony	107	107	76-122	1	20	N.D.	N.D.	0 (1)	20
Arsenic	111	107	81-123	3	20	N.D.	N.D.	0 (1)	20
Barium	105	102	78-125	2	20	0.0336	0.0325	3 (1)	20
Beryllium	103	100	87-114	2	20	N.D.	N.D.	0 (1)	20
Boron	99	98	87-111	1	20	0.268	0.261	3 (1)	20
Cadmium	106	104	75-122	2	20	N.D.	N.D.	0 (1)	20
Calcium	100	98	75-125	0	20	11.8	11.7	1	20
Chromium	104	102	76-120	2	20	N.D.	N.D.	0 (1)	20
Copper	106	105	86-122	1	20	N.D.	N.D.	0 (1)	20
Iron	99	99	75-125	0	20	1.39	1.36	2 (1)	20
Lead	105	105	75-125	0	20	N.D.	N.D.	0 (1)	20
Magnesium	99	99	81-118	0	20	2.35	2.30	2	20
Manganese	105	103	75-125	2	20	0.0461	0.0451	2 (1)	20
Molybdenum	108	108	89-117	0	20	0.0047 J	0.0018 J	88* (1)	20
Nickel	108	107	79-123	2	20	N.D.	N.D.	0 (1)	20
Potassium	104	102	77-128	2	20	2.50	2.45	2 (1)	20
Selenium	107	103	75-125	4	20	N.D.	N.D.	0 (1)	20
Silver	85	85	75-125	0	20	N.D.	N.D.	0 (1)	20
Sodium	101	99	84-117	1	20	8.84	8.68	2 (1)	20
Strontium	106	103	88-117	2	20	0.243	0.235	3	20
Thallium	107	106	75-125	1	20	N.D.	N.D.	0 (1)	20
Vanadium	105	103	90-117	2	20	N.D.	N.D.	0 (1)	20
Zinc	103	102	85-117	1	20	0.0042 J	0.0047 J	11 (1)	20
Batch number: 141545713002	Sample number(s): 7481909-7481911 UNSPK: 7481911 BKG: 7481911								
Mercury	106	104	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: 14150347902A	Sample number(s): 7481909-7481911 UNSPK: 7481909 BKG: 7481909								
Bromide	103		90-110			N.D.	N.D.	0 (1)	20
Chloride	103		90-110			6.4	6.5	2 (1)	20
Nitrate Nitrogen	107		90-110			N.D.	N.D.	200* (1)	20
Nitrite Nitrogen	100		90-110			N.D.	N.D.	0 (1)	20
Sulfate	107		90-110			31.8	31.9	0	20
Batch number: 14153021202A	Sample number(s): 7481909-7481911 UNSPK: P481570 BKG: P481570								
Total Dissolved Solids	96	92	66-131	2	23	24,000	21,500	11* (1)	5
Batch number: 14154002103A	Sample number(s): 7481909-7481911 UNSPK: P483205 BKG: P483205								
Total Alkalinity	90		17-146			181	183	1	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Chain of Custody Record

[redacted] 10634
14-78138
7481909-11

Sampler ID _____

Temperature on Receipt 4.8°C

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
GEOSyntec Consultants	Beau Hodge	5-28-14	183842
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
2501 Blue Ridge Rd Suite 430	919 417-5118		
City	**State / Zip Code**	**Site Contact**	**Lab Contact**
Raleigh	NC 27607	Rachel Drake	Barbara Wyandt
Project Name and Location (State)	**Carrier/Waybill Number**	**Analysis (Attach list if more space is needed)**	
Duke-Sutton (NC)			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Metals: Ba, Mn, Fe	Hg - 7470A	Mag. Hardness	Mang. (Dissolved)	Sulfate, Mn, Fe	Ferrous Iron	TDS	NO2 NO3	Alkalinity	Special Instructions/ Conditions of Receipt
MW-35B-20140528	5-28-14	1040		X			4		1				X	X	X	X	X	X	X	X	X	
MW-35C-20140528	5-28-14	1145		X			4		1				X	X	X	X	X	X	X	X	X	
MW-34C-20140528	5-28-14	1554		X			4		1				X	X	X	X	X	X	X	X	X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Relinquished By	Date	Time	Received By	Date	Time
1.	[redacted]	5-28-14	1800			
2.						
3.						

	Received By	Date	Time
1.			
2.			
3.		5/30/14	0945

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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Explanation of Symbols and Abbreviations

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The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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Appendix A2
Laboratory Analytical Reports LOLA and 1971 Borrow Area

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

July 16, 2014

Project: Duke Sutton, NC

Submittal Date: 07/01/2014
Group Number: 1485674
SDG: DUK34
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
20140630-MW14 Grab Groundwater Sample	7516890

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

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Analysis Report

Sample Description: 20140630-MW14 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7516890
LL Group # 1485674
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 17:00 by MP

Submitted: 07/01/2014 09:30
Reported: 07/16/2014 13:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DSMT4 SDG#: DUK34-01*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0097 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.441	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.104	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	47.3	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0016 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	1.17	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	3.03	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0275	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0064 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	5.36	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	19.2	0.167	2.00	1
08068	Strontium	7440-24-6	0.398	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	0.0114	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0021 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	22.7	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	0.27 J	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	6.5	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	125	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	200	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: 20140630-MW14 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7516890
LL Group # 1485674
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 17:00 by MP

Submitted: 07/01/2014 09:30
Reported: 07/16/2014 13:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DSMT4 SDG#: DUK34-01*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 04:09	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 04:09	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 04:09	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 13:35	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 04:09	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 04:09	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 04:09	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:05	John P Hook	1
00259	Mercury	SW-846 7470A	1	141955713004	07/16/2014 07:36	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141885713001	07/08/2014 11:00	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	2	141915713002	07/11/2014 09:34	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	3	141955713004	07/15/2014 09:08	James L Mertz	1
01505	Bromide	EPA 300.0	1	14182347901B	07/01/2014 14:15	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14182347901B	07/01/2014 14:15	Clinton M Wilson	5
00368	Nitrate Nitrogen	EPA 300.0	1	14182347901B	07/01/2014 14:15	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14182347901B	07/01/2014 14:15	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14182347901B	07/01/2014 14:15	Clinton M Wilson	5
12150	Total Alkalinity	EPA 310.1	1	14183011102A	07/02/2014 20:38	Yolunder Y Bunch	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14182021201A	07/01/2014 11:40	Sarah E Thompson	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1485674
Reported: 07/16/14 at 01:40 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141880635001	Sample number(s): 7516890								
Antimony	N.D.	0.0051	0.0400	mg/l	109		88-111		
Arsenic	N.D.	0.0072	0.0400	mg/l	111		90-113		
Barium	N.D.	0.00033	0.0100	mg/l	108		90-110		
Beryllium	N.D.	0.00067	0.0100	mg/l	106		90-111		
Boron	N.D.	0.0046	0.100	mg/l	100		90-110		
Cadmium	N.D.	0.00033	0.0100	mg/l	105		90-112		
Calcium	N.D.	0.0334	0.400	mg/l	109		90-112		
Chromium	N.D.	0.0013	0.0300	mg/l	102		90-110		
Copper	N.D.	0.0028	0.0200	mg/l	108		90-112		
Iron	N.D.	0.0334	0.400	mg/l	112		90-112		
Lead	N.D.	0.0047	0.0300	mg/l	114		88-116		
Magnesium	N.D.	0.0167	0.200	mg/l	107		89-110		
Manganese	0.0013 J	0.00083	0.0100	mg/l	108		90-110		
Molybdenum	N.D.	0.0017	0.0200	mg/l	106		90-110		
Nickel	N.D.	0.0016	0.0200	mg/l	111		90-117		
Potassium	N.D.	0.133	1.00	mg/l	104		90-110		
Selenium	N.D.	0.0048	0.0400	mg/l	103		89-113		
Silver	N.D.	0.0018	0.0100	mg/l	94		80-120		
Sodium	N.D.	0.167	2.00	mg/l	106		87-114		
Strontium	N.D.	0.00033	0.0100	mg/l	108		90-110		
Thallium	N.D.	0.0051	0.0600	mg/l	101		90-118		
Vanadium	N.D.	0.0019	0.0100	mg/l	102		90-110		
Zinc	N.D.	0.0020	0.0400	mg/l	104		90-110		
Batch number: 141955713004	Sample number(s): 7516890								
Mercury	N.D.	0.00006 0	0.00020	mg/l	100		80-120		
Batch number: 14182347901B	Sample number(s): 7516890								
Bromide	N.D.	0.40	0.50	mg/l	99		90-110		
Chloride	N.D.	0.20	0.40	mg/l	98		90-110		
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	102		90-110		
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	101		90-110		
Sulfate	N.D.	0.30	1.0	mg/l	101		90-110		
Batch number: 14182021201A	Sample number(s): 7516890								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	105		80-120		
Batch number: 14183011102A	Sample number(s): 7516890								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	97		90-110		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1485674
Reported: 07/16/14 at 01:40 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141880635001	Sample number(s): 7516890 UNSPK: P520777 BKG: P520777								
Antimony	108	106	76-122	2	20	N.D.	N.D.	0 (1)	20
Arsenic	104	108	81-123	3	20	0.0199 J	0.0133 J	39* (1)	20
Barium	102	101	78-125	1	20	0.144	0.136	6	20
Beryllium	102	101	87-114	1	20	N.D.	N.D.	0 (1)	20
Boron	74*	87	87-111	6	20	2.35	2.10	11 (1)	20
Cadmium	99	99	75-122	0	20	N.D.	N.D.	0 (1)	20
Calcium	7 (2)	-1 (2)	75-125	0	20	89.4	84.3	6	20
Chromium	98	95	76-120	2	20	0.0017 J	0.0019 J	11 (1)	20
Copper	106	106	86-122	0	20	N.D.	N.D.	0 (1)	20
Iron	72 (2)	112 (2)	75-125	7	20	4.72	4.44	6	20
Lead	101	100	75-125	1	20	N.D.	N.D.	0 (1)	20
Magnesium	20 (2)	10 (2)	81-118	1	20	25.1	23.6	6	20
Manganese	98	94	75-125	2	20	0.459	0.430	7	20
Molybdenum	102	102	89-117	0	20	0.319	0.293	9	20
Nickel	104	103	79-123	1	20	N.D.	N.D.	0 (1)	20
Potassium	100	98	77-128	1	20	14.7	13.8	6	20
Selenium	100	101	75-125	1	20	N.D.	N.D.	0 (1)	20
Silver	93	91	75-125	2	20	N.D.	N.D.	0 (1)	20
Sodium	21 (2)	51 (2)	84-117	3	20	52.1	47.3	10 (1)	20
Strontium	49*	72*	88-117	6	20	3.20	2.88	11	20
Thallium	95	94	75-125	0	20	N.D.	N.D.	0 (1)	20
Vanadium	97	97	90-117	0	20	N.D.	N.D.	0 (1)	20
Zinc	100	99	85-117	0	20	0.0041 J	0.0038 J	8 (1)	20
Batch number: 141955713004	Sample number(s): 7516890 UNSPK: P514111 BKG: P514111								
Mercury	94	97	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: 14182347901B	Sample number(s): 7516890 UNSPK: 7516890 BKG: 7516890								
Bromide	99		90-110			N.D.	N.D.	0 (1)	20
Chloride	102		90-110			22.7	23.0	1	20
Nitrate Nitrogen	102		90-110			0.27 J	0.28 J	5 (1)	20
Nitrite Nitrogen	99		90-110			N.D.	N.D.	0 (1)	20
Sulfate	104		90-110			6.5	6.6	3 (1)	20
Batch number: 14182021201A	Sample number(s): 7516890 UNSPK: P515584 BKG: P515584								
Total Dissolved Solids	384*		66-131			4,080	4,080	0	5
Batch number: 14183011102A	Sample number(s): 7516890 UNSPK: P518803 BKG: P518803								
Total Alkalinity	39		17-146			199	200	1	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Acct. # 10634 For Eurofins Lancaster Laboratories Environmental use only Group # 1485674 Sample # 7516890
Instructions on reverse side correspond with circled numbers.

COC # 354247

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1 Client Information

Client: GEOSYNTEC CONSULTANTS	Acct. #:
Project Name/#: GC5592 / DUKE SUTTON	PWSID #:
Project Manager: RACHEL DONAHUE	P.O. #:
Sampler: M. PATINKIN	Quote #:
Name of state where samples were collected: NORTH CAROLINA	

2 Sample Identification / Collected / 3 Grab / Composite / 4 Matrix / 5 Analysis Requested

Sample Identification	Collected Date	Collected Time	Grab	Composite	Matrix	Total # of Containers	Analysis Requested (Preservation Codes)
20140630 - MW14	06/30/14	1700	X		Water: X	5	TOTAL METALS, V (6010C, 7470A); CATIONS (Ca, Mg, Na, K) (6010C); Sr, B, Ba, Mo, Fe (6010C); MAJOR ANIONS (Cl, Br, SO4, ALKALINITY) (300.0); NITRATE, NITRITE (300.0); TDS (SM 2540 C-1997 & 160.1): X X X X X X
TEMP BLANK	—	—			Water: X	1	

Matrix: Soil ☐ Sediment ☐ Potable ☐ Ground ☑ Water ☐ NPDES ☐ Surface ☐ Other: ____

For Lab Use Only
FSC:
SCR#: 157564

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

6 Remarks

7 Turnaround Time (TAT) Requested (please circle)

Standard MP Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: TAT 5 DAYS

E-mail address:

8 Data Package Options (circle if required)

Type I (Validation/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) TX TRRP-13
Type IV (CLP SOW) MA MCP CT RCP

9

	Relinquished by	Date	Time	Received by	Date	Time
1		6/30/14	1940	MP		
2		6/30/14	1815			
3						
4						
5					7/1/14	0730

EDD Required? Yes No
If yes, format: ASDAT
Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx ✓ Other ____
Temperature upon receipt 2.6 °C

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Explanation of Symbols and Abbreviations

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The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

July 16, 2014

Project: Duke Sutton, NC

Submittal Date: 07/02/2014
Group Number: 1486078
SDG: DUK35
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
SS-MB2(64.0-68.0)-20140625 Grab Soil Sample	7519007
SS-MB2(64.0-68.0)-20140625 Grab Soil Sample	7519008
SS-MB2(76.0-80.0)-20140625 Grab Soil Sample	7519009
SS-MB2(76.0-80.0)-20140625 Grab Soil Sample	7519010
GW-MW16-20140701 Grab Groundwater Sample	7519011
GW-MW16D-20140701 Grab Groundwater Sample	7519012
EB-02-20140701 Grab Water Sample	7519013
SB-02-20140701 Grab Water Sample	7519014
GW-MW20-20140701 Grab Groundwater Sample	7519015
GW-MW20D-20140701 Grab Groundwater Sample	7519016

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

July 14, 2014

Project: Duke Sutton, NC

Submittal Date: 07/03/2014
Group Number: 1486445
SDG: DUK36
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
SS-F-DPT-1(3-4)-20140630 Solid Sample	7520693
SS-F-DPT-1(3-4)-20140630 Solid Sample	7520694
SS-F-DPT-1(7-8)-20140630 Solid Sample	7520695
SS-F-DPT-1(7-8)-20140630 Solid Sample	7520696
SS-F-DPT-3(1.5-2.5)-20140630 Solid Sample	7520697
SS-F-DPT-3(1.5-2.5)-20140630 Solid Sample	7520698
SS-F-DPT-3(5-6)-20140630 Solid Sample	7520699
SS-F-DPT-3(5-6)-20140630 Solid Sample	7520700
SS-F-DPT-5(2-4)-20140701 Solid Sample	7520701
SS-F-DPT-5(2-4)-20140701 MS Solid Sample	7520702
SS-F-DPT-5(2-4)-20140701 MSD Solid Sample	7520703
SS-F-DPT-5(2-4)-20140701 DUP Solid Sample	7520704
SS-F-DPT-5(2-4)-20140701 Solid Sample	7520705
SS-F-DPT-5(2-4)-20140701 MS Solid Sample	7520706
SS-F-DPT-5(2-4)-20140701 MSD Solid Sample	7520707
SS-F-DPT-5(2-4)-20140701 DUP Solid Sample	7520708
SS-F-DPT-5(6-8)-20140701 Solid Sample	7520709
SS-F-DPT-5(6-8)-20140701 Solid Sample	7520710
SS-F-DPT-95(7-8)-20140701 Solid Sample	7520711
SS-F-DPT-95(7-8)-20140701 Solid Sample	7520712
SS-F-DPT-7(3-4)-20140701 Solid Sample	7520713
SS-F-DPT-7(3-4)-20140701 Solid Sample	7520714
SS-F-DPT-7(7-8)-20140701 Solid Sample	7520715
SS-F-DPT-7(7-8)-20140701 Solid Sample	7520716
SS-F-DPT-4(18-20)-20140701 Solid Sample	7520717
SS-F-DPT-4(18-20)-20140701 Solid Sample	7520718
SS-F-DPT-11(7-8)-20140702 Solid Sample	7520719
SS-F-DPT-11(7-8)-20140702 Solid Sample	7520720
SS-F-DPT-11(11-12)-20140702 Solid Sample	7520721
SS-F-DPT-11(11-12)-20140702 Solid Sample	7520722
SS-F-DPT-7(15-16)-20140701 Solid Sample	7520723

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Analysis Report

SS-F-DPT-7(15-16)-20140701 Solid Sample	7520724
SS-F-DPT-14(3-4)-20140702 Solid Sample	7520725
SS-F-DPT-14(3-4)-20140702 Solid Sample	7520726
SS-F-DPT-14(7-8)-20140702 Solid Sample	7520727
SS-F-DPT-14(7-8)-20140702 Solid Sample	7520728

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

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ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: SS-F-DPT-1(3-4)-20140630 Solid Sample
Duke Sutton

LL Sample # SW 7520693
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 14:15 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13T SDG#: DUK36-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.317	3.84	1
06935	Arsenic	7440-38-2	0.715	J	0.614	3.84	1
06946	Barium	7440-39-3	3.28		0.0317	0.959	1
06947	Beryllium	7440-41-7	N.D.		0.0643	0.959	1
07914	Boron	7440-42-8	3.98	J	0.806	9.59	1
06949	Cadmium	7440-43-9	N.D.		0.0317	0.959	1
06951	Chromium	7440-47-3	0.815	J	0.106	2.88	1
06953	Copper	7440-50-8	0.598	J	0.317	1.92	1
01654	Iron	7439-89-6	348		3.20	38.4	1
06955	Lead	7439-92-1	1.52	J	0.480	2.88	1
06958	Manganese	7439-96-5	3.12		0.0796	0.959	1
06960	Molybdenum	7439-98-7	0.164	J	0.163	1.92	1
06961	Nickel	7440-02-0	0.516	J	0.144	1.92	1
06936	Selenium	7782-49-2	N.D.		0.422	3.84	1
06966	Silver	7440-22-4	N.D.		0.182	0.959	1
07968	Strontium	7440-24-6	1.74		0.0317	0.959	1
06925	Thallium	7440-28-0	N.D.		0.767	5.75	1
06972	Zinc	7440-66-6	1.69	J	0.249	3.84	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0096	0.191	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	6.65		0.0100	0.0100	1
	The pH was measured in water at 22.8 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	0.70		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-F-DPT-1(3-4)-20140630 Solid Sample
Duke Sutton

LL Sample # SW 7520693
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 14:15 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13T SDG#: DUK36-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 19:46	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:09	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:02	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002A	07/08/2014 19:40	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-F-DPT-1(3-4)-20140630 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520694
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 14:15 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13S SDG#: DUK36-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0299	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0295 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	1.84	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.345 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.259	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0026 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0032 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0117 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	4.81	0.167	2.00	1
08068	Strontium	7440-24-6	0.0052 J	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0066 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:15	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-1(3-4)-20140630 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520694
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 14:15 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13S SDG#: DUK36-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:34	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:16	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-1(7-8)-20140630 Solid Sample
Duke Sutton

LL Sample # SW 7520695
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 14:20 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS17T SDG#: DUK36-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.470	5.70	1
06935	Arsenic	7440-38-2	26.5		0.912	5.70	1
06946	Barium	7440-39-3	452		0.235	7.13	5
06947	Beryllium	7440-41-7	3.54		0.0955	1.43	1
07914	Boron	7440-42-8	24.6		1.20	14.3	1
06949	Cadmium	7440-43-9	N.D.		0.0470	1.43	1
06951	Chromium	7440-47-3	18.8		0.157	4.28	1
06953	Copper	7440-50-8	42.8		0.470	2.85	1
01654	Iron	7439-89-6	12,600		4.76	57.0	1
06955	Lead	7439-92-1	13.9		0.713	4.28	1
06958	Manganese	7439-96-5	44.9		0.118	1.43	1
06960	Molybdenum	7439-98-7	1.06	J	0.242	2.85	1
06961	Nickel	7440-02-0	54.8		0.214	2.85	1
06936	Selenium	7782-49-2	5.23	J	0.627	5.70	1
06966	Silver	7440-22-4	N.D.		0.271	1.43	1
07968	Strontium	7440-24-6	337		0.235	7.13	5
06925	Thallium	7440-28-0	N.D.		1.14	8.55	1
06972	Zinc	7440-66-6	31.3		0.371	5.70	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.154	J	0.0148	0.296	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	6.55		0.0100	0.0100	1
	The pH was measured in water at 23.1 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	33.2		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/09/2014 19:54	John P Hook	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-1(7-8)-20140630 Solid Sample
Duke Sutton

LL Sample # SW 7520695
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 14:20 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS17T SDG#: DUK36-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 19:50	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/09/2014 19:54	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:13	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:04	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002A	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-1(7-8)-20140630 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520696
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 14:20 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS17S SDG#: DUK36-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0109 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.104	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0195 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	1.55	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0016 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.197 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.151 J	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0030 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0019 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0075 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.151 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0108 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	1.97 J	0.167	2.00	1
08068	Strontium	7440-24-6	0.0794	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0060 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:19	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-1(7-8)-20140630 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520696
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 14:20 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS17S SDG#: DUK36-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:37	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:18	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-3(1.5-2.5)-20140630 Solid Sample
Duke Sutton

LL Sample # SW 7520697
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 16:02 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS31T SDG#: DUK36-05

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.337	4.09	1
06935	Arsenic	7440-38-2	1.28	J	0.654	4.09	1
06946	Barium	7440-39-3	5.57		0.0337	1.02	1
06947	Beryllium	7440-41-7	N.D.		0.0685	1.02	1
07914	Boron	7440-42-8	2.68	J	0.858	10.2	1
06949	Cadmium	7440-43-9	N.D.		0.0337	1.02	1
06951	Chromium	7440-47-3	2.34	J	0.112	3.07	1
06953	Copper	7440-50-8	1.83	J	0.337	2.04	1
01654	Iron	7439-89-6	833		3.41	40.9	1
06955	Lead	7439-92-1	2.31	J	0.511	3.07	1
06958	Manganese	7439-96-5	7.45		0.0848	1.02	1
06960	Molybdenum	7439-98-7	N.D.		0.174	2.04	1
06961	Nickel	7440-02-0	2.10		0.153	2.04	1
06936	Selenium	7782-49-2	N.D.		0.450	4.09	1
06966	Silver	7440-22-4	N.D.		0.194	1.02	1
07968	Strontium	7440-24-6	11.4		0.0337	1.02	1
06925	Thallium	7440-28-0	N.D.		0.818	6.13	1
06972	Zinc	7440-66-6	3.06	J	0.266	4.09	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0103	0.207	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.28		0.0100	0.0100	1
	The pH was measured in water at 23.3 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	5.0		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-3(1.5-2.5)-20140630 Solid Sample
Duke Sutton

LL Sample # SW 7520697
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 16:02 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS31T SDG#: DUK36-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 19:58	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:17	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:06	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002A	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-3(1.5-2.5)-20140630 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520698
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 16:02 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS31S SDG#: DUK36-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0612	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0438 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	10.2	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0019 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.473	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.391	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0044 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0020 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	6.22	0.167	2.00	1
08068	Strontium	7440-24-6	0.0201	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0099 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:23	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-3(1.5-2.5)-20140630 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520698
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 16:02 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS31S SDG#: DUK36-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:41	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:20	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-3(5-6)-20140630 Solid Sample
Duke Sutton

LL Sample # SW 7520699
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 16:12 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS35T SDG#: DUK36-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.567	6.87	1
06935	Arsenic	7440-38-2	28.1		1.10	6.87	1
06946	Barium	7440-39-3	314		0.283	8.59	5
06947	Beryllium	7440-41-7	2.73		0.115	1.72	1
07914	Boron	7440-42-8	22.8		1.44	17.2	1
06949	Cadmium	7440-43-9	N.D.		0.0567	1.72	1
06951	Chromium	7440-47-3	20.4		0.189	5.15	1
06953	Copper	7440-50-8	34.8		0.567	3.43	1
01654	Iron	7439-89-6	11,700		5.73	68.7	1
06955	Lead	7439-92-1	9.56		0.859	5.15	1
06958	Manganese	7439-96-5	58.6		0.143	1.72	1
06960	Molybdenum	7439-98-7	1.21	J	0.292	3.43	1
06961	Nickel	7440-02-0	17.4		0.258	3.43	1
06936	Selenium	7782-49-2	5.33	J	0.755	6.87	1
06966	Silver	7440-22-4	N.D.		0.326	1.72	1
07968	Strontium	7440-24-6	201		0.283	8.59	5
06925	Thallium	7440-28-0	N.D.		1.37	10.3	1
06972	Zinc	7440-66-6	14.0		0.446	6.87	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.228	J	0.0171	0.341	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.71		0.0100	0.0100	1
	The pH was measured in water at 23.1 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	44.0		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/09/2014 20:14	John P Hook	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-3(5-6)-20140630 Solid Sample
Duke Sutton

LL Sample # SW 7520699
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 16:12 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS35T SDG#: DUK36-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 20:10	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/09/2014 20:14	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:20	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:08	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002A	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-3(5-6)-20140630 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520700
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 16:12 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS35S SDG#: DUK36-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0229 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0223	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0278 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	4.34	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.204	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0099 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0071 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	0.0051 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	2.76	0.167	2.00	1
08068	Strontium	7440-24-6	0.0436	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:26	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-3(5-6)-20140630 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520700
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/30/2014 16:12 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS35S SDG#: DUK36-08

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:45	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:22	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520701
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52T SDG#: DUK36-09BKG

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.410	4.96	1
06935	Arsenic	7440-38-2	18.5		0.794	4.96	1
06946	Barium	7440-39-3	340		0.205	6.21	5
06947	Beryllium	7440-41-7	2.76		0.0831	1.24	1
07914	Boron	7440-42-8	8.38	J	1.04	12.4	1
06949	Cadmium	7440-43-9	N.D.		0.0410	1.24	1
06951	Chromium	7440-47-3	11.8		0.137	3.72	1
06953	Copper	7440-50-8	27.0		0.410	2.48	1
01654	Iron	7439-89-6	11,400		4.14	49.6	1
06955	Lead	7439-92-1	8.63		0.621	3.72	1
06958	Manganese	7439-96-5	81.1		0.103	1.24	1
06960	Molybdenum	7439-98-7	1.79	J	0.211	2.48	1
06961	Nickel	7440-02-0	18.6		0.186	2.48	1
06936	Selenium	7782-49-2	3.39	J	0.546	4.96	1
06966	Silver	7440-22-4	N.D.		0.236	1.24	1
07968	Strontium	7440-24-6	184		0.205	6.21	5
06925	Thallium	7440-28-0	N.D.		0.993	7.45	1
06972	Zinc	7440-66-6	16.6		0.323	4.96	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0339	J	0.0126	0.251	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.53		0.0100	0.0100	1
	The pH was measured in water at 23.2 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	21.0		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/09/2014 19:07	John P Hook	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520701
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52T SDG#: DUK36-09BKG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 18:43	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/09/2014 19:07	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 14:32	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:11	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 MS Solid Sample
Duke Sutton

LL Sample # SW 7520702
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52T SDG#: DUK36-09MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/kg	mg/kg	mg/kg	
06944	Antimony	7440-36-0	49.9	0.398	4.82	1
06935	Arsenic	7440-38-2	35.8	0.772	4.82	1
06946	Barium	7440-39-3	571	0.199	6.03	5
06947	Beryllium	7440-41-7	8.80	0.0808	1.21	1
07914	Boron	7440-42-8	242	1.01	12.1	1
06949	Cadmium	7440-43-9	5.70	0.0398	1.21	1
06951	Chromium	7440-47-3	39.7	0.133	3.62	1
06953	Copper	7440-50-8	57.9	0.398	2.41	1
01654	Iron	7439-89-6	12,600	4.03	48.2	1
06955	Lead	7439-92-1	25.9	0.603	3.62	1
06958	Manganese	7439-96-5	123	0.100	1.21	1
06960	Molybdenum	7439-98-7	235	0.205	2.41	1
06961	Nickel	7440-02-0	80.0	0.181	2.41	1
06936	Selenium	7782-49-2	20.7	0.530	4.82	1
06966	Silver	7440-22-4	4.49	0.229	1.21	1
07968	Strontium	7440-24-6	296	0.199	6.03	5
06925	Thallium	7440-28-0	13.5	0.964	7.23	1
06972	Zinc	7440-66-6	72.1	0.313	4.82	1
	SW-846 7471B		mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.226 J	0.0118	0.237	1
Wet Chemistry	**SM 2540 G-1997**		%	%	%	
00118	Moisture	n.a.	21.0	0.50	0.50	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06946	Barium	SW-846 6010C	3	141880637002	07/09/2014 19:26	John P Hook	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 18:55	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 MS Solid Sample
Duke Sutton

LL Sample # SW 7520702
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52T SDG#: DUK36-09MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
07968	Strontium	SW-846 6010C	3	141880637002	07/09/2014 19:26	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 14:43	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:21	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 MSD Solid Sample
Duke Sutton

LL Sample # SW 7520703
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52T SDG#: DUK36-09MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/kg	mg/kg	mg/kg	
06944	Antimony	7440-36-0	51.3	0.402	4.87	1
06935	Arsenic	7440-38-2	36.5	0.779	4.87	1
06946	Barium	7440-39-3	604	0.201	6.09	5
06947	Beryllium	7440-41-7	9.06	0.0815	1.22	1
07914	Boron	7440-42-8	243	1.02	12.2	1
06949	Cadmium	7440-43-9	5.78	0.0402	1.22	1
06951	Chromium	7440-47-3	40.5	0.134	3.65	1
06953	Copper	7440-50-8	59.6	0.402	2.43	1
01654	Iron	7439-89-6	12,300	4.07	48.7	1
06955	Lead	7439-92-1	27.0	0.609	3.65	1
06958	Manganese	7439-96-5	122	0.101	1.22	1
06960	Molybdenum	7439-98-7	240	0.207	2.43	1
06961	Nickel	7440-02-0	81.1	0.183	2.43	1
06936	Selenium	7782-49-2	21.1	0.536	4.87	1
06966	Silver	7440-22-4	4.49	0.231	1.22	1
07968	Strontium	7440-24-6	318	0.201	6.09	5
06925	Thallium	7440-28-0	13.6	0.974	7.30	1
06972	Zinc	7440-66-6	73.3	0.316	4.87	1
	SW-846 7471B		mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.282	0.0122	0.244	1
Wet Chemistry	**SM 2540 G-1997**		%	%	%	
00118	Moisture	n.a.	21.0	0.50	0.50	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06946	Barium	SW-846 6010C	3	141880637002	07/09/2014 19:30	John P Hook	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 18:59	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 MSD Solid Sample
Duke Sutton

LL Sample # SW 7520703
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52T SDG#: DUK36-09MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
07968	Strontium	SW-846 6010C	3	141880637002	07/09/2014 19:30	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 14:47	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:23	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 DUP Solid Sample
Duke Sutton

LL Sample # SW 7520704
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52T SDG#: DUK36-09DUP

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.402	4.87	1
06935	Arsenic	7440-38-2	20.8		0.779	4.87	1
06946	Barium	7440-39-3	389		0.201	6.09	5
06947	Beryllium	7440-41-7	3.42		0.0815	1.22	1
07914	Boron	7440-42-8	9.31	J	1.02	12.2	1
06949	Cadmium	7440-43-9	N.D.		0.0402	1.22	1
06951	Chromium	7440-47-3	13.7		0.134	3.65	1
06953	Copper	7440-50-8	32.7		0.402	2.43	1
01654	Iron	7439-89-6	11,500		4.07	48.7	1
06955	Lead	7439-92-1	10.2		0.609	3.65	1
06958	Manganese	7439-96-5	55.3		0.101	1.22	1
06960	Molybdenum	7439-98-7	1.51	J	0.207	2.43	1
06961	Nickel	7440-02-0	20.2		0.183	2.43	1
06936	Selenium	7782-49-2	4.68	J	0.536	4.87	1
06966	Silver	7440-22-4	N.D.		0.231	1.22	1
07968	Strontium	7440-24-6	213		0.201	6.09	5
06925	Thallium	7440-28-0	N.D.		0.974	7.30	1
06972	Zinc	7440-66-6	14.3		0.316	4.87	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0395	J	0.0118	0.237	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.51		0.0100	0.0100	1
	The pH was measured in water at 23 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00118	Moisture	n.a.	21.0		0.50	0.50	1
00121	Moisture Duplicate	n.a.	23.1		0.50	0.50	1
	The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/09/2014 19:22	John P Hook	5

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 DUP Solid Sample
Duke Sutton

LL Sample # SW 7520704
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52T SDG#: DUK36-09DUP

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 18:51	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/09/2014 19:22	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 14:39	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:19	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00118	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520705
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52S SDG#: DUK36-10BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0055 J	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0197 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.105	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0284 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	5.40	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0021 J	0.0013	0.0300	1
07053	Copper	7440-50-8	0.0085 J	0.0028	0.0200	1
01754	Iron	7439-89-6	0.370 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.323	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0031 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0172 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	3.58	0.167	2.00	1
08068	Strontium	7440-24-6	0.122	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0059 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:01	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520705
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52S SDG#: DUK36-10BKG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 01:56	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:24	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 MS Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520706
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52S SDG#: DUK36-10MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	4.82	0.0051	0.0400	1
07035	Arsenic	7440-38-2	4.90	0.0072	0.0400	1
07046	Barium	7440-39-3	94.6	0.0083	0.250	25
07047	Beryllium	7440-41-7	4.86	0.0013	0.0200	2
08014	Boron	7440-42-8	4.49	0.0046	0.100	1
07049	Cadmium	7440-43-9	0.914	0.00033	0.0100	1
01750	Calcium	7440-70-2	52.6	0.0334	0.400	1
07051	Chromium	7440-47-3	4.58	0.0013	0.0300	1
07053	Copper	7440-50-8	4.72	0.0028	0.0200	1
01754	Iron	7439-89-6	5.25	0.0334	0.400	1
07055	Lead	7439-92-1	4.53	0.0047	0.0300	1
01757	Magnesium	7439-95-4	47.4	0.0167	0.200	1
07058	Manganese	7439-96-5	4.51	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	9.40	0.0017	0.0200	1
07061	Nickel	7440-02-0	4.50	0.0016	0.0200	1
01762	Potassium	7440-09-7	48.9	0.133	1.00	1
07036	Selenium	7782-49-2	0.965	0.0048	0.0400	1
07066	Silver	7440-22-4	3.53	0.0018	0.0100	1
01767	Sodium	7440-23-5	49.0	0.167	2.00	1
08068	Strontium	7440-24-6	5.06	0.00066	0.0200	2
07022	Thallium	7440-28-0	4.35	0.0051	0.0600	1
07072	Zinc	7440-66-6	4.62	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	0.0193	0.00060	0.0020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:11	Tara L Snyder	25
07047	Beryllium	SW-846 6010C	2	141900636001	07/11/2014 08:56	Joanne M Gates	2
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 MS Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520706
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52S SDG#: DUK36-10MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
08068	Strontium	SW-846 6010C	2	141900636001	07/11/2014 08:56	Joanne M Gates	2
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:07	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:26	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 MSD Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520707
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52S SDG#: DUK36-10MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	4.65	0.0051	0.0400	1
07035	Arsenic	7440-38-2	4.72	0.0072	0.0400	1
07046	Barium	7440-39-3	90.7	0.0083	0.250	25
07047	Beryllium	7440-41-7	4.77	0.0013	0.0200	2
08014	Boron	7440-42-8	4.40	0.0046	0.100	1
07049	Cadmium	7440-43-9	0.880	0.00033	0.0100	1
01750	Calcium	7440-70-2	50.6	0.0334	0.400	1
07051	Chromium	7440-47-3	4.51	0.0013	0.0300	1
07053	Copper	7440-50-8	4.58	0.0028	0.0200	1
01754	Iron	7439-89-6	5.31	0.0334	0.400	1
07055	Lead	7439-92-1	4.38	0.0047	0.0300	1
01757	Magnesium	7439-95-4	46.3	0.0167	0.200	1
07058	Manganese	7439-96-5	4.45	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	9.15	0.0017	0.0200	1
07061	Nickel	7440-02-0	4.37	0.0016	0.0200	1
01762	Potassium	7440-09-7	47.8	0.133	1.00	1
07036	Selenium	7782-49-2	0.933	0.0048	0.0400	1
07066	Silver	7440-22-4	4.03	0.0018	0.0100	1
01767	Sodium	7440-23-5	48.7	0.167	2.00	1
08068	Strontium	7440-24-6	4.90	0.00066	0.0200	2
07022	Thallium	7440-28-0	4.19	0.0051	0.0600	1
07072	Zinc	7440-66-6	4.46	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	0.0182	0.00060	0.0020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:19	Tara L Snyder	25
07047	Beryllium	SW-846 6010C	2	141900636001	07/11/2014 09:00	Joanne M Gates	2
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 MSD Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520707
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52S SDG#: DUK36-10MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
08068	Strontium	SW-846 6010C	2	141900636001	07/11/2014 09:00	Joanne M Gates	2
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:15	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:28	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 DUP Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520708
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52S SDG#: DUK36-10DUP

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0066 J	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0183 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.115	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0285 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	5.30	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0019 J	0.0013	0.0300	1
07053	Copper	7440-50-8	0.0091 J	0.0028	0.0200	1
01754	Iron	7439-89-6	0.362 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.314	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0032 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0149 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	0.0051 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	3.43	0.167	2.00	1
08068	Strontium	7440-24-6	0.120	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0069 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:08	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-5(2-4)-20140701 DUP Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520708
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS52S SDG#: DUK36-10DUP

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:03	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:31	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-5(6-8)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520709
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:10 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS56T SDG#: DUK36-11

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.	0.517	6.26	1
06935	Arsenic	7440-38-2	42.2	1.00	6.26	1
06946	Barium	7440-39-3	708	0.258	7.83	5
06947	Beryllium	7440-41-7	7.84	0.105	1.57	1
07914	Boron	7440-42-8	19.0	1.32	15.7	1
06949	Cadmium	7440-43-9	N.D.	0.0517	1.57	1
06951	Chromium	7440-47-3	25.4	0.172	4.70	1
06953	Copper	7440-50-8	66.4	0.517	3.13	1
01654	Iron	7439-89-6	13,500	5.23	62.6	1
06955	Lead	7439-92-1	18.8	0.783	4.70	1
06958	Manganese	7439-96-5	85.7	0.130	1.57	1
06960	Molybdenum	7439-98-7	0.985 J	0.266	3.13	1
06961	Nickel	7440-02-0	34.9	0.235	3.13	1
06936	Selenium	7782-49-2	6.86	0.689	6.26	1
06966	Silver	7440-22-4	N.D.	0.298	1.57	1
07968	Strontium	7440-24-6	475	0.258	7.83	5
06925	Thallium	7440-28-0	N.D.	1.25	9.40	1
06972	Zinc	7440-66-6	28.0	0.407	6.26	1
	SW-846 7471B		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0875 J	0.0156	0.311	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**	**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.80	0.0100	0.0100	1
	The pH was measured in water at 23.3 C.					
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	37.4	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/09/2014 20:22	John P Hook	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-5(6-8)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520709
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:10 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS56T SDG#: DUK36-11

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 20:18	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/09/2014 20:22	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:24	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:25	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-5(6-8)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520710
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:10 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS56S SDG#: DUK36-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0132 J	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0415	0.0072	0.0400	1
07046	Barium	7440-39-3	0.221	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0183 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	12.0	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.214	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0019 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0112 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.300 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0284 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	1.35 J	0.167	2.00	1
08068	Strontium	7440-24-6	0.247	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0023 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:30	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-5(6-8)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520710
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:10 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS56S SDG#: DUK36-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:48	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:33	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-95(7-8)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520711
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:10 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS95T SDG#: DUK36-13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.	0.488	5.92	1
06935	Arsenic	7440-38-2	42.3	0.947	5.92	1
06946	Barium	7440-39-3	686	0.244	7.40	5
06947	Beryllium	7440-41-7	7.41	0.0991	1.48	1
07914	Boron	7440-42-8	17.5	1.24	14.8	1
06949	Cadmium	7440-43-9	N.D.	0.0488	1.48	1
06951	Chromium	7440-47-3	25.3	0.163	4.44	1
06953	Copper	7440-50-8	62.7	0.488	2.96	1
01654	Iron	7439-89-6	13,000	4.94	59.2	1
06955	Lead	7439-92-1	17.8	0.740	4.44	1
06958	Manganese	7439-96-5	79.8	0.123	1.48	1
06960	Molybdenum	7439-98-7	0.975 J	0.251	2.96	1
06961	Nickel	7440-02-0	33.3	0.222	2.96	1
06936	Selenium	7782-49-2	6.74	0.651	5.92	1
06966	Silver	7440-22-4	N.D.	0.281	1.48	1
07968	Strontium	7440-24-6	449	0.244	7.40	5
06925	Thallium	7440-28-0	N.D.	1.18	8.88	1
06972	Zinc	7440-66-6	27.8	0.385	5.92	1
	SW-846 7471B		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0955 J	0.0145	0.290	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**	**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.79	0.0100	0.0100	1
	The pH was measured in water at 22.9 C.					
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	35.0	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/09/2014 20:30	John P Hook	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-95(7-8)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520711
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:10 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS95T SDG#: DUK36-13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 20:26	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/09/2014 20:30	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:28	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:27	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-95(7-8)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520712
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:10 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS95S SDG#: DUK36-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0141 J	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0426	0.0072	0.0400	1
07046	Barium	7440-39-3	0.213	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0184 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	11.7	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.220	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0028 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0150 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.283 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0280 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	1.35 J	0.167	2.00	1
08068	Strontium	7440-24-6	0.243	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:34	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-95(7-8)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520712
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:10 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS95S SDG#: DUK36-14

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:52	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:35	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-7(3-4)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520713
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:30 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS73T SDG#: DUK36-15

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.394	4.78	1
06935	Arsenic	7440-38-2	4.27	J	0.764	4.78	1
06946	Barium	7440-39-3	31.8		0.0394	1.19	1
06947	Beryllium	7440-41-7	0.383	J	0.0800	1.19	1
07914	Boron	7440-42-8	1.96	J	1.00	11.9	1
06949	Cadmium	7440-43-9	N.D.		0.0394	1.19	1
06951	Chromium	7440-47-3	3.39	J	0.131	3.58	1
06953	Copper	7440-50-8	5.03		0.394	2.39	1
01654	Iron	7439-89-6	2,180		3.99	47.8	1
06955	Lead	7439-92-1	2.51	J	0.597	3.58	1
06958	Manganese	7439-96-5	8.22		0.0991	1.19	1
06960	Molybdenum	7439-98-7	0.294	J	0.203	2.39	1
06961	Nickel	7440-02-0	3.27		0.179	2.39	1
06936	Selenium	7782-49-2	N.D.		0.525	4.78	1
06966	Silver	7440-22-4	N.D.		0.227	1.19	1
07968	Strontium	7440-24-6	11.8		0.0394	1.19	1
06925	Thallium	7440-28-0	N.D.		0.955	7.17	1
06972	Zinc	7440-66-6	5.99		0.310	4.78	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0117	0.233	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	6.10		0.0100	0.0100	1
	The pH was measured in water at 23.2 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	18.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-7(3-4)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520713
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:30 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS73T SDG#: DUK36-15

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/10/2014 04:41	Tara L Snyder	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:32	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:29	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-7(3-4)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520714
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:30 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS73S SDG#: DUK36-16

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0173	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0397 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	1.47	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.281 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.211	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0014 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	6.09	0.167	2.00	1
08068	Strontium	7440-24-6	0.0101	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0060 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:45	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-7(3-4)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520714
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:30 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS73S SDG#: DUK36-16

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:56	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:41	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-7(7-8)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520715
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:32 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS77T SDG#: DUK36-17

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.546	6.61	1
06935	Arsenic	7440-38-2	31.1		1.06	6.61	1
06946	Barium	7440-39-3	543		0.273	8.27	5
06947	Beryllium	7440-41-7	5.79		0.111	1.65	1
07914	Boron	7440-42-8	15.6	J	1.39	16.5	1
06949	Cadmium	7440-43-9	N.D.		0.0546	1.65	1
06951	Chromium	7440-47-3	22.2		0.182	4.96	1
06953	Copper	7440-50-8	58.2		0.546	3.31	1
01654	Iron	7439-89-6	8,130		5.52	66.1	1
06955	Lead	7439-92-1	17.7		0.827	4.96	1
06958	Manganese	7439-96-5	43.5		0.137	1.65	1
06960	Molybdenum	7439-98-7	1.62	J	0.281	3.31	1
06961	Nickel	7440-02-0	27.0		0.248	3.31	1
06936	Selenium	7782-49-2	6.29	J	0.727	6.61	1
06966	Silver	7440-22-4	N.D.		0.314	1.65	1
07968	Strontium	7440-24-6	336		0.273	8.27	5
06925	Thallium	7440-28-0	N.D.		1.32	9.92	1
06972	Zinc	7440-66-6	22.4		0.430	6.61	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0915	J	0.0157	0.315	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.21		0.0100	0.0100	1
	The pH was measured in water at 23.3 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	40.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/10/2014 04:48	Tara L Snyder	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-7(7-8)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520715
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:32 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS77T SDG#: DUK36-17

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/10/2014 04:44	Tara L Snyder	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/10/2014 04:48	Tara L Snyder	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:36	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:31	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402A	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-7(7-8)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520716
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:32 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS77S SDG#: DUK36-18

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.010 J	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0182 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.295	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0278 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	5.60	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.306	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0054 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0261	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	0.0053 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	2.71	0.167	2.00	1
08068	Strontium	7440-24-6	0.139	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:48	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-7(7-8)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520716
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:32 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS77S SDG#: DUK36-18

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 02:59	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:43	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-4(18-20)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520717
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 12:48 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D418T SDG#: DUK36-19

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	0.839 J	0.699	8.47	1
06935	Arsenic	7440-38-2	3.02 J	1.36	8.47	1
06946	Barium	7440-39-3	34.2	0.0699	2.12	1
06947	Beryllium	7440-41-7	N.D.	0.142	2.12	1
07914	Boron	7440-42-8	7.03 J	1.78	21.2	1
06949	Cadmium	7440-43-9	0.0826 J	0.0699	2.12	1
06951	Chromium	7440-47-3	6.51	0.233	6.36	1
06953	Copper	7440-50-8	3.15 J	0.699	4.24	1
01654	Iron	7439-89-6	1,610	7.08	84.7	1
06955	Lead	7439-92-1	2.32 J	1.06	6.36	1
06958	Manganese	7439-96-5	15.6	0.176	2.12	1
06960	Molybdenum	7439-98-7	0.428 J	0.360	4.24	1
06961	Nickel	7440-02-0	3.23 J	0.318	4.24	1
06936	Selenium	7782-49-2	N.D.	0.932	8.47	1
06966	Silver	7440-22-4	N.D.	0.403	2.12	1
07968	Strontium	7440-24-6	21.0	0.0699	2.12	1
06925	Thallium	7440-28-0	N.D.	1.69	12.7	1
06972	Zinc	7440-66-6	9.63	0.551	8.47	1
	SW-846 7471B		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.	0.0209	0.418	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**	**Std. Units**	**Std. Units**	
00394	pH	n.a.	5.54	0.0100	0.0100	1
	The pH was measured in water at 23.1 C.					
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	52.8	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-4(18-20)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520717
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 12:48 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D418T SDG#: DUK36-19

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/10/2014 04:53	Tara L Snyder	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:40	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:33	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402B	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-4(18-20)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520718
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 12:48 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D418S SDG#: DUK36-20

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0424	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0994 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	1.08	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	0.0037 J	0.0028	0.0200	1
01754	Iron	7439-89-6	0.0850 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.190 J	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0020 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	12.6	0.167	2.00	1
08068	Strontium	7440-24-6	0.0033 J	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0091 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-4(18-20)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520718
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 12:48 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D418S SDG#: DUK36-20

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 03:03	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:45	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-11(7-8)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7520719
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 09:58 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D117T SDG#: DUK36-21

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.345	4.18	1
06935	Arsenic	7440-38-2	6.44		0.668	4.18	1
06946	Barium	7440-39-3	38.8		0.0345	1.04	1
06947	Beryllium	7440-41-7	0.845	J	0.0700	1.04	1
07914	Boron	7440-42-8	2.62	J	0.877	10.4	1
06949	Cadmium	7440-43-9	N.D.		0.0345	1.04	1
06951	Chromium	7440-47-3	4.16		0.115	3.13	1
06953	Copper	7440-50-8	7.55		0.345	2.09	1
01654	Iron	7439-89-6	2,080		3.49	41.8	1
06955	Lead	7439-92-1	3.52		0.522	3.13	1
06958	Manganese	7439-96-5	10.9		0.0867	1.04	1
06960	Molybdenum	7439-98-7	0.378	J	0.178	2.09	1
06961	Nickel	7440-02-0	3.93		0.157	2.09	1
06936	Selenium	7782-49-2	N.D.		0.459	4.18	1
06966	Silver	7440-22-4	N.D.		0.198	1.04	1
07968	Strontium	7440-24-6	21.3		0.0345	1.04	1
06925	Thallium	7440-28-0	N.D.		0.835	6.27	1
06972	Zinc	7440-66-6	3.99	J	0.272	4.18	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0108	0.216	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	6.43		0.0100	0.0100	1
	The pH was measured in water at 23.2 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	8.8		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-11(7-8)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7520719
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 09:58 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D117T SDG#: DUK36-21

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/10/2014 04:56	Tara L Snyder	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:43	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:35	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402B	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-11(7-8)-20140702 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520720
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 09:58 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D117S SDG#: DUK36-22

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0038 J	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0321 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	0.791	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.0362 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.278	0.0167	0.200	1
07058	Manganese	7439-96-5	N.D.	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	2.55	0.167	2.00	1
08068	Strontium	7440-24-6	0.0202	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 08:52	Joanne M Gates	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-11(7-8)-20140702 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520720
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 09:58 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D117S SDG#: DUK36-22

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 03:07	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:47	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-11(11-12)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7520721
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D111T SDG#: DUK36-23

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony		7440-36-0	N.D.		0.383	4.65	1
06935	Arsenic		7440-38-2	7.54		0.743	4.65	1
06946	Barium		7440-39-3	261		0.192	5.81	5
06947	Beryllium		7440-41-7	1.59		0.0778	1.16	1
07914	Boron		7440-42-8	4.89	J	0.976	11.6	1
06949	Cadmium		7440-43-9	N.D.		0.0383	1.16	1
06951	Chromium		7440-47-3	6.59		0.128	3.48	1
06953	Copper		7440-50-8	14.7		0.383	2.32	1
01654	Iron		7439-89-6	9,420		3.88	46.5	1
06955	Lead		7439-92-1	3.60		0.581	3.48	1
06958	Manganese		7439-96-5	46.9		0.0964	1.16	1
06960	Molybdenum		7439-98-7	0.441	J	0.197	2.32	1
06961	Nickel		7440-02-0	8.38		0.174	2.32	1
06936	Selenium		7782-49-2	0.555	J	0.511	4.65	1
06966	Silver		7440-22-4	N.D.		0.221	1.16	1
07968	Strontium		7440-24-6	83.7		0.0383	1.16	1
06925	Thallium		7440-28-0	N.D.		0.929	6.97	1
06972	Zinc		7440-66-6	6.30		0.302	4.65	1
		SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury		7439-97-6	N.D.		0.0117	0.233	1
Wet Chemistry		**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH		n.a.	6.69		0.0100	0.0100	1
	The pH was measured in water at 23.1 C.							
Wet Chemistry		**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture		n.a.	16.4		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/10/2014 05:04	Tara L Snyder	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-11(11-12)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7520721
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D111T SDG#: DUK36-23

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/10/2014 05:00	Tara L Snyder	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:54	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:37	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402B	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-11(11-12)-20140702 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520722
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D111S SDG#: DUK36-24

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0571	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0535 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	1.30	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0021 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.426	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.500	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0054 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0024 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	4.41	0.167	2.00	1
08068	Strontium	7440-24-6	0.0375	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0060 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-11(11-12)-20140702 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520722
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:00 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D111S SDG#: DUK36-24

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 03:18	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:49	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-7(15-16)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520723
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:35 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D715T SDG#: DUK36-25

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.377	4.57	1
06935	Arsenic	7440-38-2	1.07	J	0.732	4.57	1
06946	Barium	7440-39-3	7.41		0.0377	1.14	1
06947	Beryllium	7440-41-7	N.D.		0.0766	1.14	1
07914	Boron	7440-42-8	2.75	J	0.960	11.4	1
06949	Cadmium	7440-43-9	N.D.		0.0377	1.14	1
06951	Chromium	7440-47-3	1.12	J	0.126	3.43	1
06953	Copper	7440-50-8	N.D.		0.377	2.29	1
01654	Iron	7439-89-6	267		3.82	45.7	1
06955	Lead	7439-92-1	1.12	J	0.572	3.43	1
06958	Manganese	7439-96-5	2.52		0.0949	1.14	1
06960	Molybdenum	7439-98-7	N.D.		0.194	2.29	1
06961	Nickel	7440-02-0	0.252	J	0.171	2.29	1
06936	Selenium	7782-49-2	N.D.		0.503	4.57	1
06966	Silver	7440-22-4	N.D.		0.217	1.14	1
07968	Strontium	7440-24-6	3.43		0.0377	1.14	1
06925	Thallium	7440-28-0	N.D.		0.915	6.86	1
06972	Zinc	7440-66-6	0.935	J	0.297	4.57	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	N.D.		0.0118	0.237	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.16		0.0100	0.0100	1
	The pH was measured in water at 23.1 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-7(15-16)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7520723
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:35 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D715T SDG#: DUK36-25

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/10/2014 05:08	Tara L Snyder	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 15:58	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:43	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402B	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-7(15-16)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520724
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:35 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D715S SDG#: DUK36-26

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0447	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0527 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	1.86	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0045 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.821	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.364	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0079 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0063 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.217 J	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	5.74	0.167	2.00	1
08068	Strontium	7440-24-6	0.0250	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0099 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-7(15-16)-20140701 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520724
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:35 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D715S SDG#: DUK36-26

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 03:22	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:51	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-14(3-4)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7520725
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:30 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D143T SDG#: DUK36-27

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.537	6.50	1
06935	Arsenic	7440-38-2	35.1		1.04	6.50	1
06946	Barium	7440-39-3	447		0.268	8.13	5
06947	Beryllium	7440-41-7	5.15		0.109	1.63	1
07914	Boron	7440-42-8	9.87	J	1.37	16.3	1
06949	Cadmium	7440-43-9	N.D.		0.0537	1.63	1
06951	Chromium	7440-47-3	21.1		0.179	4.88	1
06953	Copper	7440-50-8	56.1		0.537	3.25	1
01654	Iron	7439-89-6	13,400		5.43	65.0	1
06955	Lead	7439-92-1	14.6		0.813	4.88	1
06958	Manganese	7439-96-5	152		0.135	1.63	1
06960	Molybdenum	7439-98-7	3.02	J	0.276	3.25	1
06961	Nickel	7440-02-0	29.9		0.244	3.25	1
06936	Selenium	7782-49-2	2.77	J	0.715	6.50	1
06966	Silver	7440-22-4	N.D.		0.309	1.63	1
07968	Strontium	7440-24-6	235		0.268	8.13	5
06925	Thallium	7440-28-0	N.D.		1.30	9.76	1
06972	Zinc	7440-66-6	20.5		0.423	6.50	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.106	J	0.0156	0.312	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	6.32		0.0100	0.0100	1
	The pH was measured in water at 23.1 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	38.5		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/10/2014 05:16	Tara L Snyder	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-14(3-4)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7520725
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:30 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D143T SDG#: DUK36-27

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/10/2014 05:12	Tara L Snyder	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/10/2014 05:16	Tara L Snyder	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 16:02	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:45	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402B	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-14(3-4)-20140702 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520726
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:30 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D143S SDG#: DUK36-28

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0352	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0466 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	1.11	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.139 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.515	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0021 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0073 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	5.53	0.167	2.00	1
08068	Strontium	7440-24-6	0.0210	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0079 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-14(3-4)-20140702 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520726
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:30 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D143S SDG#: DUK36-28

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 03:25	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:53	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-F-DPT-14(7-8)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7520727
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:40 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D147T SDG#: DUK36-29

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.526	6.38	1
06935	Arsenic	7440-38-2	39.0		1.02	6.38	1
06946	Barium	7440-39-3	443		0.263	7.97	5
06947	Beryllium	7440-41-7	2.64		0.107	1.59	1
07914	Boron	7440-42-8	12.4	J	1.34	15.9	1
06949	Cadmium	7440-43-9	N.D.		0.0526	1.59	1
06951	Chromium	7440-47-3	17.1		0.175	4.78	1
06953	Copper	7440-50-8	34.9		0.526	3.19	1
01654	Iron	7439-89-6	16,200		5.32	63.8	1
06955	Lead	7439-92-1	9.93		0.797	4.78	1
06958	Manganese	7439-96-5	72.7		0.132	1.59	1
06960	Molybdenum	7439-98-7	2.19	J	0.271	3.19	1
06961	Nickel	7440-02-0	16.6		0.239	3.19	1
06936	Selenium	7782-49-2	4.83	J	0.701	6.38	1
06966	Silver	7440-22-4	N.D.		0.303	1.59	1
07968	Strontium	7440-24-6	195		0.263	7.97	5
06925	Thallium	7440-28-0	N.D.		1.28	9.57	1
06972	Zinc	7440-66-6	15.0		0.414	6.38	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.131	J	0.0154	0.308	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	5.90		0.0100	0.0100	1
	The pH was measured in water at 23 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	39.1		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/10/2014 05:32	Tara L Snyder	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1

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Analysis Report

Sample Description: SS-F-DPT-14(7-8)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7520727
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:40 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D147T SDG#: DUK36-29

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/10/2014 05:28	Tara L Snyder	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/10/2014 05:32	Tara L Snyder	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 16:06	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:47	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039402B	07/03/2014 20:15	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820002B	07/08/2014 19:40	Scott W Freisher	1

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Analysis Report

Sample Description: SS-F-DPT-14(7-8)-20140702 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520728
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:40 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D147S SDG#: DUK36-30*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0870	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0250 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	1.71	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.320	0.0167	0.200	1
07058	Manganese	7439-96-5	N.D.	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0089 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0021 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.409 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0065 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	2.76	0.167	2.00	1
08068	Strontium	7440-24-6	0.129	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07035	Arsenic	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07046	Barium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
01750	Calcium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1

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Analysis Report

Sample Description: SS-F-DPT-14(7-8)-20140702 Solid Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7520728
LL Group # 1486445
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:40 by RD

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:29

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

D147S SDG#: DUK36-30*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
01754	Iron	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07055	Lead	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07060	Molybdenum	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07061	Nickel	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
01762	Potassium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07066	Silver	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
01767	Sodium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07022	Thallium	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
07072	Zinc	SW-846 6010C	1	141900636001	07/11/2014 03:29	Tara L Snyder	1
00259	Mercury	SW-846 7470A	1	141905713003	07/12/2014 21:55	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141900636001	07/10/2014 06:33	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141905713003	07/10/2014 07:34	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14189-2486-1567	07/08/2014 12:00	Christina A Huber	n.a.

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486445
Reported: 07/14/14 at 11:29 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141880637002	Sample number(s): 7520693,7520695,7520697,7520699,7520701-7520704,7520709,7520711,7520713,7520715,7520717,7520719,7520721,7520723,7520725,7520727								
Antimony	N.D.	0.330	4.00	mg/kg	104		80-120		
Arsenic	N.D.	0.640	4.00	mg/kg	106		80-120		
Barium	0.0340 J	0.0330	1.00	mg/kg	100		80-120		
Beryllium	N.D.	0.0670	1.00	mg/kg	100		80-120		
Boron	2.54 J	0.840	10.0	mg/kg	98		80-120		
Cadmium	N.D.	0.0330	1.00	mg/kg	102		80-120		
Chromium	N.D.	0.110	3.00	mg/kg	100		80-120		
Copper	N.D.	0.330	2.00	mg/kg	102		80-120		
Iron	N.D.	3.34	40.0	mg/kg	105		80-120		
Lead	N.D.	0.500	3.00	mg/kg	104		80-120		
Manganese	N.D.	0.0830	1.00	mg/kg	103		80-120		
Molybdenum	N.D.	0.170	2.00	mg/kg	101		80-120		
Nickel	N.D.	0.150	2.00	mg/kg	106		80-120		
Selenium	N.D.	0.440	4.00	mg/kg	97		80-120		
Silver	N.D.	0.190	1.00	mg/kg	82		80-120		
Strontium	0.179 J	0.0330	1.00	mg/kg	101		80-120		
Thallium	N.D.	0.800	6.00	mg/kg	92		80-120		
Zinc	1.06 J	0.260	4.00	mg/kg	100		80-120		
Batch number: 141880638001	Sample number(s): 7520693,7520695,7520697,7520699,7520701-7520704,7520709,7520711,7520713,7520715,7520717,7520719,7520721,7520723,7520725,7520727								
Mercury	N.D.	0.0100	0.200	mg/kg	85		80-120		
Batch number: 141900636001	Sample number(s): 7520694,7520696,7520698,7520700,7520705-7520708,7520710,7520712,7520714,7520716,7520718,7520720,7520722,7520724,7520726,7520728								
Antimony	N.D.	0.0051	0.0400	mg/l	108		80-120		
Arsenic	N.D.	0.0072	0.0400	mg/l	106		80-120		
Barium	N.D.	0.00033	0.0100	mg/l	103		80-120		
Beryllium	N.D.	0.00067	0.0100	mg/l	102		80-120		
Boron	N.D.	0.0046	0.100	mg/l	95		80-120		
Cadmium	N.D.	0.00033	0.0100	mg/l	104		80-120		
Calcium	N.D.	0.0334	0.400	mg/l	103		80-120		
Chromium	N.D.	0.0013	0.0300	mg/l	103		80-120		
Copper	N.D.	0.0028	0.0200	mg/l	105		80-120		
Iron	N.D.	0.0334	0.400	mg/l	105		80-120		
Lead	N.D.	0.0047	0.0300	mg/l	110		80-120		
Magnesium	N.D.	0.0167	0.200	mg/l	102		80-120		
Manganese	N.D.	0.00083	0.0100	mg/l	104		80-120		
Molybdenum	N.D.	0.0017	0.0200	mg/l	107		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486445
Reported: 07/14/14 at 11:29 AM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Nickel	N.D.	0.0016	0.0200	mg/l	109		80-120		
Potassium	N.D.	0.133	1.00	mg/l	100		80-120		
Selenium	N.D.	0.0048	0.0400	mg/l	104		80-120		
Silver	N.D.	0.0018	0.0100	mg/l	111		80-120		
Sodium	N.D.	0.167	2.00	mg/l	103		80-120		
Strontium	N.D.	0.00033	0.0100	mg/l	104		80-120		
Thallium	N.D.	0.0051	0.0600	mg/l	98		80-120		
Zinc	N.D.	0.0020	0.0400	mg/l	103		80-120		
Batch number: 141905713003	Sample number(s): 7520694,7520696,7520698,7520700,7520705-7520708,7520710,7520712,7520714,7520716,7520718,7520720,7520722,7520724,7520726,7520728								
Mercury	N.D.	0.00006 0	0.00020	mg/l	107		80-120		
Batch number: 14184039402A	Sample number(s): 7520693,7520695,7520697,7520699,7520701,7520704,7520709,7520711,7520713,7520715								
pH					100		90-110		
Batch number: 14184039402B	Sample number(s): 7520717,7520719,7520721,7520723,7520725,7520727								
pH					100		90-110		
Batch number: 14189820002A	Sample number(s): 7520693,7520695,7520697,7520699								
Moisture					100		99-101		
Batch number: 14189820002B	Sample number(s): 7520701-7520704,7520709,7520711,7520713,7520715,7520717,7520719,7520721,7520723,7520725,7520727								
Moisture					100		99-101		
Moisture					100		99-101		
Moisture Duplicate					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141880637002	Sample number(s): 7520693,7520695,7520697,7520699,7520701-7520704,7520709,7520711,7520713,7520715,7520717,7520719,7520721,7520723,7520725,7520727 UNSPK: 7520701 BKG: 7520701								
Antimony	83	84	75-125	3	20	N.D.	N.D.	0 (1)	20
Arsenic	96	98	75-125	2	20	14.6	16.5	12 (1)	20
Barium	96	108	75-125	6	20	269	307	13	20
Beryllium	100	104	83-119	3	20	2.18	2.70	22* (1)	20
Boron	97	96	84-110	1	20	6.62 J	7.35 J	10 (1)	20
Cadmium	95	95	75-120	1	20	N.D.	N.D.	0 (1)	20
Chromium	116	118	75-125	2	20	9.34	10.9	15 (1)	20
Copper	102	107	75-125	3	20	21.3	25.8	19	20
Iron	965 (2)	741 (2)	75-125	2	20	9,010	9,100	1	20
Lead	96	100	75-125	4	20	6.81	8.09	17 (1)	20

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486445
Reported: 07/14/14 at 11:29 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc		DUP Conc		DUP RPD	Dup RPD Max
Manganese	70*	67*	75-125	1	20	64.1		43.7		38*	20
Molybdenum	97	98	82-110	2	20	1.42	J	1.19	J	17 (1)	20
Nickel	102	103	75-125	1	20	14.7		16.0		9	20
Selenium	96	97	75-125	2	20	2.68	J	3.70	J	32* (1)	20
Silver	75	74*	75-125	0	20	N.D.		N.D.		0 (1)	20
Strontium	93	111	81-125	7	20	145		168		15	20
Thallium	75*	75*	78-119	1	20	N.D.		N.D.		0 (1)	20
Zinc	92	93	75-125	2	20	13.1		11.3		15 (1)	20
Batch number: 141880638001	Sample number(s): 7520693,7520695,7520697,7520699,7520701-7520704,7520709,7520711,7520713,7520715,7520717,7520719,7520721,7520723,7520725,7520727 UNSPK: 7520701 BKG: 7520701										
Mercury	97	122*	80-120	22*	20	0.0268	J	0.0312	J	15 (1)	20
Batch number: 141900636001	Sample number(s): 7520694,7520696,7520698,7520700,7520705-7520708,7520710,7520712,7520714,7520716,7520718,7520720,7520722,7520724,7520726,7520728 UNSPK: 7520705 BKG: 7520705										
Antimony	96	93	75-125	4	20	0.0055	J	0.0066	J	18 (1)	20
Arsenic	98	94	75-125	4	20	0.0197	J	0.0183	J	7 (1)	20
Barium	94	91	75-125	4	20	0.105		0.115		10	20
Beryllium	97	95	75-125	2	20	N.D.		N.D.		0 (1)	20
Boron	89	87	75-125	2	20	0.0284	J	0.0285	J	0 (1)	20
Cadmium	91	88	75-125	4	20	N.D.		N.D.		0 (1)	20
Calcium	94	90	75-125	4	20	5.40		5.30		2	20
Chromium	91	90	75-125	1	20	0.0021	J	0.0019	J	12 (1)	20
Copper	94	91	75-125	3	20	0.0085	J	0.0091	J	8 (1)	20
Iron	98	99	75-125	1	20	0.370	J	0.362	J	2 (1)	20
Lead	91	88	75-125	3	20	N.D.		N.D.		0 (1)	20
Magnesium	94	92	75-125	2	20	0.323		0.314		3 (1)	20
Manganese	90	89	75-125	1	20	0.0031	J	0.0032	J	4 (1)	20
Molybdenum	94	91	75-125	3	20	0.0172	J	0.0149	J	14 (1)	20
Nickel	90	87	75-125	3	20	N.D.		N.D.		0 (1)	20
Potassium	98	96	75-125	2	20	N.D.		N.D.		0 (1)	20
Selenium	96	93	75-125	3	20	N.D.		0.0051	J	200* (1)	20
Silver	71*	81	75-125	13	20	N.D.		N.D.		0 (1)	20
Sodium	91	90	75-125	1	20	3.58		3.43		4 (1)	20
Strontium	99	96	75-125	3	20	0.122		0.120		1	20
Thallium	87	84	75-125	4	20	N.D.		N.D.		0 (1)	20
Zinc	92	89	75-125	3	20	0.0059	J	0.0069	J	16 (1)	20
Batch number: 141905713003	Sample number(s): 7520694,7520696,7520698,7520700,7520705-7520708,7520710,7520712,7520714,7520716,7520718,7520720,7520722,7520724,7520726,7520728 UNSPK: 7520705 BKG: 7520705										
Mercury	96	91	80-120	6	20	N.D.		N.D.		0 (1)	20
Batch number: 14184039402A	Sample number(s): 7520693,7520695,7520697,7520699,7520701,7520704,7520709,7520711,7520713,7520715 BKG: 7520701										
pH						7.53		7.51		0	3
Batch number: 14184039402B	Sample number(s): 7520717,7520719,7520721,7520723,7520725,7520727 BKG: 7520727										
pH						5.90		5.86		1	3

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486445
Reported: 07/14/14 at 11:29 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 14189820002A	Sample number(s): 7520693,7520695,7520697,7520699 BKG: 7520697								
Moisture						5.0	5.4	8*	5
Batch number: 14189820002B	Sample number(s): 7520701-7520704,7520709,7520711,7520713,7520715,7520717,7520719,7520721,7520723,7520725,7520727 BKG: 7520701								
Moisture						21.0	23.1	10*	5
Moisture						21.0	23.1	10*	5
Moisture Duplicate						21.0	23.1	10*	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Acct. # 10634 For Eurofins Lancaster Laboratories Environmental use only Group # 1486445 Sample # 7520693-28
Instructions on reverse side correspond with circled numbers.

COC # 354252

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1 Client Information

Client: Geosyntec Consultants	Acct. #:
Project Name/#: Sutton - FADA	PWSID #:
Project Manager: Beau Hodge	P.O. #:
Sampler: Rachel Donahue	Quote #:

Name of state where samples were collected: NC

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

6 Remarks
page 1 of 2
(2 coolers)

2 Sample Identification	Collected Date	Collected Time	3 Grab	3 Composite	4 Matrix: Soil	Sediment	Water	Ground	Potable	Surface	NPDES	Other:	Total # of Containers	5 Analysis Requested: Preservation Codes									
														metals	SPLP metals								
SS-F-DPT-1 (3-4)-20140630	6-30-14	1415	X		X								2	X	X								
SS-F-DPT-1-(7-8)-20140630	6-30-14	1420	X		X								2	X	X								
SS-F-DPT-3 (1.5-2.5)-20140630	6-30-14	1602	X		X								2	X	X								
SS-F-DPT-3 (5-6)-20140630	6-30-14	1612	X		X								2	X	X								
SS-F-DPT-5 (2-4)-20140701	7-1-14	1300	X		X								2	X	X								
SS-F-DPT-5 (6-8)-20140701	7-1-14	1310	X		X								2	X	X								
SS-F-DPT-5(2-4)-20140701 MS	7-1-14	1300	X		X								2	X	X								
SS-F-DPT-5(2-4)-20140701 MSD	7-1-14	1300	X		X								2	X	X								
SS-F-DPT-95 (7-8)-20140701	7-1-14	1310	X		X								2	X	X								
SS-F-DPT-7 (3-4)-20140701	7-1-14	1430	X		X								2	X	X								

7 Turnaround Time (TAT) Requested (please circle)
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: STAT

E-mail address: radonahue@geosyntec.com + bhodge@geosyntec.com

8 Data Package Options (circle if required)
Type I (Validation/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) TX TRRP-13
Type IV (CLP SOW) MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	7-2-14				
	7-2-14	1800			

9

EDD Required? (Yes) No
If yes, format: ESDat

Site-Specific QC (MS/MSD/Dup)? (Yes) No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS FedEx Other

Temperature upon receipt 1.1-1.8 °C

Environmental Analysis Request/Chain of Custody

COC # 354251

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Acct. # 10634 For Eurofins Lancaster Laboratories Environmental use only Group # 1486445 Sample # 7520693-28
Instructions on reverse side correspond with circled numbers.

1 Client Information

Client: GeoSyntec Consultants	Acct. #:
Project Name/#: Sutton - FADA	PWSID #:
Project Manager: Beau Hodge	P.O. #:
Sampler: Rachel Donahue	Quote #:

Name of state where samples were collected: NC

4 Matrix: Sediment ☐ Soil ☒ Water (Ground ☐ Potable ☐ Surface ☐ NPDES ☐) Other: ____

5 Analysis Requested — Preservation Codes

For Lab Use Only
FSC: ____
SCR#: 157572

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

6 Remarks
Page 2 of 2
(2 coolers)

2 Sample Identification	Collected Date	Collected Time	3 Grab	Composite	Total # of Containers	Metals	SPLP
SS-F-DPT-7(7-8)-20140701	7-1-14	1432	X		2	X	X
SS-F-DPT-4(18-20)-20140701	7-1-14	1248	X		2	X	X
SS-F-DPT-11(7-8)-20140702	7-2-14	958	X		2	X	X
SS-F-DPT-11(11-12)-20140702	7-2-14	1000	X		2	X	X
SS-F-DPT-7(15-16)-20140702	7-1-14	1435	X		2	X	X
SS-F-DPT-14(3-4)-20140702	7-2-14	1530	X		2	X	X
SS-F-DPT-14(7-8)-20140702	7-2-14	1540	X		2	X	X

7 Turnaround Time (TAT) Requested (please circle)
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: 5 day TAT
E-mail address: BHodge@geosyntec.com rdonahue@geosyntec.com

8 Data Package Options (circle if required)
Type I (Validation/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) TX TRRP-13
Type IV (CLP SOW) MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
[signature]	6/20/14	930			
[signature]	7/2/14	1806			
			[signature]	7.3.14	915

9

EDD Required? Yes No
If yes, format: esdat

Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS ____ FedEx X Other ____

Temperature upon receipt 1.1-1.8 °C

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: SS-MB2(64.0-68.0)-20140625 Grab Soil Sample
Duke Sutton

LL Sample # SW 7519007
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/25/2014 14:45 by WS

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

MB264 SDG#: DUK35-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.452	5.48	1
06935	Arsenic	7440-38-2	87.3		0.877	5.48	1
06946	Barium	7440-39-3	502		0.226	6.85	5
06947	Beryllium	7440-41-7	3.92		0.0918	1.37	1
07914	Boron	7440-42-8	42.3		1.15	13.7	1
06949	Cadmium	7440-43-9	N.D.		0.0452	1.37	1
06951	Chromium	7440-47-3	43.8		0.151	4.11	1
06953	Copper	7440-50-8	59.1		0.452	2.74	1
01654	Iron	7439-89-6	14,500		4.58	54.8	1
06955	Lead	7439-92-1	26.1		0.685	4.11	1
06958	Manganese	7439-96-5	87.6		0.114	1.37	1
06960	Molybdenum	7439-98-7	2.09	J	0.233	2.74	1
06961	Nickel	7440-02-0	29.8		0.205	2.74	1
06936	Selenium	7782-49-2	4.59	J	0.603	5.48	1
06966	Silver	7440-22-4	N.D.		0.260	1.37	1
07968	Strontium	7440-24-6	318		0.226	6.85	5
06925	Thallium	7440-28-0	N.D.		1.10	8.22	1
06972	Zinc	7440-66-6	43.6		0.356	5.48	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.140	J	0.0127	0.255	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.23		0.0100	0.0100	1
	The pH was measured in water at 23.6 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	27.0		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06946	Barium	SW-846 6010C	1	141880637002	07/09/2014 20:34	John P Hook	5
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1

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Analysis Report

Sample Description: SS-MB2(64.0-68.0)-20140625 Grab Soil Sample
Duke Sutton

LL Sample # SW 7519007
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/25/2014 14:45 by WS

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

MB264 SDG#: DUK35-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 19:38	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/09/2014 20:34	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 14:54	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 14:59	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039401B	07/03/2014 18:40	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820001B	07/08/2014 18:12	Scott W Freisher	1

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Analysis Report

Sample Description: SS-MB2(64.0-68.0)-20140625 Grab Soil Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7519008
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/25/2014 14:45 by WS

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

M264S SDG#: DUK35-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.184	0.0072	0.0400	1
07046	Barium	7440-39-3	0.124	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0517 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	4.32	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0024 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.0602 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.751	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0038 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0036 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.654 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0102 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	1.39 J	0.167	2.00	1
08068	Strontium	7440-24-6	0.281	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141890636001	07/10/2014 05:39	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1

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Analysis Report

Sample Description: SS-MB2(64.0-68.0)-20140625 Grab Soil Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7519008
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/25/2014 14:45 by WS

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

M264S SDG#: DUK35-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
08068	Strontium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141890636001	07/09/2014 21:31	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141895713002	07/10/2014 13:38	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141890636001	07/09/2014 09:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713002	07/09/2014 09:25	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14188-482-1567	07/07/2014 12:15	Darin P Wagner	n.a.

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Analysis Report

Sample Description: SS-MB2(76.0-80.0)-20140625 Grab Soil Sample
Duke Sutton

LL Sample # SW 7519009
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/25/2014 15:20 by WS

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

MB276 SDG#: DUK35-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.	0.457	5.54	1
06935	Arsenic	7440-38-2	155	4.43	27.7	5
06946	Barium	7440-39-3	735	0.457	13.9	10
06947	Beryllium	7440-41-7	5.70	0.0928	1.39	1
07914	Boron	7440-42-8	55.3	1.16	13.9	1
06949	Cadmium	7440-43-9	N.D.	0.0457	1.39	1
06951	Chromium	7440-47-3	54.5	0.152	4.16	1
06953	Copper	7440-50-8	83.8	0.457	2.77	1
01654	Iron	7439-89-6	31,500	23.1	277	5
06955	Lead	7439-92-1	28.9	0.693	4.16	1
06958	Manganese	7439-96-5	128	0.115	1.39	1
06960	Molybdenum	7439-98-7	3.01	0.235	2.77	1
06961	Nickel	7440-02-0	43.6	0.208	2.77	1
06936	Selenium	7782-49-2	6.74	0.609	5.54	1
06966	Silver	7440-22-4	N.D.	0.263	1.39	1
07968	Strontium	7440-24-6	587	0.229	6.93	5
06925	Thallium	7440-28-0	N.D.	1.11	8.31	1
06972	Zinc	7440-66-6	57.6	0.360	5.54	1
	SW-846 7471B		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.128 J	0.0137	0.275	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**	**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.41	0.0100	0.0100	1
	The pH was measured in water at 23.5 C.					
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	27.8	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06935	Arsenic	SW-846 6010C	1	141880637002	07/09/2014 20:39	John P Hook	5
06946	Barium	SW-846 6010C	1	141880637002	07/09/2014 20:43	John P Hook	10
06947	Beryllium	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1

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Analysis Report

Sample Description: SS-MB2(76.0-80.0)-20140625 Grab Soil Sample
Duke Sutton

LL Sample # SW 7519009
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/25/2014 15:20 by WS

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

MB276 SDG#: DUK35-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06949	Cadmium	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06951	Chromium	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06953	Copper	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
01654	Iron	SW-846 6010C	1	141880637002	07/09/2014 20:39	John P Hook	5
06955	Lead	SW-846 6010C	1	141880637002	07/09/2014 19:42	John P Hook	1
06958	Manganese	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06960	Molybdenum	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06961	Nickel	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06936	Selenium	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06966	Silver	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
07968	Strontium	SW-846 6010C	1	141880637002	07/09/2014 20:39	John P Hook	5
06925	Thallium	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
06972	Zinc	SW-846 6010C	1	141880637002	07/08/2014 14:58	Eric L Eby	1
00159	Mercury	SW-846 7471B	1	141880638001	07/11/2014 15:01	Parker D Lindstrom	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141880637002	07/08/2014 05:19	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141880638001	07/08/2014 07:27	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14184039401B	07/03/2014 18:40	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14189820001B	07/08/2014 18:12	Scott W Freisher	1

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Analysis Report

Sample Description: SS-MB2(76.0-80.0)-20140625 Grab Soil Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7519010
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/25/2014 15:20 by WS

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

M276S SDG#: DUK35-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.316	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0543	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.105	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	4.90	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0023 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.125 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.849	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0034 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0043 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.437 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0235 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	2.06	0.167	2.00	1
08068	Strontium	7440-24-6	0.185	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0025 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07035	Arsenic	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07046	Barium	SW-846 6010C	1	141890636001	07/10/2014 06:01	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
08014	Boron	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07049	Cadmium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
01750	Calcium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07051	Chromium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1

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Analysis Report

Sample Description: SS-MB2(76.0-80.0)-20140625 Grab Soil Sample
Non-Volatile Extraction
Duke Sutton

LL Sample # TL 7519010
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 06/25/2014 15:20 by WS

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

M276S SDG#: DUK35-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07053	Copper	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
01754	Iron	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07055	Lead	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
01757	Magnesium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07058	Manganese	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07060	Molybdenum	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07061	Nickel	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
01762	Potassium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07036	Selenium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07066	Silver	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
01767	Sodium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
08068	Strontium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07022	Thallium	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
07072	Zinc	SW-846 6010C	1	141890636001	07/09/2014 22:07	Katlin N Cataldi	1
00259	Mercury	SW-846 7470A	1	141895713002	07/10/2014 13:46	Parker D Lindstrom	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141890636001	07/09/2014 09:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713002	07/09/2014 09:25	James L Mertz	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14188-482-1567	07/07/2014 12:15	Darin P Wagner	n.a.

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Analysis Report

Sample Description: GW-MW16-20140701 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7519011
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:40 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DSM16 SDG#: DUK35-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	mg/l	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0081 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0263	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.143	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	8.66	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0020 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.781	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	3.86	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0204	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0118 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	5.46	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	26.9	0.167	2.00	1
08068	Strontium	7440-24-6	0.105	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	0.0029 J	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0041 J	0.0020	0.0400	1
	SW-846 7470A		mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	mg/l	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	28.0	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	31.8	1.5	5.0	5
	EPA 310.1		mg/l as CaCO3	mg/l as CaCO3	mg/l as CaCO3	
12150	Total Alkalinity	n.a.	23.8	0.70	2.0	1
	SM 2540 C-1997		mg/l	mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	140	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: GW-MW16-20140701 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7519011
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:40 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DSM16 SDG#: DUK35-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 04:13	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 04:13	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 04:13	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 04:13	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 04:13	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 04:13	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 04:13	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:09	John P Hook	1
00259	Mercury	SW-846 7470A	1	141955713004	07/16/2014 07:51	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141885713001	07/08/2014 11:00	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	2	141915713002	07/11/2014 09:34	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	3	141955713004	07/15/2014 09:08	James L Mertz	1
01505	Bromide	EPA 300.0	1	14183987601A	07/02/2014 19:08	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14183987601A	07/02/2014 19:08	Clinton M Wilson	5
00368	Nitrate Nitrogen	EPA 300.0	1	14183987601A	07/02/2014 19:08	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14183987601A	07/02/2014 19:08	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14183987601A	07/02/2014 19:08	Clinton M Wilson	5
12150	Total Alkalinity	EPA 310.1	1	14188002103A	07/07/2014 18:04	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14183021202A	07/02/2014 12:20	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW16D-20140701 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7519012
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:20 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS16D SDG#: DUK35-06FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0083 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0343	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.432	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	24.5	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	1.82	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	5.97	0.0167	0.200	1
07058	Manganese	7439-96-5	0.269	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0022 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	4.82	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	80.7	0.835	10.0	5
08068	Strontium	7440-24-6	0.154	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	0.0043 J	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0378 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	114	10.0	20.0	50
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	89.0	3.0	10.0	10
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	2.7	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	345	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: GW-MW16D-20140701 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7519012
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 13:20 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS16D SDG#: DUK35-06FD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 04:16	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 04:16	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 04:16	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 04:16	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 04:16	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 04:20	Tara L Snyder	5
08068	Strontium	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 04:16	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:20	John P Hook	1
00259	Mercury	SW-846 7470A	1	141955713004	07/16/2014 07:53	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141885713001	07/08/2014 11:00	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	2	141915713002	07/11/2014 09:34	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	3	141955713004	07/15/2014 09:08	James L Mertz	1
01505	Bromide	EPA 300.0	1	14183987601A	07/02/2014 19:56	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14183987601A	07/03/2014 13:05	Clinton M Wilson	50
00368	Nitrate Nitrogen	EPA 300.0	1	14183987601A	07/02/2014 19:56	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14183987601A	07/02/2014 19:56	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14183987601A	07/03/2014 12:46	Clinton M Wilson	10
12150	Total Alkalinity	EPA 310.1	1	14188002102A	07/07/2014 14:55	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14183021202A	07/02/2014 12:20	Sarah E Thompson	1

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Analysis Report

Sample Description: EB-02-20140701 Grab Water Sample
Duke Sutton

LL Sample # WW 7519013
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 12:20 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DSEB2 SDG#: DUK35-07EB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
07058	Manganese	7439-96-5	0.00094 J	0.00083	0.0100	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 04:24	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 04:24	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 04:24	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:23	John P Hook	1
00259	Mercury	SW-846 7470A	1	141955713004	07/16/2014 07:55	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141885713001	07/08/2014 11:00	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	2	141915713002	07/11/2014 09:34	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	3	141955713004	07/15/2014 09:08	James L Mertz	1

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Analysis Report

Sample Description: SB-02-20140701 Grab Water Sample
Duke Sutton

LL Sample # WW 7519014
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 12:10 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DSSB2 SDG#: DUK35-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
07058	Manganese	7439-96-5	N.D.	0.00083	0.0100	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	N.D.	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 04:27	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 04:27	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 04:27	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:27	John P Hook	1
00259	Mercury	SW-846 7470A	1	141955713004	07/16/2014 07:57	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141885713001	07/08/2014 11:00	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	2	141915713002	07/11/2014 09:34	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	3	141955713004	07/15/2014 09:08	James L Mertz	1

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Analysis Report

Sample Description: GW-MW20-20140701 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7519015
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 15:40 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DSM20 SDG#: DUK35-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.126	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.129	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	85.5	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0019 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	2.61	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	8.94	0.0167	0.200	1
07058	Manganese	7439-96-5	0.413	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0134 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	6.71	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	16.3	0.167	2.00	1
08068	Strontium	7440-24-6	0.785	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	0.0413	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0054 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	18.8	1.0	2.0	5
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	53.7	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	207	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	334	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: GW-MW20-20140701 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7519015
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 15:40 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DSM20 SDG#: DUK35-09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 04:38	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 04:38	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 04:38	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 04:38	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 04:38	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 04:38	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 04:38	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:31	John P Hook	1
00259	Mercury	SW-846 7470A	1	141955713004	07/16/2014 07:59	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141885713001	07/08/2014 11:00	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	2	141915713002	07/11/2014 09:34	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	3	141955713004	07/15/2014 09:08	James L Mertz	1
01505	Bromide	EPA 300.0	1	14183987601B	07/02/2014 23:59	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14183987601B	07/02/2014 23:59	Clinton M Wilson	5
00368	Nitrate Nitrogen	EPA 300.0	1	14183987601B	07/02/2014 23:59	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14183987601B	07/02/2014 23:59	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14183987601B	07/02/2014 23:59	Clinton M Wilson	5
12150	Total Alkalinity	EPA 310.1	1	14188002102A	07/07/2014 14:28	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14184021201A	07/03/2014 07:43	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW20D-20140701 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7519016
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 16:35 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS20D SDG#: DUK35-10FD*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0587	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.227	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	69.9	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0014 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	2.31	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	5.62	0.0167	0.200	1
07058	Manganese	7439-96-5	0.190	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0072 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	2.72	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	51.7	0.334	4.00	2
08068	Strontium	7440-24-6	0.186	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0020 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	83.5	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	69.6	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	118	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	365	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: GW-MW20D-20140701 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7519016
LL Group # 1486078
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 16:35 by MP

Submitted: 07/02/2014 09:20
Reported: 07/16/2014 13:58

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS20D SDG#: DUK35-10FD*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 04:46	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 04:46	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 04:46	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 04:46	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 04:46	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 04:50	Tara L Snyder	2
08068	Strontium	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 04:46	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:35	John P Hook	1
00259	Mercury	SW-846 7470A	1	141955713004	07/16/2014 08:01	Damary Valentin	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141885713001	07/08/2014 11:00	James L Mertz	1
05713	WW SW846 Hg Digest	SW-846 7470A	2	141915713002	07/11/2014 09:34	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	3	141955713004	07/15/2014 09:08	James L Mertz	1
01505	Bromide	EPA 300.0	1	14183987601B	07/03/2014 01:20	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14183987601B	07/03/2014 13:21	Clinton M Wilson	20
00368	Nitrate Nitrogen	EPA 300.0	1	14183987601B	07/03/2014 01:20	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14183987601B	07/03/2014 01:20	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14183987601B	07/03/2014 01:20	Clinton M Wilson	5
12150	Total Alkalinity	EPA 310.1	1	14188002102A	07/07/2014 14:09	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14184021201A	07/03/2014 07:43	Sarah E Thompson	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486078
Reported: 07/16/14 at 01:58 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141880635001	Sample number(s): 7519011-7519016								
Antimony	N.D.	0.0051	0.0400	mg/l	109		88-111		
Arsenic	N.D.	0.0072	0.0400	mg/l	111		90-113		
Barium	N.D.	0.00033	0.0100	mg/l	108		90-110		
Beryllium	N.D.	0.00067	0.0100	mg/l	106		90-111		
Boron	N.D.	0.0046	0.100	mg/l	100		90-110		
Cadmium	N.D.	0.00033	0.0100	mg/l	105		90-112		
Calcium	N.D.	0.0334	0.400	mg/l	109		90-112		
Chromium	N.D.	0.0013	0.0300	mg/l	102		90-110		
Copper	N.D.	0.0028	0.0200	mg/l	108		90-112		
Iron	N.D.	0.0334	0.400	mg/l	112		90-112		
Lead	N.D.	0.0047	0.0300	mg/l	114		88-116		
Magnesium	N.D.	0.0167	0.200	mg/l	107		89-110		
Manganese	0.0013 J	0.00083	0.0100	mg/l	108		90-110		
Molybdenum	N.D.	0.0017	0.0200	mg/l	106		90-110		
Nickel	N.D.	0.0016	0.0200	mg/l	111		90-117		
Potassium	N.D.	0.133	1.00	mg/l	104		90-110		
Selenium	N.D.	0.0048	0.0400	mg/l	103		89-113		
Silver	N.D.	0.0018	0.0100	mg/l	94		80-120		
Sodium	N.D.	0.167	2.00	mg/l	106		87-114		
Strontium	N.D.	0.00033	0.0100	mg/l	108		90-110		
Thallium	N.D.	0.0051	0.0600	mg/l	101		90-118		
Vanadium	N.D.	0.0019	0.0100	mg/l	102		90-110		
Zinc	N.D.	0.0020	0.0400	mg/l	104		90-110		
Batch number: 141880637002	Sample number(s): 7519007,7519009								
Antimony	N.D.	0.330	4.00	mg/kg	104		80-120		
Arsenic	N.D.	0.640	4.00	mg/kg	106		80-120		
Barium	0.0340 J	0.0330	1.00	mg/kg	100		80-120		
Beryllium	N.D.	0.0670	1.00	mg/kg	100		80-120		
Boron	2.54 J	0.840	10.0	mg/kg	98		80-120		
Cadmium	N.D.	0.0330	1.00	mg/kg	102		80-120		
Chromium	N.D.	0.110	3.00	mg/kg	100		80-120		
Copper	N.D.	0.330	2.00	mg/kg	102		80-120		
Iron	N.D.	3.34	40.0	mg/kg	105		80-120		
Lead	N.D.	0.500	3.00	mg/kg	104		80-120		
Manganese	N.D.	0.0830	1.00	mg/kg	103		80-120		
Molybdenum	N.D.	0.170	2.00	mg/kg	101		80-120		
Nickel	N.D.	0.150	2.00	mg/kg	106		80-120		
Selenium	N.D.	0.440	4.00	mg/kg	97		80-120		
Silver	N.D.	0.190	1.00	mg/kg	82		80-120		
Strontium	0.179 J	0.0330	1.00	mg/kg	101		80-120		
Thallium	N.D.	0.800	6.00	mg/kg	92		80-120		
Zinc	1.06 J	0.260	4.00	mg/kg	100		80-120		

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(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486078
Reported: 07/16/14 at 01:58 PM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141880638001	Sample number(s): 7519007,7519009								
Mercury	N.D.	0.0100	0.200	mg/kg	85		80-120		
Batch number: 141890636001	Sample number(s): 7519008,7519010								
Antimony	N.D.	0.0051	0.0400	mg/l	102		80-120		
Arsenic	N.D.	0.0072	0.0400	mg/l	102		80-120		
Barium	N.D.	0.00033	0.0100	mg/l	101		80-120		
Beryllium	N.D.	0.00067	0.0100	mg/l	100		80-120		
Boron	N.D.	0.0046	0.100	mg/l	97		80-120		
Cadmium	N.D.	0.00033	0.0100	mg/l	102		80-120		
Calcium	N.D.	0.0334	0.400	mg/l	101		80-120		
Chromium	N.D.	0.0013	0.0300	mg/l	101		80-120		
Copper	N.D.	0.0028	0.0200	mg/l	97		80-120		
Iron	N.D.	0.0334	0.400	mg/l	102		80-120		
Lead	N.D.	0.0047	0.0300	mg/l	105		80-120		
Magnesium	N.D.	0.0167	0.200	mg/l	98		80-120		
Manganese	0.0011 J	0.00083	0.0100	mg/l	102		80-120		
Molybdenum	N.D.	0.0017	0.0200	mg/l	101		80-120		
Nickel	N.D.	0.0016	0.0200	mg/l	105		80-120		
Potassium	N.D.	0.133	1.00	mg/l	97		80-120		
Selenium	N.D.	0.0048	0.0400	mg/l	97		80-120		
Silver	N.D.	0.0018	0.0100	mg/l	103		80-120		
Sodium	N.D.	0.167	2.00	mg/l	98		80-120		
Strontium	N.D.	0.00033	0.0100	mg/l	99		80-120		
Thallium	0.0056 J	0.0051	0.0600	mg/l	91		80-120		
Zinc	0.0036 J	0.0020	0.0400	mg/l	101		80-120		
Batch number: 141895713002	Sample number(s): 7519008,7519010								
Mercury	N.D.	0.00006 0	0.00020	mg/l	112		80-120		
Batch number: 141955713004	Sample number(s): 7519011-7519016								
Mercury	N.D.	0.00006 0	0.00020	mg/l	100		80-120		
Batch number: 14183987601A	Sample number(s): 7519011-7519012								
Bromide	N.D.	0.40	0.50	mg/l	91	91	90-110	0	20
Chloride	N.D.	0.20	0.40	mg/l	93	92	90-110	0	20
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	93	94	90-110	0	20
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	93	93	90-110	0	20
Sulfate	N.D.	0.30	1.0	mg/l	98	99	90-110	0	20
Batch number: 14183987601B	Sample number(s): 7519015-7519016								
Bromide	N.D.	0.40	0.50	mg/l	91	91	90-110	0	20
Chloride	N.D.	0.20	0.40	mg/l	93	92	90-110	0	20
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	93	94	90-110	0	20
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	93	93	90-110	0	20
Sulfate	N.D.	0.30	1.0	mg/l	98	99	90-110	0	20
Batch number: 14183021202A	Sample number(s): 7519011-7519012								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	98		80-120		
Batch number: 14184021201A	Sample number(s): 7519015-7519016								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	95		80-120		

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486078
Reported: 07/16/14 at 01:58 PM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 14184039401B	Sample number(s): 7519007,7519009								
pH					99		90-110		
Batch number: 14188002102A	Sample number(s): 7519012,7519015-7519016								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	97		90-110		
Batch number: 14188002103A	Sample number(s): 7519011								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	96		90-110		
Batch number: 14189820001B	Sample number(s): 7519007,7519009								
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141880635001	Sample number(s): 7519011-7519016 UNSPK: P520777 BKG: P520777								
Antimony	108	106	76-122	2	20	N.D.	N.D.	0 (1)	20
Arsenic	104	108	81-123	3	20	0.0199 J	0.0133 J	39* (1)	20
Barium	102	101	78-125	1	20	0.144	0.136	6	20
Beryllium	102	101	87-114	1	20	N.D.	N.D.	0 (1)	20
Boron	74*	87	87-111	6	20	2.35	2.10	11 (1)	20
Cadmium	99	99	75-122	0	20	N.D.	N.D.	0 (1)	20
Calcium	7 (2)	-1 (2)	75-125	0	20	89.4	84.3	6	20
Chromium	98	95	76-120	2	20	0.0017 J	0.0019 J	11 (1)	20
Copper	106	106	86-122	0	20	N.D.	N.D.	0 (1)	20
Iron	72 (2)	112 (2)	75-125	7	20	4.72	4.44	6	20
Lead	101	100	75-125	1	20	N.D.	N.D.	0 (1)	20
Magnesium	20 (2)	10 (2)	81-118	1	20	25.1	23.6	6	20
Manganese	98	94	75-125	2	20	0.459	0.430	7	20
Molybdenum	102	102	89-117	0	20	0.319	0.293	9	20
Nickel	104	103	79-123	1	20	N.D.	N.D.	0 (1)	20
Potassium	100	98	77-128	1	20	14.7	13.8	6	20
Selenium	100	101	75-125	1	20	N.D.	N.D.	0 (1)	20
Silver	93	91	75-125	2	20	N.D.	N.D.	0 (1)	20
Sodium	21 (2)	51 (2)	84-117	3	20	52.1	47.3	10 (1)	20
Strontium	49*	72*	88-117	6	20	3.20	2.88	11	20
Thallium	95	94	75-125	0	20	N.D.	N.D.	0 (1)	20
Vanadium	97	97	90-117	0	20	N.D.	N.D.	0 (1)	20
Zinc	100	99	85-117	0	20	0.0041 J	0.0038 J	8 (1)	20
Batch number: 141880637002	Sample number(s): 7519007,7519009 UNSPK: P520701 BKG: P520701								
Antimony	83	84	75-125	3	20	N.D.	N.D.	0 (1)	20
Arsenic	96	98	75-125	2	20	14.6	16.5	12 (1)	20
Barium	96	108	75-125	6	20	269	307	13	20
Beryllium	100	104	83-119	3	20	2.18	2.70	22* (1)	20
Boron	97	96	84-110	1	20	6.62 J	7.35 J	10 (1)	20
Cadmium	95	95	75-120	1	20	N.D.	N.D.	0 (1)	20

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486078
Reported: 07/16/14 at 01:58 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Chromium	116	118	75-125	2	20	9.34	10.9	15 (1)	20
Copper	102	107	75-125	3	20	21.3	25.8	19	20
Iron	965 (2)	741 (2)	75-125	2	20	9,010	9,100	1	20
Lead	96	100	75-125	4	20	6.81	8.09	17 (1)	20
Manganese	70*	67*	75-125	1	20	64.1	43.7	38*	20
Molybdenum	97	98	82-110	2	20	1.42 J	1.19 J	17 (1)	20
Nickel	102	103	75-125	1	20	14.7	16.0	9	20
Selenium	96	97	75-125	2	20	2.68 J	3.70 J	32* (1)	20
Silver	75	74*	75-125	0	20	N.D.	N.D.	0 (1)	20
Strontium	93	111	81-125	7	20	145	168	15	20
Thallium	75*	75*	78-119	1	20	N.D.	N.D.	0 (1)	20
Zinc	92	93	75-125	2	20	13.1	11.3	15 (1)	20
Batch number: 141880638001	Sample number(s): 7519007,7519009 UNSPK: P520701 BKG: P520701								
Mercury	97	122*	80-120	22*	20	0.0268 J	0.0312 J	15 (1)	20
Batch number: 141890636001	Sample number(s): 7519008,7519010 UNSPK: 7519008 BKG: 7519008								
Antimony	88	87	75-125	1	20	N.D.	N.D.	0 (1)	20
Arsenic	89	88	75-125	1	20	0.184	0.182	1 (1)	20
Barium	90	89	75-125	2	20	0.124	0.123	0	20
Beryllium	85	83	75-125	1	20	N.D.	N.D.	0 (1)	20
Boron	86	86	75-125	1	20	0.0517 J	0.0473 J	9 (1)	20
Cadmium	89	88	75-125	1	20	N.D.	N.D.	0 (1)	20
Calcium	89	89	75-125	0	20	4.32	4.36	1	20
Chromium	88	87	75-125	1	20	0.0024 J	0.0028 J	15 (1)	20
Copper	93	93	75-125	1	20	N.D.	N.D.	0 (1)	20
Iron	87	87	75-125	0	20	0.0602 J	0.0572 J	5 (1)	20
Lead	89	88	75-125	1	20	N.D.	N.D.	0 (1)	20
Magnesium	87	87	75-125	0	20	0.751	0.759	1 (1)	20
Manganese	88	87	75-125	1	20	0.0038 J	0.0037 J	2 (1)	20
Molybdenum	89	87	75-125	2	20	0.0036 J	0.0033 J	9 (1)	20
Nickel	89	89	75-125	1	20	N.D.	N.D.	0 (1)	20
Potassium	92	92	75-125	0	20	0.654 J	0.663 J	1 (1)	20
Selenium	86	85	75-125	1	20	0.0102 J	0.0101 J	1 (1)	20
Silver	49*	48*	75-125	2	20	N.D.	N.D.	0 (1)	20
Sodium	90	89	75-125	0	20	1.39 J	1.39 J	0 (1)	20
Strontium	90	89	75-125	1	20	0.281	0.282	0	20
Thallium	89	87	75-125	1	20	N.D.	N.D.	0 (1)	20
Zinc	87	87	75-125	1	20	N.D.	N.D.	0 (1)	20
Batch number: 141895713002	Sample number(s): 7519008,7519010 UNSPK: 7519008 BKG: 7519008								
Mercury	99	93	80-120	7	20	N.D.	N.D.	0 (1)	20
Batch number: 141955713004	Sample number(s): 7519011-7519016 UNSPK: P514111 BKG: P514111								
Mercury	94	97	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: 14183987601A	Sample number(s): 7519011-7519012 UNSPK: 7519011 BKG: 7519011								
Bromide	89*		90-110			N.D.	N.D.	0 (1)	20
Chloride	83*		90-110			28.0	27.8	0	20
Nitrate Nitrogen	92		90-110			N.D.	N.D.	0 (1)	20
Nitrite Nitrogen	86*		90-110			N.D.	N.D.	0 (1)	20
Sulfate	96		90-110			31.8	31.7	0	20

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486078
Reported: 07/16/14 at 01:58 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 14183987601B	Sample number(s): 7519015-7519016 UNSPK: 7519015 BKG: 7519015								
Bromide	89*		90-110			N.D.	N.D.	0 (1)	20
Chloride	85*		90-110			18.8	18.6	1	20
Nitrate Nitrogen	91		90-110			N.D.	N.D.	0 (1)	20
Nitrite Nitrogen	88*		90-110			N.D.	N.D.	0 (1)	20
Sulfate	97		90-110			53.7	53.7	0	20
Batch number: 14183021202A	Sample number(s): 7519011-7519012 UNSPK: P518932 BKG: P518932								
Total Dissolved Solids	102		66-131			1,620	1,880	15*	5
Batch number: 14184021201A	Sample number(s): 7519015-7519016 UNSPK: P519692 BKG: P519692								
Total Dissolved Solids	97		66-131			792	786	1	5
Batch number: 14184039401B	Sample number(s): 7519007,7519009 BKG: 7519007								
pH						8.23	8.20	0	3
Batch number: 14188002102A	Sample number(s): 7519012,7519015-7519016 UNSPK: P520819 BKG: P520819								
Total Alkalinity	89	85	17-146	2	5	296	296	0	5
Batch number: 14188002103A	Sample number(s): 7519011 UNSPK: P520777 BKG: P520777								
Total Alkalinity	47	48	17-146	1	5	235	235	0	5
Batch number: 14189820001B	Sample number(s): 7519007,7519009 BKG: 7519009								
Moisture						27.8	25.9	7*	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Environmental Analysis Request/Chain of Custody

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Acct. # 10634 Group # 1486078 Sample # 7519007-16

Client: Geosyntec Consultants	PAGE # 1/2		
Project Name/#: Duke Sutton	Site ID #:		
Project Manager: Herwig Goldemund	P.O. #:		
Sampler: Weston Shin	PWSID #:		
Phone #: 704-618-2765	Quote #:		
State where sample(s) were collected: North Carolina			

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Water	Other:	Total # of Containers	Metals - 6010C	Hg - 7470A	Major Cations - 6010C	Major Anions - 300.0	Sr, B, Ba, Mo, Fe - 6010C	pH - SW-846 9045D Modified	SPLP - Metals - 1312 and 6000/7000 series
SS-MB2 (64.0-68.0)-20140625	6/25/2014	14:45	x		x			2	x	x	x	x	x	x	x
SS-MB2 (76.0-80.0)-20140625	6/25/2014	15:20	x		x			2	x	x	x	x	x	x	x

Matrix: Sediment ☐ Ground ☐ Surface ☐ Potable ☐ NPDES ☐ Soil ☑ Water Other:

Analyses Requested / Preservation Codes

For Lab Use Only
SF #: _____
SCR #: _____

Preservation Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 P = H_3PO_4
O = Other

Remarks
NOTE FOR ALL SOIL SAMPLES : 6010 to analyze for Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, Tl, Zn ONLY.

Turnaround Time Requested (TAT) (please check): Standard ☐ Rush ☑
(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: HGoldemund@Geosyntec.com; WShin@Geosyntec.com

Phone: (704) 618-2765

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐
Type III (Reduced non-CLP) ☐ CT RCP ☐
Type IV (CLP SOW) ☐ TX TRRP-13 ☐
Type VI (Raw Data Only) ☐ **PENDING - TO BE CONFIRMED WITH PM.**

EDD Required? Yes ☑ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
Weston Shin	7/1/2014	19:00			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	7/2/14	0920

Relinquished by Commercial Carrier:
UPS _____ FedEx ✓ Other _____

Temperature upon receipt 2.7 °C

Environmental Analysis Request/Chain of Custody

COC # 354250

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Acct. # 10634 For Eurofins Lancaster Laboratories Environmental use only Group # 1486078 Sample # 751907-16
Instructions on reverse side correspond with circled numbers.

PAGE 2/2

1 Client Information

Client: GEOSYNTEC CONSULTANTS	Acct. #:
Project Name/#: DUKE SUTTON / GC5572	PWSID #:
Project Manager: HERWIG GOLDEMUND ~~MPRACTEL DYNAMIC~~	P.O. #:
Sampler: M. PATINKIN / M. JENNY	Quote #:

Name of state where samples were collected: NORTH CAROLINA

4 Matrix: Soil ☐ Sediment ☐ Water ☑ Ground Potable ☐ NPDES ☐ Surface ☐ Other: ☐

5 Analysis Requested — Preservation Codes

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

6 Remarks

2 Sample Identification	Collected Date	Collected Time	3 Grab	Composite	Total # of Containers	TOTAL METALS, V (6010C, 7470A)	CATIONS (Ca, Mg, Na, K) (6010C)	Sr, B, Ba, Mo, Fe (6010C)	MAJOR ANIONS (Cl, Br, NO_3, SO_4, ALKALINITY)	NITRATE, NITRITE (300.0)	TDS (SM 2540 C-1997 OR 160.1)
GW-MW1G - 20140701	07/01/14	1320	X		5	X	X	X	X	X	X
GW-MW16D - 20140701	07/01/14	1320	X		5	X	X	X	X	X	X
EB-02 - 20140701	07/01/14	1220	X		1	X					
SB-02 - 20140701	07/01/14	1210	X		1	X					
GW-MW20 - 20140701	07/01/14	1540	X		5	X	X	X	X	X	X
GW-MW20D - 20140701	07/01/14	1635	X		5	X	X	X	X	X	X
TEMP BLANK	—	—			1						

7 Turnaround Time (TAT) Requested (please circle)
Standard (Rush)
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: 5 DAY TAT

E-mail address: HGOLDEMUND@GEOSYNTEC.COM

8 Data Package Options (circle if required)
Type I (Validation/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) TX TRRP-13
Type IV (CLP SOW) MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	07/01/14	1738			

9

EDD Required? (Yes) No
If yes, format: ASDAT

Site-Specific QC (MS/MSD/Dup)? Yes (No)
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS ____ FedEx ✓ Other ____

Temperature upon receipt 2.7 °C

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

July 14, 2014

Project: Duke Sutton, NC

Submittal Date: 07/03/2014
Group Number: 1486459
SDG: DUK37
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
GW-MW13D-20140702 Grab Groundwater Sample	7520777
GW-MW13D-20140702 MS Grab Groundwater Sample	7520778
GW-MW13D-20140702 MSD Grab Groundwater Sample	7520779
GW-MW13D-20140702 DUP Grab Groundwater Sample	7520780
GW-MW13-20140702 Grab Groundwater Sample	7520781
GW-MW15-20140702 Grab Groundwater Sample	7520782
GW-MW159-20140702 Grab Groundwater Sample	7520783
GW-MW15D-20140702 Grab Groundwater Sample	7520784
GW-MW15-20140702-MBQC Grab Groundwater Sample	7520785

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: GW-MW13D-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520777
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:10 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13D SDG#: DUK37-01BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0199 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.144	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	2.35	0.0230	0.500	5
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	89.4	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0017 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	4.72	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	25.1	0.0167	0.200	1
07058	Manganese	7439-96-5	0.459	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.319	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	14.7	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	52.1	0.835	10.0	5
08068	Strontium	7440-24-6	3.20	0.0017	0.0500	5
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0041 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	59.6	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	96.9	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	235	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	516	19.4	60.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: GW-MW13D-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520777
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:10 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13D SDG#: DUK37-01BKG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 03:16	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 03:16	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/09/2014 03:39	Tara L Snyder	5
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 03:16	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 12:59	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 03:16	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 03:39	Tara L Snyder	5
08068	Strontium	SW-846 6010C	1	141880635001	07/09/2014 03:39	Tara L Snyder	5
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 03:16	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 21:43	John P Hook	1
00259	Mercury	SW-846 7470A	2	141895713006	07/12/2014 14:44	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1
01505	Bromide	EPA 300.0	1	14184987601B	07/03/2014 19:51	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14184987601B	07/07/2014 07:21	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 19:51	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 19:51	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14184987601B	07/05/2014 19:05	Clinton M Wilson	20
12150	Total Alkalinity	EPA 310.1	1	14188002103A	07/07/2014 17:19	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14189021201A	07/08/2014 10:13	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW13D-20140702 MS Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520778
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:15 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13D SDG#: DUK37-01MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	mg/l	
07044	Antimony	7440-36-0	0.540	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.177	0.0072	0.0400	1
07046	Barium	7440-39-3	2.18	0.00033	0.0100	1
07047	Beryllium	7440-41-7	0.0512	0.00067	0.0100	1
08014	Boron	7440-42-8	3.84	0.0230	0.500	5
07049	Cadmium	7440-43-9	0.0494	0.00033	0.0100	1
01750	Calcium	7440-70-2	89.7	0.0334	0.400	1
07051	Chromium	7440-47-3	0.197	0.0013	0.0300	1
07053	Copper	7440-50-8	0.266	0.0028	0.0200	1
01754	Iron	7439-89-6	5.45	0.0334	0.400	1
07055	Lead	7439-92-1	0.151	0.0047	0.0300	1
01757	Magnesium	7439-95-4	25.5	0.0167	0.200	1
07058	Manganese	7439-96-5	0.950	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	2.35	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.519	0.0016	0.0200	1
01762	Potassium	7440-09-7	24.7	0.133	1.00	1
07036	Selenium	7782-49-2	0.150	0.0048	0.0400	1
07066	Silver	7440-22-4	0.0467	0.0018	0.0100	1
01767	Sodium	7440-23-5	54.2	0.835	10.0	5
08068	Strontium	7440-24-6	3.70	0.0017	0.0500	5
07022	Thallium	7440-28-0	0.142	0.0051	0.0600	1
07071	Vanadium	7440-62-2	0.485	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.502	0.0020	0.0400	1
	SW-846 7470A		mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	0.0010	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	mg/l	
01505	Bromide	24959-67-9	45.3	4.0	5.0	10
00224	Chloride	16887-00-6	127	8.0	16.0	40
00368	Nitrate Nitrogen	14797-55-8	9.3	0.50	1.0	10
01506	Nitrite Nitrogen	14797-65-0	8.2	0.80	1.0	10
00228	Sulfate	14808-79-8	288	12.0	40.0	40
	EPA 310.1		mg/l as CaCO3	mg/l as CaCO3	mg/l as CaCO3	
12150	Total Alkalinity	n.a.	323	0.70	2.0	1
	SM 2540 C-1997		mg/l	mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	895	19.4	60.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: GW-MW13D-20140702 MS Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520778
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:15 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13D SDG#: DUK37-01MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 03:28	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 03:28	Tara L Snyder	1
08014	Boron	SW-846 6010C	2	141880635001	07/09/2014 03:58	Tara L Snyder	5
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 03:28	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 13:59	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 03:28	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
01767	Sodium	SW-846 6010C	2	141880635001	07/09/2014 03:58	Tara L Snyder	5
08068	Strontium	SW-846 6010C	2	141880635001	07/09/2014 03:58	Tara L Snyder	5
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 03:28	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 21:54	John P Hook	1
00259	Mercury	SW-846 7470A	2	141895713006	07/12/2014 14:46	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1
01505	Bromide	EPA 300.0	1	14184987601B	07/03/2014 20:23	Clinton M Wilson	10
00224	Chloride	EPA 300.0	1	14184987601B	07/07/2014 07:53	Sandra J Miller	40
00368	Nitrate Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 20:23	Clinton M Wilson	10
01506	Nitrite Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 20:23	Clinton M Wilson	10
00228	Sulfate	EPA 300.0	2	14184987601B	07/05/2014 19:37	Clinton M Wilson	40
12150	Total Alkalinity	EPA 310.1	1	14188002103A	07/07/2014 17:26	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14189021201A	07/08/2014 10:13	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW13D-20140702 MSD Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520779
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:20 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13D SDG#: DUK37-01MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	mg/l	
07044	Antimony	7440-36-0	0.532	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.181	0.0072	0.0400	1
07046	Barium	7440-39-3	2.17	0.00033	0.0100	1
07047	Beryllium	7440-41-7	0.0507	0.00067	0.0100	1
08014	Boron	7440-42-8	4.09	0.0230	0.500	5
07049	Cadmium	7440-43-9	0.0494	0.00033	0.0100	1
01750	Calcium	7440-70-2	89.4	0.0334	0.400	1
07051	Chromium	7440-47-3	0.192	0.0013	0.0300	1
07053	Copper	7440-50-8	0.265	0.0028	0.0200	1
01754	Iron	7439-89-6	5.85	0.0334	0.400	1
07055	Lead	7439-92-1	0.150	0.0047	0.0300	1
01757	Magnesium	7439-95-4	25.3	0.0167	0.200	1
07058	Manganese	7439-96-5	0.930	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	2.35	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.513	0.0016	0.0200	1
01762	Potassium	7440-09-7	24.5	0.133	1.00	1
07036	Selenium	7782-49-2	0.151	0.0048	0.0400	1
07066	Silver	7440-22-4	0.0455	0.0018	0.0100	1
01767	Sodium	7440-23-5	57.2	0.835	10.0	5
08068	Strontium	7440-24-6	3.92	0.0017	0.0500	5
07022	Thallium	7440-28-0	0.142	0.0051	0.0600	1
07071	Vanadium	7440-62-2	0.486	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.501	0.0020	0.0400	1
	SW-846 7470A		mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	0.0010	0.000060	0.00020	1
Wet Chemistry	**EPA 310.1**		mg/l as CaCO3	mg/l as CaCO3	mg/l as CaCO3	
12150	Total Alkalinity	n.a.	326	0.70	2.0	1
	SM 2540 C-1997		mg/l	mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	890	19.4	60.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 03:31	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 03:31	Tara L Snyder	1

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Analysis Report

Sample Description: GW-MW13D-20140702 MSD Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520779
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:20 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13D SDG#: DUK37-01MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08014	Boron	SW-846 6010C	2	141880635001	07/09/2014 04:01	Tara L Snyder	5
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 03:31	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 14:03	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 03:31	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 04:01	Tara L Snyder	5
08068	Strontium	SW-846 6010C	2	141880635001	07/09/2014 04:01	Tara L Snyder	5
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 03:31	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 21:58	John P Hook	1
00259	Mercury	SW-846 7470A	2	141895713006	07/12/2014 14:49	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1
12150	Total Alkalinity	EPA 310.1	1	14188002103A	07/07/2014 17:32	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14189021201A	07/08/2014 10:13	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW13D-20140702 DUP Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520780
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:10 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13D SDG#: DUK37-01DUP

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0133 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.136	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	2.10	0.0230	0.500	5
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	84.3	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0019 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	4.44	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	23.6	0.0167	0.200	1
07058	Manganese	7439-96-5	0.430	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.293	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	13.8	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	47.3	0.835	10.0	5
08068	Strontium	7440-24-6	2.88	0.0017	0.0500	5
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0038 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	58.9	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	95.4	6.0	20.0	20
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	235	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	503	19.4	60.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: GW-MW13D-20140702 DUP Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520780
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:10 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS13D SDG#: DUK37-01DUP

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 03:24	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 03:24	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/09/2014 03:54	Tara L Snyder	5
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 03:24	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 03:24	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 03:24	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 03:54	Tara L Snyder	5
08068	Strontium	SW-846 6010C	1	141880635001	07/09/2014 03:54	Tara L Snyder	5
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 03:24	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 21:50	John P Hook	1
00259	Mercury	SW-846 7470A	2	141895713006	07/12/2014 14:51	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1
01505	Bromide	EPA 300.0	1	14184987601B	07/03/2014 20:07	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14184987601B	07/07/2014 07:37	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 20:07	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 20:07	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14184987601B	07/05/2014 19:21	Clinton M Wilson	20
12150	Total Alkalinity	EPA 310.1	1	14188002103A	07/07/2014 17:39	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14189021201A	07/08/2014 10:13	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW13-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520781
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:11 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS-13 SDG#: DUK37-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		mg/l	mg/l	mg/l	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.218	0.0072	0.0400	1
07046	Barium	7440-39-3	0.367	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.935	0.0092	0.200	2
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	45.3	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0013 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	5.50	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	15.7	0.0167	0.200	1
07058	Manganese	7439-96-5	0.145	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.140	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	13.0	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	44.8	0.334	4.00	2
08068	Strontium	7440-24-6	1.40	0.00066	0.0200	2
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0022 J	0.0020	0.0400	1
	SW-846 7470A		mg/l	mg/l	mg/l	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	mg/l	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	47.2	4.0	8.0	20
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	128	6.0	20.0	20
	EPA 310.1		mg/l as CaCO3	mg/l as CaCO3	mg/l as CaCO3	
12150	Total Alkalinity	n.a.	86.9	0.70	2.0	1
	SM 2540 C-1997		mg/l	mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	370	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: GW-MW13-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520781
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:11 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS-13 SDG#: DUK37-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 04:53	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 04:53	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/09/2014 04:57	Tara L Snyder	2
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 04:53	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 13:39	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 04:53	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 04:57	Tara L Snyder	2
08068	Strontium	SW-846 6010C	1	141880635001	07/09/2014 04:57	Tara L Snyder	2
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 04:53	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:38	John P Hook	1
00259	Mercury	SW-846 7470A	1	141895713006	07/12/2014 14:53	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1
01505	Bromide	EPA 300.0	1	14184987601B	07/03/2014 21:12	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14184987601B	07/07/2014 08:09	Sandra J Miller	20
00368	Nitrate Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 21:12	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 21:12	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14184987601B	07/05/2014 19:54	Clinton M Wilson	20
12150	Total Alkalinity	EPA 310.1	1	14188002103A	07/07/2014 17:45	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14189021201A	07/08/2014 10:13	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW15-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520782
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:35 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS-15 SDG#: DUK37-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0383 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0365	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0592 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	114	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0014 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	5.72	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	5.20	0.0167	0.200	1
07058	Manganese	7439-96-5	0.109	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0076 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	3.50	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	18.3	0.167	2.00	1
08068	Strontium	7440-24-6	0.553	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0022 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	45.1	2.0	4.0	10
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	42.0	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	211	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	398	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: GW-MW15-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520782
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:35 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS-15 SDG#: DUK37-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 05:01	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 05:01	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 05:01	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 13:51	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 05:01	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 05:01	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 05:01	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:42	John P Hook	1
00259	Mercury	SW-846 7470A	1	141895713006	07/12/2014 14:59	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1
01505	Bromide	EPA 300.0	1	14184987601B	07/03/2014 21:28	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14184987601B	07/07/2014 08:25	Sandra J Miller	10
00368	Nitrate Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 21:28	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 21:28	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14184987601B	07/03/2014 21:28	Clinton M Wilson	5
12150	Total Alkalinity	EPA 310.1	1	14188002103A	07/07/2014 16:45	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14189021201A	07/08/2014 10:13	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW159-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520783
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:30 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS159 SDG#: DUK37-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0377 J	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0343	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0583 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	110	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	5.41	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	5.12	0.0167	0.200	1
07058	Manganese	7439-96-5	0.105	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0069 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	3.38	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	17.5	0.167	2.00	1
08068	Strontium	7440-24-6	0.548	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0021 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	43.6	2.0	4.0	10
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	41.9	1.5	5.0	5
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	221	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	410	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

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Analysis Report

Sample Description: GW-MW159-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520783
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:30 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS159 SDG#: DUK37-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 05:08	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 05:08	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 05:08	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 13:55	Joanne M Gates	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 05:08	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 05:08	Tara L Snyder	1
08068	Strontium	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 05:08	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:46	John P Hook	1
00259	Mercury	SW-846 7470A	1	141895713006	07/12/2014 15:01	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1
01505	Bromide	EPA 300.0	1	14184987601B	07/03/2014 21:44	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14184987601B	07/07/2014 08:42	Sandra J Miller	10
00368	Nitrate Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 21:44	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 21:44	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14184987601B	07/03/2014 21:44	Clinton M Wilson	5
12150	Total Alkalinity	EPA 310.1	1	14188002102A	07/07/2014 14:22	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14189021201A	07/08/2014 10:13	Sarah E Thompson	1

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Analysis Report

Sample Description: GW-MW15D-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520784
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:43 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS15D SDG#: DUK37-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	N.D.	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0533	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.550	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	61.5	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0019 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.724	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	8.18	0.0167	0.200	1
07058	Manganese	7439-96-5	1.62	0.0017	0.0200	2
07060	Molybdenum	7439-98-7	N.D.	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	7.61	0.133	1.00	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
01767	Sodium	7440-23-5	66.5	0.334	4.00	2
08068	Strontium	7440-24-6	0.615	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0062 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	**mg/l**	
01505	Bromide	24959-67-9	N.D.	2.0	2.5	5
00224	Chloride	16887-00-6	131	10.0	20.0	50
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	0.50	5
01506	Nitrite Nitrogen	14797-65-0	N.D.	0.40	0.50	5
00228	Sulfate	14808-79-8	75.7	3.0	10.0	10
	EPA 310.1		**mg/l as CaCO3**	**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity	n.a.	70.1	0.70	2.0	1
	SM 2540 C-1997		**mg/l**	**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	435	9.7	30.0	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: GW-MW15D-20140702 Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520784
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:43 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS15D SDG#: DUK37-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07046	Barium	SW-846 6010C	1	141880635001	07/09/2014 05:23	Tara L Snyder	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 05:23	Tara L Snyder	1
08014	Boron	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
01750	Calcium	SW-846 6010C	1	141880635001	07/09/2014 05:23	Tara L Snyder	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
01754	Iron	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 05:23	Tara L Snyder	1
01757	Magnesium	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07058	Manganese	SW-846 6010C	1	141880635001	07/09/2014 05:27	Tara L Snyder	2
07060	Molybdenum	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
01762	Potassium	SW-846 6010C	1	141880635001	07/09/2014 05:23	Tara L Snyder	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
01767	Sodium	SW-846 6010C	1	141880635001	07/09/2014 05:27	Tara L Snyder	2
08068	Strontium	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 05:23	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:49	John P Hook	1
00259	Mercury	SW-846 7470A	1	141895713006	07/12/2014 15:03	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1
01505	Bromide	EPA 300.0	1	14184987601B	07/03/2014 22:00	Clinton M Wilson	5
00224	Chloride	EPA 300.0	1	14184987601B	07/07/2014 08:58	Sandra J Miller	50
00368	Nitrate Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 22:00	Clinton M Wilson	5
01506	Nitrite Nitrogen	EPA 300.0	1	14184987601B	07/03/2014 22:00	Clinton M Wilson	5
00228	Sulfate	EPA 300.0	1	14184987601B	07/05/2014 20:42	Clinton M Wilson	10
12150	Total Alkalinity	EPA 310.1	1	14188002104A	07/07/2014 21:07	Michele L Graham	1
00212	Total Dissolved Solids	SM 2540 C-1997	1	14189021201A	07/08/2014 10:13	Sarah E Thompson	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: GW-MW15-20140702-MBQC Grab Groundwater Sample
Duke Sutton

LL Sample # WW 7520785
LL Group # 1486459
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 15:45 by MP

Submitted: 07/03/2014 09:15
Reported: 07/14/2014 11:33

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

DS15Q SDG#: DUK37-06*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0354 J	0.0072	0.0400	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
07051	Chromium	7440-47-3	0.0015 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
07058	Manganese	7439-96-5	0.105	0.00083	0.0100	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
07036	Selenium	7782-49-2	N.D.	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0018	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07071	Vanadium	7440-62-2	N.D.	0.0019	0.0100	1
07072	Zinc	7440-66-6	0.0022 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141880635001	07/09/2014 05:31	Tara L Snyder	1
07049	Cadmium	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07051	Chromium	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07053	Copper	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07055	Lead	SW-846 6010C	1	141880635001	07/09/2014 05:31	Tara L Snyder	1
07058	Manganese	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07061	Nickel	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07036	Selenium	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07066	Silver	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07022	Thallium	SW-846 6010C	1	141880635001	07/09/2014 05:31	Tara L Snyder	1
07071	Vanadium	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
07072	Zinc	SW-846 6010C	1	141880635001	07/08/2014 22:53	John P Hook	1
00259	Mercury	SW-846 7470A	1	141895713006	07/12/2014 15:05	Parker D Lindstrom	1
10635	WW SW846(IV) ICP Dig (tot rec)	SW-846 3005A	1	141880635001	07/08/2014 11:13	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141895713006	07/09/2014 09:23	James L Mertz	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486459
Reported: 07/14/14 at 11:33 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141880635001	Sample number(s): 7520777-7520785								
Antimony	N.D.	0.0051	0.0400	mg/l	109		88-111		
Arsenic	N.D.	0.0072	0.0400	mg/l	111		90-113		
Barium	N.D.	0.00033	0.0100	mg/l	108		90-110		
Beryllium	N.D.	0.00067	0.0100	mg/l	106		90-111		
Boron	N.D.	0.0046	0.100	mg/l	100		90-110		
Cadmium	N.D.	0.00033	0.0100	mg/l	105		90-112		
Calcium	N.D.	0.0334	0.400	mg/l	109		90-112		
Chromium	N.D.	0.0013	0.0300	mg/l	102		90-110		
Copper	N.D.	0.0028	0.0200	mg/l	108		90-112		
Iron	N.D.	0.0334	0.400	mg/l	112		90-112		
Lead	N.D.	0.0047	0.0300	mg/l	114		88-116		
Magnesium	N.D.	0.0167	0.200	mg/l	107		89-110		
Manganese	0.0013 J	0.00083	0.0100	mg/l	108		90-110		
Molybdenum	N.D.	0.0017	0.0200	mg/l	106		90-110		
Nickel	N.D.	0.0016	0.0200	mg/l	111		90-117		
Potassium	N.D.	0.133	1.00	mg/l	104		90-110		
Selenium	N.D.	0.0048	0.0400	mg/l	103		89-113		
Silver	N.D.	0.0018	0.0100	mg/l	94		80-120		
Sodium	N.D.	0.167	2.00	mg/l	106		87-114		
Strontium	N.D.	0.00033	0.0100	mg/l	108		90-110		
Thallium	N.D.	0.0051	0.0600	mg/l	101		90-118		
Vanadium	N.D.	0.0019	0.0100	mg/l	102		90-110		
Zinc	N.D.	0.0020	0.0400	mg/l	104		90-110		
Batch number: 141895713006	Sample number(s): 7520777-7520785								
Mercury	N.D.	0.00006 0	0.00020	mg/l	103		80-120		
Batch number: 14184987601B	Sample number(s): 7520777-7520778,7520780-7520784								
Bromide	N.D.	0.40	0.50	mg/l	91	91	90-110	0	20
Chloride	N.D.	0.20	0.40	mg/l	91	92	90-110	1	20
Nitrate Nitrogen	N.D.	0.050	0.10	mg/l	92	92	90-110	0	20
Nitrite Nitrogen	N.D.	0.080	0.10	mg/l	91	91	90-110	0	20
Sulfate	N.D.	0.30	1.0	mg/l	98	98	90-110	0	20
Batch number: 14188002102A	Sample number(s): 7520783								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	97		90-110		
Batch number: 14188002103A	Sample number(s): 7520777-7520782								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	96		90-110		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486459
Reported: 07/14/14 at 11:33 AM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 14188002104A	Sample number(s): 7520784								
Total Alkalinity	N.D.	0.70	2.0	mg/l as CaCO3	96		90-110		
Batch number: 14189021201A	Sample number(s): 7520777-7520784								
Total Dissolved Solids	N.D.	9.7	30.0	mg/l	89		80-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141880635001	Sample number(s): 7520777-7520785 UNSPK: 7520777 BKG: 7520777								
Antimony	108	106	76-122	2	20	N.D.	N.D.	0 (1)	20
Arsenic	104	108	81-123	3	20	0.0199 J	0.0133 J	39* (1)	20
Barium	102	101	78-125	1	20	0.144	0.136	6	20
Beryllium	102	101	87-114	1	20	N.D.	N.D.	0 (1)	20
Boron	74*	87	87-111	6	20	2.35	2.10	11 (1)	20
Cadmium	99	99	75-122	0	20	N.D.	N.D.	0 (1)	20
Calcium	7 (2)	-1 (2)	75-125	0	20	89.4	84.3	6	20
Chromium	98	95	76-120	2	20	0.0017 J	0.0019 J	11 (1)	20
Copper	106	106	86-122	0	20	N.D.	N.D.	0 (1)	20
Iron	72 (2)	112 (2)	75-125	7	20	4.72	4.44	6	20
Lead	101	100	75-125	1	20	N.D.	N.D.	0 (1)	20
Magnesium	20 (2)	10 (2)	81-118	1	20	25.1	23.6	6	20
Manganese	98	94	75-125	2	20	0.459	0.430	7	20
Molybdenum	102	102	89-117	0	20	0.319	0.293	9	20
Nickel	104	103	79-123	1	20	N.D.	N.D.	0 (1)	20
Potassium	100	98	77-128	1	20	14.7	13.8	6	20
Selenium	100	101	75-125	1	20	N.D.	N.D.	0 (1)	20
Silver	93	91	75-125	2	20	N.D.	N.D.	0 (1)	20
Sodium	21 (2)	51 (2)	84-117	3	20	52.1	47.3	10 (1)	20
Strontium	49*	72*	88-117	6	20	3.20	2.88	11	20
Thallium	95	94	75-125	0	20	N.D.	N.D.	0 (1)	20
Vanadium	97	97	90-117	0	20	N.D.	N.D.	0 (1)	20
Zinc	100	99	85-117	0	20	0.0041 J	0.0038 J	8 (1)	20
Batch number: 141895713006	Sample number(s): 7520777-7520785 UNSPK: 7520777 BKG: 7520777								
Mercury	102	102	80-120	0	20	N.D.	N.D.	0 (1)	20
Batch number: 14184987601B	Sample number(s): 7520777-7520778,7520780-7520784 UNSPK: 7520777 BKG: 7520777								
Bromide	91		90-110			N.D.	N.D.	0 (1)	20
Chloride	85*		90-110			59.6	58.9	1	20
Nitrate Nitrogen	93		90-110			N.D.	N.D.	0 (1)	20
Nitrite Nitrogen	82*		90-110			N.D.	N.D.	0 (1)	20
Sulfate	95		90-110			96.9	95.4	2 (1)	20
Batch number: 14188002102A	Sample number(s): 7520783 UNSPK: P520819 BKG: P520819								
Total Alkalinity	89	85	17-146	2	5	296	296	0	5
Batch number: 14188002103A	Sample number(s): 7520777-7520782 UNSPK: 7520777 BKG: 7520777								

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

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Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1486459
Reported: 07/14/14 at 11:33 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Total Alkalinity	47	48	17-146	1	5	235	235	0	5
Batch number: 14188002104A	Sample number(s): 7520784 UNSPK: P520624 BKG: P520624								
Total Alkalinity	90		17-146			61.9	63.8	3	5
Batch number: 14189021201A	Sample number(s): 7520777-7520784 UNSPK: 7520777 BKG: 7520777								
Total Dissolved Solids	95	94	66-131	1	23	516	503	3	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Acct. # 10634 For Eurofins Lancaster Laboratories Environmental use only Group # 1486459 Sample # 7520777-85
Instructions on reverse side correspond with circled numbers.

COC # 347981

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1 Client Information

Client: GEOSYNTEC CONSULTANTS	Acct. #:
Project Name/#: DUKE SUTTON / GC5592	PWSID #:
Project Manager: HERWIG GOLDEMUND	P.O. #:
Sampler: M. PATINKIN / M. JENNI	Quote #:
Name of state where samples were collected: NORTH CAROLINA	

2 Sample Identification / Collected / 3 Grab / Composite / 4 Matrix / Total # of Containers / 5 Analysis Requested

Preservation Codes: H=HCl, N=HNO_3, S=H_2SO_4, T=Thiosulfate, B=NaOH, O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Matrix	Total # of Containers	Analysis Requested
GW-MW13D-20140702	7/2	1210	X		Water	5	X X X X X X
GW-MW13-20140702		1211	X		Water	5	X X X X X X
GW-MW13D-20140702-MS		1215	X		Water	5	X X X X X X
GW-MW13D-20140702-MSD		1220	X		Water	5	X X X X X X
GW-MW15-20140702		1535	X		Water	5	X X X X X X
GW-MW15D-20140702		1530	X		Water	5	X X X X X X
GW-MW15D-20140702		1543	X		Water	5	X X X X X X
GW-MW15-20140702-MBRC		1545	X		Water	1	X
TEMP BLANK	—	—			Water	1	

Analysis Requested: TOTAL METALS (Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn, Hg) (6020/7470); CATIONS (Ca, Mg, Na, K) (6020); Sr, B, Ba, Mo, Fe (6010); MAJOR ANIONS (Cl, Br, SO4, F) (300); NITRATE, NITRITE (300.0); TDS (SM 2540 C-1997 or 2011)

6 Remarks

For Lab Use Only
FSC:
SCR#: 158059

7 Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: 5 DAY TAT

E-mail address: HGOLDEMUND@GEOSYNTEC.COM

8 Data Package Options (circle if required)

Type I (Validation/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) TX TRRP-13

Type IV (CLP SOW) MA MCP CT RCP

9 Relinquished / Received

Relinquished by	Date	Time	Received by	Date	Time
L. Meggahko	6/30/14	15:29			
	7/2/14	18:06			
				7/3/14	915

EDD Required? Yes No
If yes, format: ASCII

Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx ____ Other ____

Temperature upon receipt 6.0 °C

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

July 15, 2014

Project: Duke Sutton, NC

Submittal Date: 07/08/2014
Group Number: 1487148
SDG: DUK38
PO Number: GC5592
State of Sample Origin: NC

Client Sample Description	Lancaster Labs (LL) #
SS-GP12(28-32)-20140702 Solid Sample	7525095
SS-GP12(28-32)-20140702 Solid Sample	7525096
SS-GP13(64-68)-20140701 Solid Sample	7525097
SS-GP13(64-68)-20140701 Solid Sample	7525098
SS-GP13(68-72)-20140701 Solid Sample	7525099
SS-GP13(68-72)-20140701 Solid Sample	7525100
SS-GP14(60-62)-20140702 Solid Sample	7525101
SS-GP14(60-62)-20140702 Solid Sample	7525102
SS-GP14(68-72)-20140702 Solid Sample	7525103
SS-GP14(68-72)-20140702 Solid Sample	7525104
SS-GP15(60-64)-20140701 Solid Sample	7525105
SS-GP15(60-64)-20140701 Solid Sample	7525106
SS-GP15(68.7-70.7)-20140701 Solid Sample	7525107
SS-GP15(68.7-70.7)-20140701 Solid Sample	7525108

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Lauren Wellborn
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Beau Hodge
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Rachel Donahue
ELECTRONIC COPY TO	GeoSyntec Consultants	Attn: Herwig Goldemund

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Analysis Report

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Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

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Analysis Report

Sample Description: SS-GP12(28-32)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7525095
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:20 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

12-28 SDG#: DUK38-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	0.758 J	0.509	6.17	1
06935	Arsenic	7440-38-2	67.6	0.988	6.17	1
06946	Barium	7440-39-3	467	0.255	7.72	5
06947	Beryllium	7440-41-7	5.99	0.103	1.54	1
07914	Boron	7440-42-8	41.2	1.30	15.4	1
06949	Cadmium	7440-43-9	0.230 J	0.0509	1.54	1
06951	Chromium	7440-47-3	46.8	0.170	4.63	1
06953	Copper	7440-50-8	76.8	0.509	3.09	1
01654	Iron	7439-89-6	13,200	5.15	61.7	1
06955	Lead	7439-92-1	30.8	0.772	4.63	1
06958	Manganese	7439-96-5	64.1	0.128	1.54	1
06960	Molybdenum	7439-98-7	4.39	0.262	3.09	1
06961	Nickel	7440-02-0	35.9	0.232	3.09	1
06936	Selenium	7782-49-2	5.43 J	0.679	6.17	1
06966	Silver	7440-22-4	N.D.	0.293	1.54	1
07968	Strontium	7440-24-6	322	0.255	7.72	5
06925	Thallium	7440-28-0	5.45 J	1.23	9.26	1
06972	Zinc	7440-66-6	51.4	0.401	6.17	1
	SW-846 7471B		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0871 J	0.0155	0.310	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**	**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.62	0.0100	0.0100	1
	The pH was measured in water at 22 C.					
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	37.7	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141920637001	07/14/2014 16:39	Eric L Eby	5
06947	Beryllium	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1

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Analysis Report

Sample Description: SS-GP12(28-32)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7525095
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:20 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

12-28 SDG#: DUK38-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141920637001	07/14/2014 16:39	Eric L Eby	5
06925	Thallium	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141920637001	07/14/2014 09:52	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141920638001	07/14/2014 15:33	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141920637001	07/13/2014 08:55	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141920638001	07/13/2014 10:58	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14192039401A	07/11/2014 21:30	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14191820003A	07/10/2014 18:44	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP12(28-32)-20140702 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525096
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:20 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1228S SDG#: DUK38-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0222 J	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0716	0.0072	0.0400	1
07046	Barium	7440-39-3	0.135	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0463 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	3.24	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	0.0281	0.0028	0.0200	1
01754	Iron	7439-89-6	N.D.	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.529	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0080 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.141	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0046 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.600 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0090 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0180	0.100	10
	The silver result was performed by the Method of Standard Addition. Reporting limits were raised due to interference from the sample matrix.					
01767	Sodium	7440-23-5	2.20	0.167	2.00	1
08068	Strontium	7440-24-6	0.191	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0027 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07046	Barium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
08014	Boron	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1

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Analysis Report

Sample Description: SS-GP12(28-32)-20140702 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525096
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 12:20 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1228S SDG#: DUK38-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01750	Calcium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07051	Chromium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07053	Copper	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
01754	Iron	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07055	Lead	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
01757	Magnesium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07058	Manganese	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07061	Nickel	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
01762	Potassium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07036	Selenium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07066	Silver	SW-846 6010C	2	141910636001	07/15/2014 08:37	Joanne M Gates	10
01767	Sodium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
08068	Strontium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07022	Thallium	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
07072	Zinc	SW-846 6010C	1	141910636001	07/14/2014 19:37	John P Hook	1
00259	Mercury	SW-846 7470A	1	141915713001	07/14/2014 11:46	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141910636001	07/14/2014 10:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141915713001	07/11/2014 09:00	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14190-2486-1567A	07/09/2014 14:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP13(64-68)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7525097
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 10:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

13-64 SDG#: DUK38-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.	0.464	5.63	1
06935	Arsenic	7440-38-2	129	0.900	5.63	1
06946	Barium	7440-39-3	865	0.464	14.1	10
06947	Beryllium	7440-41-7	6.56	0.0943	1.41	1
07914	Boron	7440-42-8	52.2	1.18	14.1	1
06949	Cadmium	7440-43-9	0.245 J	0.0464	1.41	1
06951	Chromium	7440-47-3	49.0	0.155	4.22	1
06953	Copper	7440-50-8	64.0	0.464	2.81	1
01654	Iron	7439-89-6	19,600	4.70	56.3	1
06955	Lead	7439-92-1	32.9	0.703	4.22	1
06958	Manganese	7439-96-5	95.1	0.117	1.41	1
06960	Molybdenum	7439-98-7	2.01 J	0.239	2.81	1
06961	Nickel	7440-02-0	34.3	0.211	2.81	1
06936	Selenium	7782-49-2	6.68	0.619	5.63	1
06966	Silver	7440-22-4	N.D.	0.267	1.41	1
07968	Strontium	7440-24-6	491	0.232	7.03	5
06925	Thallium	7440-28-0	6.25 J	1.13	8.44	1
06972	Zinc	7440-66-6	53.3	0.366	5.63	1
	SW-846 7471B		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.156 J	0.0137	0.274	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**	**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.69	0.0100	0.0100	1
	The pH was measured in water at 21.6 C.					
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	32.3	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141920637001	07/14/2014 16:47	Eric L Eby	10
06947	Beryllium	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1

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Analysis Report

Sample Description: SS-GP13(64-68)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7525097
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 10:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

13-64 SDG#: DUK38-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141920637001	07/14/2014 16:43	Eric L Eby	5
06925	Thallium	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141920637001	07/14/2014 09:56	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141920638001	07/14/2014 15:43	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141920637001	07/13/2014 08:55	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141920638001	07/13/2014 10:58	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14192039401A	07/11/2014 21:30	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14191820003A	07/10/2014 18:44	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP13(64-68)-20140701 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525098
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 10:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1364S SDG#: DUK38-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.251	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0676	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.137	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	4.42	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0024 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.0523 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	1.23	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0013 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0045 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.168 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0344 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0180	0.100	10
	The silver result was performed by the Method of Standard Addition. Reporting limits were raised due to interference from the sample matrix.					
01767	Sodium	7440-23-5	3.06	0.167	2.00	1
08068	Strontium	7440-24-6	0.249	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0036 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07046	Barium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
08014	Boron	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1

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Analysis Report

Sample Description: SS-GP13(64-68)-20140701 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525098
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 10:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1364S SDG#: DUK38-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01750	Calcium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07051	Chromium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07053	Copper	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
01754	Iron	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07055	Lead	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
01757	Magnesium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07058	Manganese	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07061	Nickel	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
01762	Potassium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07036	Selenium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07066	Silver	SW-846 6010C	2	141910636001	07/15/2014 08:52	Joanne M Gates	10
01767	Sodium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
08068	Strontium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07022	Thallium	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
07072	Zinc	SW-846 6010C	1	141910636001	07/14/2014 20:14	John P Hook	1
00259	Mercury	SW-846 7470A	1	141915713001	07/14/2014 11:58	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141910636001	07/14/2014 10:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141915713001	07/11/2014 09:00	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14190-2486-1567A	07/09/2014 14:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP13(68-72)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7525099
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 10:10 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1368- SDG#: DUK38-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.	0.450	5.45	1
06935	Arsenic	7440-38-2	127	0.872	5.45	1
06946	Barium	7440-39-3	591	0.225	6.81	5
06947	Beryllium	7440-41-7	5.10	0.0913	1.36	1
07914	Boron	7440-42-8	52.3	1.14	13.6	1
06949	Cadmium	7440-43-9	0.285 J	0.0450	1.36	1
06951	Chromium	7440-47-3	47.4	0.150	4.09	1
06953	Copper	7440-50-8	64.8	0.450	2.72	1
01654	Iron	7439-89-6	19,500	4.55	54.5	1
06955	Lead	7439-92-1	31.4	0.681	4.09	1
06958	Manganese	7439-96-5	101	0.113	1.36	1
06960	Molybdenum	7439-98-7	2.91	0.232	2.72	1
06961	Nickel	7440-02-0	40.8	0.204	2.72	1
06936	Selenium	7782-49-2	5.71	0.599	5.45	1
06966	Silver	7440-22-4	N.D.	0.259	1.36	1
07968	Strontium	7440-24-6	388	0.225	6.81	5
06925	Thallium	7440-28-0	7.40 J	1.09	8.17	1
06972	Zinc	7440-66-6	53.4	0.354	5.45	1
	SW-846 7471B		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.186 J	0.0135	0.269	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**	**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.61	0.0100	0.0100	1
	The pH was measured in water at 21.7 C.					
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	30.1	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141920637001	07/14/2014 16:59	Eric L Eby	5
06947	Beryllium	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1

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Analysis Report

Sample Description: SS-GP13(68-72)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7525099
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 10:10 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1368- SDG#: DUK38-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141920637001	07/14/2014 16:59	Eric L Eby	5
06925	Thallium	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141920637001	07/14/2014 10:08	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141920638001	07/14/2014 15:45	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141920637001	07/13/2014 08:55	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141920638001	07/13/2014 10:58	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14192039401A	07/11/2014 21:30	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14191820003A	07/10/2014 18:44	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP13(68-72)-20140701 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525100
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 10:10 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1368S SDG#: DUK38-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0057 J	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.254	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0321	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.177	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	3.73	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0024 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.119 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	1.18	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0022 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0064 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	0.0293 J	0.0048	0.0400	1
07066	Silver	7440-22-4	0.0210 J	0.0180	0.100	10
	The silver result was performed by the Method of Standard Addition. Reporting limits were raised due to interference from the sample matrix.					
01767	Sodium	7440-23-5	3.95	0.167	2.00	1
08068	Strontium	7440-24-6	0.183	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0099 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07046	Barium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
08014	Boron	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1

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Analysis Report

Sample Description: SS-GP13(68-72)-20140701 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525100
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 10:10 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1368S SDG#: DUK38-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01750	Calcium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07051	Chromium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07053	Copper	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
01754	Iron	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07055	Lead	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
01757	Magnesium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07058	Manganese	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07061	Nickel	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
01762	Potassium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07036	Selenium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07066	Silver	SW-846 6010C	2	141910636001	07/15/2014 09:14	Joanne M Gates	10
01767	Sodium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
08068	Strontium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07022	Thallium	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
07072	Zinc	SW-846 6010C	1	141910636001	07/14/2014 20:18	John P Hook	1
00259	Mercury	SW-846 7470A	1	141915713001	07/14/2014 12:00	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141910636001	07/14/2014 10:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141915713001	07/11/2014 09:00	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14190-2486-1567A	07/09/2014 14:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP14(60-62)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7525101
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1460- SDG#: DUK38-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.502	6.08	1
06935	Arsenic	7440-38-2	137		0.973	6.08	1
06946	Barium	7440-39-3	562		0.251	7.60	5
06947	Beryllium	7440-41-7	3.82		0.102	1.52	1
07914	Boron	7440-42-8	34.3		1.28	15.2	1
06949	Cadmium	7440-43-9	0.228	J	0.0502	1.52	1
06951	Chromium	7440-47-3	31.9		0.167	4.56	1
06953	Copper	7440-50-8	58.8		0.502	3.04	1
01654	Iron	7439-89-6	13,500		5.08	60.8	1
06955	Lead	7439-92-1	24.2		0.760	4.56	1
06958	Manganese	7439-96-5	72.8		0.126	1.52	1
06960	Molybdenum	7439-98-7	2.33	J	0.258	3.04	1
06961	Nickel	7440-02-0	26.5		0.228	3.04	1
06936	Selenium	7782-49-2	3.97	J	0.669	6.08	1
06966	Silver	7440-22-4	N.D.		0.289	1.52	1
07968	Strontium	7440-24-6	295		0.251	7.60	5
06925	Thallium	7440-28-0	4.62	J	1.22	9.12	1
06972	Zinc	7440-66-6	36.3		0.395	6.08	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0850	J	0.0144	0.289	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.65		0.0100	0.0100	1
	The pH was measured in water at 21.6 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	34.2		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141920637001	07/14/2014 17:03	Eric L Eby	5
06947	Beryllium	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1

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Analysis Report

Sample Description: SS-GP14(60-62)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7525101
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1460- SDG#: DUK38-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141920637001	07/14/2014 17:03	Eric L Eby	5
06925	Thallium	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141920637001	07/14/2014 10:12	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141920638001	07/14/2014 15:47	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141920637001	07/13/2014 08:55	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141920638001	07/13/2014 10:58	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14192039401A	07/11/2014 21:30	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14191820003A	07/10/2014 18:44	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP14(60-62)-20140702 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525102
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1460S SDG#: DUK38-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.247	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0901	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0547 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	2.99	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0033 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.114 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.603	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0031 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0053 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0020 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.144 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0077 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0180	0.100	10
	The silver result was performed by the Method of Standard Addition. Reporting limits were raised due to interference from the sample matrix.					
01767	Sodium	7440-23-5	3.87	0.167	2.00	1
08068	Strontium	7440-24-6	0.102	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0049 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07046	Barium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
08014	Boron	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1

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Analysis Report

Sample Description: SS-GP14(60-62)-20140702 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525102
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1460S SDG#: DUK38-08

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01750	Calcium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07051	Chromium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07053	Copper	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
01754	Iron	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07055	Lead	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
01757	Magnesium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07058	Manganese	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07061	Nickel	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
01762	Potassium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07036	Selenium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07066	Silver	SW-846 6010C	2	141910636001	07/15/2014 09:29	Joanne M Gates	10
01767	Sodium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
08068	Strontium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07022	Thallium	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
07072	Zinc	SW-846 6010C	1	141910636001	07/14/2014 20:22	John P Hook	1
00259	Mercury	SW-846 7470A	1	141915713001	07/14/2014 12:02	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141910636001	07/14/2014 10:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141915713001	07/11/2014 09:00	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14190-2486-1567A	07/09/2014 14:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP14(68-72)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7525103
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:15 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1468- SDG#: DUK38-09

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony		7440-36-0	N.D.		0.459	5.56	1
06935	Arsenic		7440-38-2	144		4.45	27.8	5
06946	Barium		7440-39-3	661		0.229	6.95	5
06947	Beryllium		7440-41-7	5.45		0.0932	1.39	1
07914	Boron		7440-42-8	45.5		1.17	13.9	1
06949	Cadmium		7440-43-9	0.163	J	0.0459	1.39	1
06951	Chromium		7440-47-3	55.8		0.153	4.17	1
06953	Copper		7440-50-8	66.5		0.459	2.78	1
01654	Iron		7439-89-6	29,500		23.2	278	5
06955	Lead		7439-92-1	29.6		0.695	4.17	1
06958	Manganese		7439-96-5	114		0.115	1.39	1
06960	Molybdenum		7439-98-7	2.65	J	0.236	2.78	1
06961	Nickel		7440-02-0	41.0		0.209	2.78	1
06936	Selenium		7782-49-2	6.04		0.612	5.56	1
06966	Silver		7440-22-4	N.D.		0.264	1.39	1
07968	Strontium		7440-24-6	598		0.229	6.95	5
06925	Thallium		7440-28-0	6.68	J	1.11	8.34	1
06972	Zinc		7440-66-6	55.4		0.362	5.56	1
		SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury		7439-97-6	0.124	J	0.0134	0.269	1
Wet Chemistry		**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH		n.a.	8.63		0.0100	0.0100	1
	The pH was measured in water at 21.5 C.							
Wet Chemistry		**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture		n.a.	29.5		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.							

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141920637001	07/14/2014 17:07	Eric L Eby	5
06946	Barium	SW-846 6010C	1	141920637001	07/14/2014 17:07	Eric L Eby	5
06947	Beryllium	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1

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Analysis Report

Sample Description: SS-GP14(68-72)-20140702 Solid Sample
Duke Sutton

LL Sample # SW 7525103
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:15 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1468- SDG#: DUK38-09

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141920637001	07/14/2014 17:07	Eric L Eby	5
06955	Lead	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141920637001	07/14/2014 17:07	Eric L Eby	5
06925	Thallium	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141920637001	07/14/2014 10:16	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141920638001	07/14/2014 15:53	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141920637001	07/13/2014 08:55	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141920638001	07/13/2014 10:58	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14192039401A	07/11/2014 21:30	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14191820003A	07/10/2014 18:44	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP14(68-72)-20140702 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525104
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:15 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1468S SDG#: DUK38-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	0.0057 J	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.263	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0281	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0761 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	4.83	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0050 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.101 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.560	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0044 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0046 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	0.0281 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0180	0.100	10
	The silver result was performed by the Method of Standard Addition. Reporting limits were raised due to interference from the sample matrix.					
01767	Sodium	7440-23-5	3.24	0.167	2.00	1
08068	Strontium	7440-24-6	0.163	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0038 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07046	Barium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
08014	Boron	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1

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Analysis Report

Sample Description: SS-GP14(68-72)-20140702 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525104
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/02/2014 10:15 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1468S SDG#: DUK38-10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01750	Calcium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07051	Chromium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07053	Copper	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
01754	Iron	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07055	Lead	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
01757	Magnesium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07058	Manganese	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07061	Nickel	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
01762	Potassium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07036	Selenium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07066	Silver	SW-846 6010C	2	141910636001	07/15/2014 09:44	Joanne M Gates	10
01767	Sodium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
08068	Strontium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07022	Thallium	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
07072	Zinc	SW-846 6010C	1	141910636001	07/14/2014 20:25	John P Hook	1
00259	Mercury	SW-846 7470A	1	141915713001	07/14/2014 12:04	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141910636001	07/14/2014 10:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141915713001	07/11/2014 09:00	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14190-2486-1567A	07/09/2014 14:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP15(60-64)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7525105
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:30 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1560- SDG#: DUK38-11

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**	**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.	0.432	5.24	1
06935	Arsenic	7440-38-2	125	0.839	5.24	1
06946	Barium	7440-39-3	493	0.216	6.55	5
06947	Beryllium	7440-41-7	4.89	0.0878	1.31	1
07914	Boron	7440-42-8	66.7	1.10	13.1	1
06949	Cadmium	7440-43-9	N.D.	0.0432	1.31	1
06951	Chromium	7440-47-3	65.1	0.144	3.93	1
06953	Copper	7440-50-8	64.5	0.432	2.62	1
01654	Iron	7439-89-6	43,400	21.9	262	5
06955	Lead	7439-92-1	24.6	0.655	3.93	1
06958	Manganese	7439-96-5	160	0.544	6.55	5
06960	Molybdenum	7439-98-7	2.68	0.223	2.62	1
06961	Nickel	7440-02-0	47.3	0.197	2.62	1
06936	Selenium	7782-49-2	4.54 J	0.576	5.24	1
06966	Silver	7440-22-4	N.D.	0.249	1.31	1
07968	Strontium	7440-24-6	561	0.216	6.55	5
06925	Thallium	7440-28-0	9.28	1.05	7.86	1
06972	Zinc	7440-66-6	55.8	0.341	5.24	1
	SW-846 7471B		**mg/kg**	**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0778 J	0.0125	0.249	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**	**Std. Units**	**Std. Units**	
00394	pH	n.a.	8.28	0.0100	0.0100	1
	The pH was measured in water at 22.2 C.					
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	25.9	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141920637001	07/14/2014 17:11	Eric L Eby	5
06947	Beryllium	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1

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Analysis Report

Sample Description: SS-GP15(60-64)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7525105
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:30 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1560- SDG#: DUK38-11

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141920637001	07/14/2014 17:11	Eric L Eby	5
06955	Lead	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141920637001	07/14/2014 17:11	Eric L Eby	5
06960	Molybdenum	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141920637001	07/14/2014 17:11	Eric L Eby	5
06925	Thallium	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141920637001	07/14/2014 10:20	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141920638001	07/14/2014 15:55	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141920637001	07/13/2014 08:55	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141920638001	07/13/2014 10:58	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14192039401B	07/11/2014 21:30	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14191820003A	07/10/2014 18:44	Scott W Freisher	1

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Analysis Report

Sample Description: SS-GP15(60-64)-20140701 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525106
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:30 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1560S SDG#: DUK38-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.208	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0178	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.100	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	6.35	0.0334	0.400	1
07051	Chromium	7440-47-3	0.0036 J	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.0561 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.678	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0021 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0042 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	N.D.	0.0016	0.0200	1
01762	Potassium	7440-09-7	N.D.	0.133	1.00	1
07036	Selenium	7782-49-2	0.0278 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0180	0.100	10
	The silver result was performed by the Method of Standard Addition. Reporting limits were raised due to interference from the sample matrix.					
01767	Sodium	7440-23-5	9.01	0.167	2.00	1
08068	Strontium	7440-24-6	0.197	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0030 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07046	Barium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
08014	Boron	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1

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Analysis Report

Sample Description: SS-GP15(60-64)-20140701 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525106
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 14:30 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1560S SDG#: DUK38-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01750	Calcium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07051	Chromium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07053	Copper	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
01754	Iron	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07055	Lead	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
01757	Magnesium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07058	Manganese	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07061	Nickel	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
01762	Potassium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07036	Selenium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07066	Silver	SW-846 6010C	2	141910636001	07/15/2014 10:07	Joanne M Gates	10
01767	Sodium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
08068	Strontium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07022	Thallium	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
07072	Zinc	SW-846 6010C	1	141910636001	07/14/2014 20:29	John P Hook	1
00259	Mercury	SW-846 7470A	1	141915713001	07/14/2014 12:06	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141910636001	07/14/2014 10:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141915713001	07/11/2014 09:00	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14190-2486-1567A	07/09/2014 14:00	Christina A Huber	n.a.

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Analysis Report

Sample Description: SS-GP15(68.7-70.7)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7525107
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 15:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1568- SDG#: DUK38-13

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/kg**		**mg/kg**	**mg/kg**	
06944	Antimony	7440-36-0	N.D.		0.453	5.49	1
06935	Arsenic	7440-38-2	35.6		0.879	5.49	1
06946	Barium	7440-39-3	265		0.227	6.87	5
06947	Beryllium	7440-41-7	3.00		0.0920	1.37	1
07914	Boron	7440-42-8	30.2		1.15	13.7	1
06949	Cadmium	7440-43-9	N.D.		0.0453	1.37	1
06951	Chromium	7440-47-3	22.3		0.151	4.12	1
06953	Copper	7440-50-8	28.9		0.453	2.75	1
01654	Iron	7439-89-6	22,400		4.59	54.9	1
06955	Lead	7439-92-1	15.2		0.687	4.12	1
06958	Manganese	7439-96-5	63.4		0.114	1.37	1
06960	Molybdenum	7439-98-7	2.38	J	0.233	2.75	1
06961	Nickel	7440-02-0	112		0.206	2.75	1
06936	Selenium	7782-49-2	1.82	J	0.604	5.49	1
06966	Silver	7440-22-4	N.D.		0.261	1.37	1
07968	Strontium	7440-24-6	237		0.227	6.87	5
06925	Thallium	7440-28-0	62.5		1.10	8.24	1
06972	Zinc	7440-66-6	27.5		0.357	5.49	1
	SW-846 7471B		**mg/kg**		**mg/kg**	**mg/kg**	
00159	Mercury	7439-97-6	0.0272	J	0.0140	0.280	1
Wet Chemistry	**SW-846 9045D modified**		**Std. Units**		**Std. Units**	**Std. Units**	
00394	pH	n.a.	7.89		0.0100	0.0100	1
	The pH was measured in water at 21.6 C.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	29.3		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

General Sample Comments

State of North Carolina Lab Certification No. 521

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06944	Antimony	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	141920637001	07/14/2014 17:15	Eric L Eby	5
06947	Beryllium	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1

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Analysis Report

Sample Description: SS-GP15(68.7-70.7)-20140701 Solid Sample
Duke Sutton

LL Sample # SW 7525107
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 15:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1568- SDG#: DUK38-13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07914	Boron	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
01654	Iron	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06960	Molybdenum	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
07968	Strontium	SW-846 6010C	1	141920637001	07/14/2014 17:15	Eric L Eby	5
06925	Thallium	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	141920637001	07/14/2014 10:24	Joanne M Gates	1
00159	Mercury	SW-846 7471B	1	141920638001	07/14/2014 15:57	Damary Valentin	1
10637	SW SW846 (IV)ICP/ICPMS Digest	SW-846 3050B	1	141920637001	07/13/2014 08:55	James L Mertz	1
10638	SW SW846 (IV) Hg Digest	SW-846 7471B	1	141920638001	07/13/2014 10:58	James L Mertz	1
00394	pH	SW-846 9045D modified	1	14192039401B	07/11/2014 21:30	Luz M Groff	1
00111	Moisture	SM 2540 G-1997	1	14191820003A	07/10/2014 18:44	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP15(68.7-70.7)-20140701 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525108
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 15:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1568S SDG#: DUK38-14*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010C**		**mg/l**	**mg/l**	**mg/l**	
07044	Antimony	7440-36-0	N.D.	0.0051	0.0400	1
07035	Arsenic	7440-38-2	0.0914	0.0072	0.0400	1
07046	Barium	7440-39-3	0.0332	0.00033	0.0100	1
07047	Beryllium	7440-41-7	N.D.	0.00067	0.0100	1
08014	Boron	7440-42-8	0.0763 J	0.0046	0.100	1
07049	Cadmium	7440-43-9	N.D.	0.00033	0.0100	1
01750	Calcium	7440-70-2	6.44	0.0334	0.400	1
07051	Chromium	7440-47-3	N.D.	0.0013	0.0300	1
07053	Copper	7440-50-8	N.D.	0.0028	0.0200	1
01754	Iron	7439-89-6	0.0698 J	0.0334	0.400	1
07055	Lead	7439-92-1	N.D.	0.0047	0.0300	1
01757	Magnesium	7439-95-4	0.960	0.0167	0.200	1
07058	Manganese	7439-96-5	0.0033 J	0.00083	0.0100	1
07060	Molybdenum	7439-98-7	0.0026 J	0.0017	0.0200	1
07061	Nickel	7440-02-0	0.0021 J	0.0016	0.0200	1
01762	Potassium	7440-09-7	0.209 J	0.133	1.00	1
07036	Selenium	7782-49-2	0.0152 J	0.0048	0.0400	1
07066	Silver	7440-22-4	N.D.	0.0180	0.100	10
	The silver result was performed by the Method of Standard Addition. Reporting limits were raised due to interference from the sample matrix.					
01767	Sodium	7440-23-5	3.45	0.167	2.00	1
08068	Strontium	7440-24-6	0.240	0.00033	0.0100	1
07022	Thallium	7440-28-0	N.D.	0.0051	0.0600	1
07072	Zinc	7440-66-6	0.0077 J	0.0020	0.0400	1
	SW-846 7470A		**mg/l**	**mg/l**	**mg/l**	
00259	Mercury	7439-97-6	N.D.	0.000060	0.00020	1

General Sample Comments

State of North Carolina Lab Certification No. 521

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07044	Antimony	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07035	Arsenic	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07046	Barium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07047	Beryllium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
08014	Boron	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07049	Cadmium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: SS-GP15(68.7-70.7)-20140701 Solid Sample
SPLP NON-VOLATILE EXTRACTION
Duke Sutton

LL Sample # TL 7525108
LL Group # 1487148
Account # 10634

Project Name: Duke Sutton, NC

Collected: 07/01/2014 15:00 by WS

Submitted: 07/08/2014 09:20
Reported: 07/15/2014 12:40

GeoSyntec Consultants
2501 Blue Ridge Road
Suite 430
Raleigh NC 27607

1568S SDG#: DUK38-14*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01750	Calcium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07051	Chromium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07053	Copper	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
01754	Iron	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07055	Lead	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
01757	Magnesium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07058	Manganese	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07060	Molybdenum	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07061	Nickel	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
01762	Potassium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07036	Selenium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07066	Silver	SW-846 6010C	2	141910636001	07/15/2014 10:22	Joanne M Gates	10
01767	Sodium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
08068	Strontium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07022	Thallium	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
07072	Zinc	SW-846 6010C	1	141910636001	07/14/2014 20:33	John P Hook	1
00259	Mercury	SW-846 7470A	1	141915713001	07/14/2014 12:08	Damary Valentin	1
10636	WW/TL SW846 (IV) ICP Dig (tot)	SW-846 3010A	1	141910636001	07/14/2014 10:10	Micaela L Dishong	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	141915713001	07/11/2014 09:00	Micaela L Dishong	1
01567	Synthetic Precipitation Leach	SW-846 1312	1	14190-2486-1567A	07/09/2014 14:00	Christina A Huber	n.a.

*=This limit was used in the evaluation of the final result

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1487148
Reported: 07/15/14 at 12:40 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result		Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141910636001	Sample number(s): 7525096,7525098,7525100,7525102,7525104,7525106,7525108									
Antimony	N.D.		0.0051	0.0400	mg/l	106		80-120		
Arsenic	N.D.		0.0072	0.0400	mg/l	107		80-120		
Barium	N.D.		0.00033	0.0100	mg/l	103		80-120		
Beryllium	N.D.		0.00067	0.0100	mg/l	103		80-120		
Boron	N.D.		0.0046	0.100	mg/l	100		80-120		
Cadmium	N.D.		0.00033	0.0100	mg/l	108		80-120		
Calcium	N.D.		0.0334	0.400	mg/l	106		80-120		
Chromium	N.D.		0.0013	0.0300	mg/l	104		80-120		
Copper	N.D.		0.0028	0.0200	mg/l	105		80-120		
Iron	N.D.		0.0334	0.400	mg/l	107		80-120		
Lead	N.D.		0.0047	0.0300	mg/l	112		80-120		
Magnesium	N.D.		0.0167	0.200	mg/l	101		80-120		
Manganese	N.D.		0.00083	0.0100	mg/l	106		80-120		
Molybdenum	N.D.		0.0017	0.0200	mg/l	103		80-120		
Nickel	N.D.		0.0016	0.0200	mg/l	112		80-120		
Potassium	N.D.		0.133	1.00	mg/l	102		80-120		
Selenium	N.D.		0.0048	0.0400	mg/l	106		80-120		
Silver	N.D.		0.0018	0.0100	mg/l	111		80-120		
Sodium	N.D.		0.167	2.00	mg/l	100		80-120		
Strontium	N.D.		0.00033	0.0100	mg/l	105		80-120		
Thallium	N.D.		0.0051	0.0600	mg/l	107		80-120		
Zinc	N.D.		0.0020	0.0400	mg/l	107		80-120		
Batch number: 141915713001	Sample number(s): 7525096,7525098,7525100,7525102,7525104,7525106,7525108									
Mercury	N.D.		0.00006 0	0.00020	mg/l	97		80-120		
Batch number: 141920637001	Sample number(s): 7525095,7525097,7525099,7525101,7525103,7525105,7525107									
Antimony	N.D.		0.330	4.00	mg/kg	113		80-120		
Arsenic	N.D.		0.640	4.00	mg/kg	106		80-120		
Barium	N.D.		0.0330	1.00	mg/kg	104		80-120		
Beryllium	N.D.		0.0670	1.00	mg/kg	102		80-120		
Boron	1.31	J	0.840	10.0	mg/kg	100		80-120		
Cadmium	N.D.		0.0330	1.00	mg/kg	105		80-120		
Chromium	N.D.		0.110	3.00	mg/kg	103		80-120		
Copper	N.D.		0.330	2.00	mg/kg	104		80-120		
Iron	N.D.		3.34	40.0	mg/kg	106		80-120		
Lead	N.D.		0.500	3.00	mg/kg	105		80-120		
Manganese	0.0860	J	0.0830	1.00	mg/kg	103		80-120		
Molybdenum	N.D.		0.170	2.00	mg/kg	106		80-120		
Nickel	N.D.		0.150	2.00	mg/kg	109		80-120		
Selenium	N.D.		0.440	4.00	mg/kg	103		80-120		
Silver	N.D.		0.190	1.00	mg/kg	104		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1487148
Reported: 07/15/14 at 12:40 PM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Strontium	0.105 J	0.0330	1.00	mg/kg	106		80-120		
Thallium	N.D.	0.800	6.00	mg/kg	120		80-120		
Zinc	0.517 J	0.260	4.00	mg/kg	103		80-120		
Batch number: 141920638001	Sample number(s): 7525095,7525097,7525099,7525101,7525103,7525105,7525107								
Mercury	N.D.	0.0100	0.200	mg/kg	92		80-120		
Batch number: 14192039401A	Sample number(s): 7525095,7525097,7525099,7525101,7525103								
pH					99		90-110		
Batch number: 14192039401B	Sample number(s): 7525105,7525107								
pH					99		90-110		
Batch number: 14191820003A	Sample number(s): 7525095,7525097,7525099,7525101,7525103,7525105,7525107								
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 141910636001	Sample number(s): 7525096,7525098,7525100,7525102,7525104,7525106,7525108 UNSPK: 7525096 BKG: 7525096								
Antimony	89	87	75-125	1	20	0.0222 J	0.0207 J	7 (1)	20
Arsenic	94	93	75-125	2	20	0.0716	0.0748	4 (1)	20
Barium	89	89	75-125	1	20	0.135	0.137	1	20
Beryllium	86	85	75-125	2	20	N.D.	N.D.	0 (1)	20
Boron	87	87	75-125	0	20	0.0463 J	0.0443 J	4 (1)	20
Cadmium	90	89	75-125	1	20	N.D.	N.D.	0 (1)	20
Calcium	92	90	75-125	2	20	3.24	3.31	2	20
Chromium	87	87	75-125	1	20	N.D.	N.D.	0 (1)	20
Copper	90	89	75-125	1	20	0.0281	0.0278	1 (1)	20
Iron	87	84	75-125	3	20	N.D.	N.D.	0 (1)	20
Lead	86	84	75-125	2	20	N.D.	N.D.	0 (1)	20
Magnesium	88	85	75-125	3	20	0.529	0.533	1 (1)	20
Manganese	89	89	75-125	1	20	0.0080 J	0.0083 J	4 (1)	20
Molybdenum	85	84	75-125	2	20	0.141	0.142	1	20
Nickel	88	86	75-125	1	20	0.0046 J	0.0048 J	4 (1)	20
Potassium	93	91	75-125	3	20	0.600 J	0.577 J	4 (1)	20
Selenium	89	89	75-125	0	20	0.0090 J	0.0117 J	25* (1)	20
Silver	7*	7*	75-125	3	20	N.D.	N.D.	0 (1)	20
Sodium	90	87	75-125	3	20	2.20	2.22	1 (1)	20
Strontium	83	82	75-125	1	20	0.191	0.194	2	20
Thallium	85	83	75-125	2	20	N.D.	N.D.	0 (1)	20
Zinc	91	90	75-125	1	20	0.0027 J	0.0024 J	12 (1)	20
Batch number: 141915713001	Sample number(s): 7525096,7525098,7525100,7525102,7525104,7525106,7525108 UNSPK: 7525096 BKG: 7525096								
Mercury	73*	71*	80-120	2	20	N.D.	N.D.	0 (1)	20
Batch number: 141920637001	Sample number(s): 7525095,7525097,7525099,7525101,7525103,7525105,7525107 UNSPK:								

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: GeoSyntec Consultants Group Number: 1487148
Reported: 07/15/14 at 12:40 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
	P526716	BKG: P526716							
Antimony	65*	68*	75-125	3	20	0.453 J	0.324 J	33* (1)	20
Arsenic	103	104	75-125	1	20	2.38 J	2.77 J	15 (1)	20
Barium	105	112	75-125	3	20	121	116	4	20
Beryllium	102	101	83-119	2	20	0.574 J	0.473 J	19 (1)	20
Boron	103	102	84-110	3	20	17.4	14.5	18 (1)	20
Cadmium	98	96	75-120	4	20	N.D.	0.0510 J	200* (1)	20
Chromium	118	116	75-125	2	20	18.7	17.9	4	20
Copper	116	132*	75-125	7	20	17.9	21.5	18	20
Iron	-269 (2)	-30 (2)	75-125	1	20	19,000	16,200	16	20
Lead	-377 (2)	317 (2)	75-125	74*	20	144	67.0	73*	20
Manganese	29 (2)	880 (2)	75-125	65*	20	417	307	30*	20
Molybdenum	98	97	82-110	3	20	0.990 J	0.724 J	31* (1)	20
Nickel	98	96	75-125	3	20	17.7	16.3	8	20
Selenium	96	99	75-125	1	20	N.D.	N.D.	0 (1)	20
Silver	98	100	75-125	0	20	N.D.	N.D.	0 (1)	20
Strontium	97	100	81-125	0	20	27.8	24.0	14	20
Thallium	112	111	78-119	3	20	N.D.	N.D.	0 (1)	20
Zinc	117	136*	75-125	6	20	66.8	72.5	8	20
Batch number: 141920638001	Sample number(s): 7525095,7525097,7525099,7525101,7525103,7525105,7525107 UNSPK: 7525095 BKG: 7525095								
Mercury	104	104	80-120	4	20	0.0543 J	0.0666 J	20 (1)	20
Batch number: 14192039401A	Sample number(s): 7525095,7525097,7525099,7525101,7525103 BKG: P526010								
pH						10.3	10.3	0	3
Batch number: 14192039401B	Sample number(s): 7525105,7525107 BKG: P522507								
pH						7.89	7.85	1	3
Batch number: 14191820003A	Sample number(s): 7525095,7525097,7525099,7525101,7525103,7525105,7525107 BKG: P526737								
Moisture						3.7	3.7	1	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Acct. # D634 Group # 1487148 Sample # ~~7525095-108~~ 7525095-108 Date 7/8/14 (3)

Client: **Geosyntec Consultants**	**PAGE #** 1/1		
Project Name/#: Duke Sutton	Site ID #:		
Project Manager: Herwig Goldemund	P.O. #:		
Sampler: Weston Shin	PWSID #:		
Phone #: 704-618-2765	Quote #:		
State where sample(s) were collected: North Carolina			

Matrix: Sediment ☐ | Soil ☑ | Water: Ground ☐ Surface ☐ Potable ☐ NPDES ☐ | Other: | Total # of Containers

Analyses Requested / **Preservation Codes**

Sample Identification	Collection Date	Collection Time	Grab	Composite	Soil	Water	Other:	Total # of Containers	Metals - 6010C	Hg - 7470A	Major Cations - 6010C	Major Anions - 300.0	Sr, B, Ba, Mo, Fe - 6010C	pH - SW-846 9045D Modified	SPLP - Metals - 1312 and 6000/7000 series
SS-GP12 (28-32)-20140702	7/2/2014	12:20	x		x			2	x	x	x	x	x	x	x
SS-GP13 (64-68)-20140701	7/1/2014	10:00	x		x			2	x	x	x	x	x	x	x
SS-GP13 (68-72)-20140701	7/1/2014	10:10	x		x			2	x	x	x	x	x	x	x
SS-GP14 (60-62)-20140702	7/2/2014	10:00	x		x			2	x	x	x	x	x	x	x
SS-GP14 (68-72)-20140702	7/2/2014	10:15	x		x			2	x	x	x	x	x	x	x
SS-GP15 (60-64)-20140701	7/1/2014	14:30	x		x			2	x	x	x	x	x	x	x
SS-GP15 (68.7-70.7)-20140701	7/1/2014	15:00	x		x			2	x	x	x	x	x	x	x

For Lab Use Only
SF #: _____
SCR #: _____

Preservation Codes
H = HCl | T = Thiosulfate
N = HNO_3 | B = NaOH
S = H_2SO_4 | P = H_3PO_4
O = Other

Remarks
NOTE FOR ALL SOIL SAMPLES : 6010 to analyze for Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, Tl, Zn ONLY.

Turnaround Time Requested (TAT) (please check): Standard ☐ Rush ☑
(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: HGoldemund@Geosyntec.com; WShin@Geosyntec.com

Phone: (704) 618-2765

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐
Type III (Reduced non-CLP) ☐ CT RCP ☐
Type IV (CLP SOW) ☐ TX TRRP-13 ☐
Type VI (Raw Data Only) ☐ **PENDING - TO BE CONFIRMED WITH PM.**

EDD Required? Yes ☑ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
Weston Shin	7/7/2014	18:30			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	7.8.14	920

Relinquished by Commercial Carrier: UPS _____ FedEx ~~X~~ Other _____

Temperature upon receipt 5.3 °C

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7045 0713

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Explanation of Symbols and Abbreviations

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The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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