Appendix A

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 11/4/2015 **COMPLETED** 11/5/2015 **SURF. ELEV.** 423.2 **COORDINATES:** N:1,002,932.67 E:465,110.34
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger; HQ Rock Core
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 168.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 30.5 ft. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 426.73)
		Well-graded Gravel with Silt (GW-GM)	423.2		Surface Seal
5		brownish yellow (10YR 6/8), red (2.5YR 4/8) and light gray (10YR 7/2) dry, medium dense, Gravel, sandy silt, small black mottles	414.7		
10		**Clayey Silty Sand (SC-SM)** yellowish red (5YR 4/6) dry, medium dense, Clayey silt, small gravel, with black mottles			
15		yellow (10YR 7/6) and very pale brown (10YR 7/3) dry, medium dense, Clayey silt, tiny black mottles	404.7		
20		**Well-graded Gravel with Silt (GW-GM)** yellowish brown (10YR 5/8) and red (10R 4/8) dry, medium dense, Sandy silt, small black mottles	399.7		Annular Fill
25		**Clayey Silty Sand (SC-SM)** brownish yellow / dark yellowish orange (10YR 6/6) and strong brown (7.5YR 5/8) damp, loose, Clayey silt turning to sandy silt, black mottles	394.7		
30		**Clayey Sand (SC)** yellowish brown (10YR 5/6) and dark yellowish brown (10YR 3/4) moist, Clayey sand	392.7		
		Limestone medium gray (N5), dark gray (N3) and medium light gray (N6) medium hard, not weathered, 4, Tiny calcite filled fractures, 4 natural			
35		grayish black (N2) and medium dark gray (N4) medium hard, not weathered, 6, Two layers of shale at 36.7', small calcite filled fractures. reacts with HCl			
40		grayish black (N2), black (N1) and medium dark gray (N4) medium hard, not			

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond

LOCATION

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA
			423.2		Top of casing Elev. = 426.73 (CONTINUED)
		weathered, 6, Limestone turning to shale at 43.0', small calcite filled fracture **Limestone** medium gray (N5), dark gray (N3) and medium light gray (N6) medium hard, not weathered, 4, Tiny calcite filled fractures, 4 natural			
45		black (N1) soft, not weathered, Shale, fissle, tiny layers dolomitic limestone			
50		medium dark gray (N4) and medium gray (N5) medium hard, not weathered, 48.5-48.7 clay layer, turning to dolomitic limestone to 49.3, fissle shale to 53.5, with few layers of dolomitic limestone			
55		dark gray (N3) and medium light gray (N6) medium hard, not weathered, 53.5-54.2 dolimitic limestone, turns to shale at 54.2, clay layer at limestone and shale contact, small calcite filled fractures in limestone			
60		dark gray (N3) medium hard, not weathered, 6, Calcite filled fractures, competent rock			
65		grayish black (N2) soft, not weathered, 5, Calcite filled fractures, reacts with HCl			**Annular Fill**
70		grayish black (N2) medium hard, slightly weathered, Small to medium calcite filled fractures, slight weathering at fractures			
75		grayish black (N2) medium hard, not weathered, 5, Tiny calcite filled fractures, reacts with HCl			
80		medium dark gray (N4) and medium light gray (N6) medium hard, not weathered, 4, Calcite filled fractures, calcite crystals at 82.5			
85		dark gray (N3) and medium light gray (N6) medium hard, not weathered, 5, Calcite filled fractures, slickensides			

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma 75 150 225	WELL DATA
			423.2		Top of casing Elev. = 426.73 (CONTINUED)
90		**Limestone** medium gray (N5), dark gray (N3) and medium light gray (N6) medium hard, not weathered, 4, Tiny calcite filled fractures, 4 natural			
		dark gray (N3) and medium light gray (N6) medium hard, not weathered, 9, Some slickensides			
95		dark gray (N3), medium light gray (N6) and medium dark gray (N4) medium hard, not weathered, 8, Dolomitic limestone, reacts with HCl			**Annular Fill**
100		medium gray (N5) medium hard, not weathered, More fractures, vertical fracture from 98.5-99, calcite filled fractures			
105		medium dark gray (N4) and dark gray (N3) medium hard, not weathered, Calcite filled fractures, slickensides			**Annular Seal**
110		dark gray (N3) and medium dark gray (N4) medium hard, not weathered, Vertical fracture at 111 with calcite crystals, highly fractured from 111-113.5, slickensides, calcite filled fraactures			
115		dark gray (N3) and medium gray (N5) medium hard, not weathered, Large vertical fracture with calcite crystals throughout			**Filter Pack**
120		medium gray (N5) medium hard, not weathered, Calcite filled vertical fracture measuring 1mm thick			**Screen Tip Elevation**
125		medium gray (N5) and medium dark gray (N4) medium hard, not weathered, Small calcite filled fractures throughout			
130		medium gray (N5) medium hard, not weathered, 3, Small calcite filled fractures throughout			
135		dark gray (N3) and medium dark gray (N4) medium hard, not weathered, 5, Small calcite filled fractures throughout			

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SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond

LOCATION

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA
			423.2		Top of casing Elev. = 426.73 (CONTINUED)
		Limestone medium gray (N5), dark gray (N3) and medium light gray (N6) medium hard, not weathered, 4, Tiny calcite filled fractures, 4 natural			
140		dark gray (N3) and medium dark gray (N4) medium hard, not weathered, 5			
145		dark gray (N3) medium hard, not weathered, 3			
150		dark gray (N3) medium hard, not weathered, Small vertical calcite fracture from 151.5-152.5			
155		medium dark gray (N4) and dark gray (N3) medium hard, not weathered, Medium vertical calcite fracture with calcite crystals from 157.5-158.5			
160		medium dark gray (N4) and dark gray (N3) medium hard, not weathered, Vertical calcite filled fracture to 163			
165		medium dark gray (N4) and dark gray (N3) medium hard, not weathered, 3			
			254.7		

Bottom of borehole at 168.5 feet.

SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-02
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 1/4/2016 **COMPLETED** 1/5/2016 **SURF. ELEV.** 417.6 **COORDINATES:** N:1,003,344.33 E:465,112.90
CONTRACTOR Cascade Drilling, **EQUIPMENT** **METHOD** Rotosonic
DRILLED BY Mike Hansen **LOGGED BY** C. Stanford **CHECKED BY** G. Dyer
BORING DEPTH 55 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 18 ft. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 421.19)
		Clayey Gravel (GC) mottled reddish yellow (7.5YR 6/8) and red (2.5YR 4/8) damp, stiff, Subangular to rounded quartz and chert pebbles in clay matrix, pebbles 1 to 4 cm	417.6		Surface Seal
10		mottled reddish yellow (7.5YR 6/8), red (2.5YR 4/8) and black (10YR 2/1) dry, stiff, Subangular to rounded quartz and chert pebbles in sandy clay matrix with silty lenses of 10YR 2/1, pebbles 1 to 4 cm			
		mottled reddish yellow (7.5YR 6/8) and red (2.5YR 4/8) dry, stiff, Subangular to rounded quartz and chert pebbles in clay matrix, pebbles 1 to 4 cm	402.6		
		(CL-GC) yellowish brown (10YR 5/6) dry, stiff, Subangular to rounded quartz and chert pebbles in clay clay matrix, pebbles 0.5mm to 1cm	399.6		Annular Fill
20		**LIMESTONE** medium gray (N5) medium hard, not weathered, Moderate HCl reaction			
		medium light gray (N6) medium hard, not weathered, Weak HCl reaction, few fractures			
30		medium dark gray (N4) medium hard, not weathered, Moderate HCl reaction, 3 fractures with polished surfaces, no staining			
		dark gray / olive gray (5Y 4/1) medium hard, not weathered, Moderate to Weak HCl reaction, some iron staining, two calcite filled fractures			Annular Seal
40		dark gray / brownish gray (5YR 4/1) medium hard, moderately weathered, Vigorous HCl reaction, very eroded, iron staining, calcite filled fractures			
		gray / light brownish gray (5YR 6/1) medium hard, highly weathered, Vigorous HCl reaction, very eroded, iron staining throughout, copper (green) staining on some surfaces where iron staining is present, some calcite filled fractures.			Filter Pack
50					
			362.6		Screen Tip Elevation

Bottom of borehole at 55.0 feet.

SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-03

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

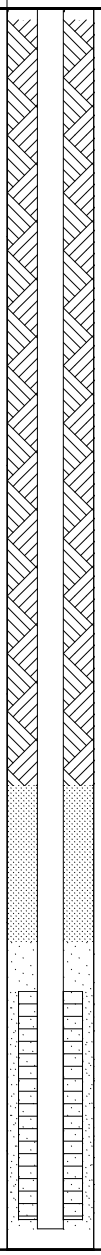
DATE STARTED 10/21/2015 **COMPLETED** 10/21/2015 **SURF. ELEV.** 421.8 **COORDINATES:** N:1,003,093.69 E:464,357.74
CONTRACTOR SCS Field Services **EQUIPMENT** **METHOD** HQ Rock Core
DRILLED BY T. Milam **LOGGED BY** S.McDonald **CHECKED BY** G. Dyer
BORING DEPTH 54.3 ft. **GROUND WATER DEPTH: DURING** 28.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 53 ft. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
		Lean Clay (CL)	421.8
		yellowish red (5YR 5/8) and yellow (2.5Y 8/8) stiff, Clayey silt with abundant chert and quartz gravel	
			413.3
10		**Silty Gravel (GM)** yellow (10YR 7/8) and yellowish red (5YR 5/8) dry, Clayey-sandy silt with abundant chert and limestone gravel	
			403.3
20		mottled strong brown (7.5YR 5/8) and white / yellowish gray (5Y 8/1)	
			398.3
		Clayey Sand (ML) light red (10R 6/8) moist, Clayey fine sand - Sampled for grain size	
30		strong brown (7.5YR 5/8) and white (10YR 8/1) wet	
			388.3
		yellowish brown (10YR 5/8) wet, Sand and Clay with gravel up to 1 inch	
40		brownish yellow (10YR 6/8) wet, Sandy clay with gravel	
			374.8
		Limestone gray / light olive gray (5Y 6/1) and light gray (N7) medium hard, 1, Strong reaction to HCl	373.3
50			371.8
		GC	
		Limestone dark gray (N3) and gray / light brownish gray (5YR 6/1) medium hard, Iron stained fracture at 50' and 53.8	
			367.5

Bottom of borehole at 54.3 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 425.30



Surface Seal
Annular Fill
Annular Seal
Filter Pack
Screen Tip Elevation

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/27/2015 **COMPLETED** 10/27/2015 **SURF. ELEV.** 424.9 **COORDINATES:** N:1,002,849.78 E:463,873.54
CONTRACTOR SCS Field Services **EQUIPMENT** **METHOD** Hollow Stem Auger; HQ Rock Core
DRILLED BY T. Milam **LOGGED BY** S.McDonald **CHECKED BY** G. Dyer
BORING DEPTH 46.5 ft. **GROUND WATER DEPTH: DURING** 33.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 36.2 ft. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 427.71)
		Clayey Silty Sand (SC-SM)	424.9		Surface Seal
5		red (2.5YR 5/8) and yellow (2.5Y 8/6) dry, Abundant small chert and quartz gravel			
10		reddish yellow (7.5YR 6/8) moist, Gravel clogged spoon			
			411.4		Annular Fill
15		**Sandy Silt (MLS)** yellow (10YR 7/6) and strong brown (7.5YR 5/8) plastic, Plastic clay, sandy silt with gravel			
			406.4		
20		**Sandy Fat Clay (CHG)** yellow (10YR 7/8) Quartz gravel and chert			
25		light yellowish brown (10YR 6/4) moist, very, Abundant quartz and chert pieces, very plastic			
30		yellowish brown (10YR 5/8) moist, Sandy gravelly clay			Annular Seal
35		yellowish brown (10YR 5/8) Moist sandy gravelly clay to 34.5, saturated from 34.5 to 35, very sandy	388.8		
		Limestone gray / light olive gray (5Y 6/1) and medium gray (N5) medium hard, moderately weathered, 4, Small iron staining, horizontal and vertical calcite fractures with soil staining and iron staining			Filter Pack
40		gray / light olive gray (5Y 6/1) medium hard, slightly weathered, 4, Calcite fractures, slightly weathered			Screen Tip Elevation
45		gray / light olive gray (5Y 6/1) medium hard, slightly weathered, 1, Weathered, shale fragments and iron	378.4		

Bottom of borehole at 46.5 feet.

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

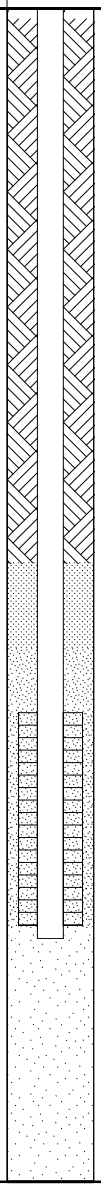
DATE STARTED 11/19/2015 **COMPLETED** 11/19/2015 **SURF. ELEV.** 426.1 **COORDINATES:** N:1,002,321.38 E:464,049.62
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 55 ft. **GROUND WATER DEPTH: DURING** 33.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
		Sandy Silt (MLS)	426.1
		strong brown (7.5YR 5/6) and red (2.5YR 4/8) dry, loose, Medium gravel	
10		reddish yellow (7.5YR 6/8) and red (2.5YR 4/8) dry, medium dense, Small gravel	
			412.6
		Clayey Silty Sand (SC-SM) brownish yellow / dark yellowish orange (10YR 6/6), yellowish red / light brown (5YR 5/6) and very dark gray (10YR 3/1) dry, medium dense, Small gravel	
20		strong brown (7.5YR 5/8), dark grayish brown / dark yellowish brown (10YR 4/2) and red (2.5YR 4/8) dry, medium dense, Tiny gravel	
		very dark grayish brown (10YR 3/2) and dark red (2.5YR 3/6) dry, medium dense, Small gravel	
			397.6
30		**Sandy Silt (MLS)** brownish yellow (10YR 6/8) and yellowish red (5YR 4/6) moist, medium dense	
			392.6
		Well-graded Sand (SW) brownish yellow / dark yellowish orange (10YR 6/6) wet, very loose, Fine grained sand	
40		yellowish brown (10YR 5/8) wet, medium dense, Rock fragments at base	
		yellowish brown (10YR 5/8) wet, medium dense, Rock fragments	
50		yellowish brown (10YR 5/8) wet, very loose, Silty clay at base	
		yellowish brown (10YR 5/8) wet, loose	371.1

Bottom of borehole at 55.0 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 429.49



SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-06

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

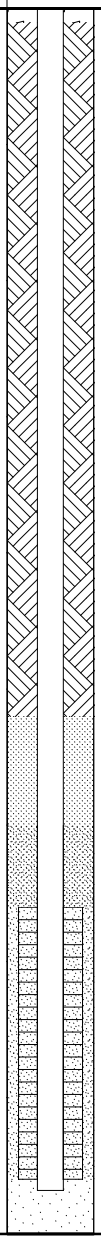
DATE STARTED 11/17/2015 **COMPLETED** 11/17/2015 **SURF. ELEV.** 424.6 **COORDINATES:** N:1,001,935.61 E:464,191.94
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 45 ft. **GROUND WATER DEPTH: DURING** 33.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	MATERIAL DESCRIPTION	ELEVATION
	Sandy Silt (MLS)	424.6
5	strong brown (7.5YR 5/8) and brownish yellow (10YR 6/8) dry, medium dense, Small chert layers, small gravel, black mottles	416.1
10	**Clayey Silty Sand (SC-SM)** yellowish red (5YR 4/6) and strong brown (7.5YR 5/8) dry, medium dense, Chert layers	
15	yellowish brown (10YR 5/6), strong brown (7.5YR 5/8) and red (2.5YR 4/6) dry, medium dense, Black shale fragments, small gravel, small chert layers	406.1
20	**Silty Clay (CL-ML)** dark red (2.5YR 3/6) and yellowish brown (10YR 5/8) dry, medium dense, Small to medium gravel	401.1
25	**Clayey Sand (SC)** brownish yellow (10YR 6/8) and red (2.5YR 4/8) dry, medium dense, Small gravel at 23.5, small chert layer	396.1
30	**Sandy Silt (MLS)** brownish yellow (10YR 6/8), red (2.5YR 4/8) and light gray (10YR 7/2) moist, medium dense	391.1
35	**Silty Sand (SM)** very pale brown (10YR 7/3) wet, medium dense, Rock fragments	386.1
40	**Clayey Sand (SC)** very pale brown (10YR 7/3) and pale brown (10YR 6/3) wet, medium dense	381.1
45	**Silty Sand (SM)** very pale brown (10YR 7/3), pale brown (10YR 6/3) and yellowish brown (10YR 5/8) wet, medium dense, Small to medium rock fragments	379.6

Bottom of borehole at 45.0 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 427.64



SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-07

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 11/9/2015 **COMPLETED** 11/10/2015 **SURF. ELEV.** 420.4 **COORDINATES:** N:1,001,142.07 E:464,485.43
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 50 ft. **GROUND WATER DEPTH: DURING** 33.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 423.79)
		Clayey Silty Sand (SC-SM)	420.4		Surface Seal
		strong brown (7.5YR 5/8) and dark red (2.5YR 3/6) dry, medium dense, Small gravel, small chert layer			
10		strong brown (7.5YR 4/6) and brownish yellow (10YR 6/8) dry, medium dense, Small gravel			
		yellowish red (5YR 4/6) and brownish yellow (10YR 6/8) dry, medium dense, Small gravel			Annular Fill
20		yellowish brown (10YR 5/6), strong brown (7.5YR 5/8) and red (2.5YR 4/6) dry, medium dense, Small gravel			
		red (2.5YR 4/6), yellowish brown (10YR 5/6) and strong brown (7.5YR 5/8) dry, medium dense, Tiny gravel			
30		red (2.5YR 4/6), strong brown (7.5YR 5/8) and light gray (10YR 7/1) moist, medium dense, Small gravel			Annular Seal
			386.9		
		Silty Sand (SM) strong brown (7.5YR 5/8), light gray (10YR 7/1) and yellow (10YR 7/8) wet, dense, Rock fragments			Filter Pack
40		yellow (10YR 7/8) and pale red (2.5YR 7/2) wet, Rock fragements			
		light red (2.5YR 7/6) wet, very loose			Screen Tip Elevation
50		light red (2.5YR 7/6) wet	370.4		

Bottom of borehole at 50.0 feet.

SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-08

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/28/2015 **COMPLETED** 10/28/2015 **SURF. ELEV.** 414.5 **COORDINATES:** N:1,000,455.33 E:464,781.68
CONTRACTOR SCS Field Services **EQUIPMENT** **METHOD** Hollow Stem Auger; HQ Rock Core
DRILLED BY T. Milam **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 54.9 ft. **GROUND WATER DEPTH: DURING** 43.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
		Silty Sand (SM)	414.5
		yellowish red (5YR 4/6) and strong brown (7.5YR 5/8) dry, medium dense, Small gravel	
10		strong brown (7.5YR 5/8) dry, medium dense, Small gravel, with chert	
			401.0
		Silty Clay (CL-ML) strong brown (7.5YR 5/8) and brownish yellow / dark yellowish orange (10YR 6/6) moist, medium dense, Moist	
20		light brownish gray / pale yellowish brown (10YR 6/2) and strong brown (7.5YR 5/8) moist, medium dense, Moist	
		light brownish gray / pale yellowish brown (10YR 6/2) and strong brown (7.5YR 5/8) moist, medium dense, Small gravel	
30		yellowish brown (10YR 5/6) and light brownish gray / pale yellowish brown (10YR 6/2) very moist, loose, Very moist	
		light gray (10YR 7/2) very moist, dense, Rock fragments	
			376.0
40		**Silty Sand (SM)** brownish yellow / dark yellowish orange (10YR 6/6) and pale brown (10YR 6/3) very moist, Rock fragments	
		brownish yellow / dark yellowish orange (10YR 6/6) wet, loose, Rock fragments	
			365.9
50		brownish yellow (10YR 6/8) wet, Large rock fragments	
		Limestone medium dark gray (N4) medium hard, 3, Heavy reaction with HCl, calcite fractures	
		medium dark gray (N4) medium hard, 2, Calcite fractures, soil staining at 49.9	359.6

Bottom of borehole at 54.9 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 417.58

Surface Seal
Annular Fill
Annular Seal
Filter Pack
Screen Tip Elevation

SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-09
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SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/29/2015 **COMPLETED** 10/29/2015 **SURF. ELEV.** 414.8 **COORDINATES:** N:1,000,625.59 E:465,070.63
CONTRACTOR SCS Field Services **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** S.McDonald **CHECKED BY** G. Dyer
BORING DEPTH 44 ft. **GROUND WATER DEPTH: DURING** 23.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 43 ft. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 417.68)
		Silt (ML)	414.8		Surface Seal
5		yellowish red (5YR 5/8) dry, very stiff, with abundant gravel and road slag			
10		yellow (10YR 7/6), pale yellow (2.5Y 8/2) and red (2.5YR 4/8) dry, very stiff			Annular Fill
15		red (2.5YR 5/8), brownish yellow (10YR 6/8) and light gray (10YR 7/2) dry, stiff, with sparse gravel			
20		pale yellow (2.5Y 7/4) and red (2.5YR 5/8) dry, stiff, with some sand			
		▽	391.3		
25		**Gravelly Silt (MLG)** yellow (10YR 7/8) and very pale brown / very pale orange (10YR 8/2) wet, medium stiff, with small gravel becoming more abundant			Annular Seal
30		yellow (10YR 7/8) and very pale brown / very pale orange (10YR 8/2) wet, soft			
			381.3		
35		**Gravelly Lean Clay (CLG)** very pale brown / very pale orange (10YR 8/2) wet, very soft			Filter Pack
			376.3		
40		**Gravelly Silt (MLG)** pale yellow (2.5Y 8/4) wet, very soft			Screen Tip Elevation
			370.8		

Bottom of borehole at 44.0 feet.

SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-10

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

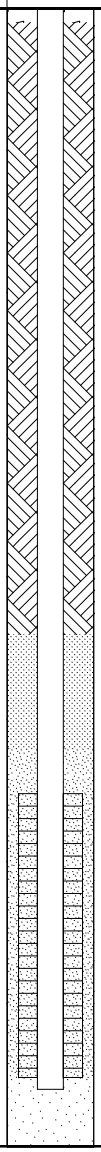
DATE STARTED 12/9/2015 **COMPLETED** 12/9/2015 **SURF. ELEV.** 414.8 **COORDINATES:** N:1,000,898.07 E:465,327.37
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 40 ft. **GROUND WATER DEPTH: DURING** 28.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
		Clayey Silty Sand (SC-SM)	414.8
5		strong brown (7.5YR 5/8) and red (2.5YR 4/6) dry, medium dense, Small to medium gravel	
10		yellowish brown (10YR 5/8), strong brown (7.5YR 5/8) and dark reddish brown / moderate brown (5YR 3/4) damp, medium dense, Small gravel, black mottles	401.3
15		**Sandy Silt (MLS)** yellowish red (5YR 5/8), red (2.5YR 5/8) and brownish yellow (10YR 6/8) damp, medium dense	396.3
20		**Silty Sand (SM)** red (2.5YR 5/8), brownish yellow (10YR 6/8) and light gray (10YR 7/1) damp, medium dense, Quartz fragments with small gravel	391.3
25		**Silty Clay (CL-ML)** brownish yellow / dark yellowish orange (10YR 6/6) damp, medium dense, Large black mottles	386.3
30		**Silty Sand (SM)** brownish yellow (10YR 6/8) wet, very loose, Rock fragments	
35		brownish yellow (10YR 6/8) wet, very loose, Rock fragments	376.3
40		**Sandy Fat Clay (CHG)** yellow (10YR 7/6) wet, very loose	374.8

Bottom of borehole at 40.0 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 418.04



SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 11/12/2015 **COMPLETED** 11/12/2015 **SURF. ELEV.** 414.8 **COORDINATES:** N:1,001,309.48 E:465,221.83
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 31 ft. **GROUND WATER DEPTH: DURING** 23.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 31 ft. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 417.69)
		Clayey Sand (SC)	414.8		Surface Seal
5		yellowish brown (10YR 5/6) and red (2.5YR 4/6) dry, medium dense, Black mottles, small to medium gravel			
			406.3		Annular Fill
10		**Sandy Fat Clay (CHG)** yellowish brown (10YR 5/6), red (2.5YR 4/6) and yellow (10YR 7/8) dry, medium dense, Small to medium gravel			
			401.3		
15		**Clayey Sand (SC)** brownish yellow (10YR 6/8), yellow (10YR 7/6) and dark red (2.5YR 3/6) dry, medium dense, Small gravel			Annular Seal
			396.3		
20		**Silty Sand (SM)** yellowish brown (10YR 5/8), red (2.5YR 4/6) and strong brown (7.5YR 5/8) moist, dense, Small gravel			
25		yellowish brown (10YR 5/8) wet, medium dense, Rock fragments, abundant at base			Filter Pack
			386.3		
30		**Clayey Sand (SC)** yellowish brown (10YR 5/8) wet, very loose, Rock fragments			
			383.8		Screen Tip Elevation

Bottom of borehole at 31.0 feet.

SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/29/2015 **COMPLETED** 10/29/2015 **SURF. ELEV.** 413.8 **COORDINATES:** N:1,001,872.32 E:465,065.28
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger; HQ Rock Core
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 36 ft. **GROUND WATER DEPTH: DURING** 23.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 26 ft. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 417.10)
		Silty Clay (CL-ML)	413.8		Surface Seal
5		strong brown (7.5YR 5/8) and brownish yellow (10YR 6/8) dry, medium dense, Black mottles, small to medium gravel			
					Annular Fill
10		strong brown (7.5YR 5/8) and brownish yellow (10YR 6/8) dry, medium dense, Abundance of medium gravel			
15		yellowish red (5YR 4/6) and yellow (10YR 7/6) damp, medium dense, Small gravel			
			395.3		Annular Seal
20		**Silty Sand (SM)** yellow (10YR 7/6) moist, loose			
			390.3		Filter Pack
25		**Sandy Silt (MLS)** brownish yellow (10YR 6/8) wet			
			387.8		
		Dolomitic Limestone medium light gray (N6), medium dark gray (N4) and dark gray (N3) medium hard, slightly weathered, Large vertical fracture from 26to 27.7 with weathering and soil preensce, calcite filled fractures, moderate reaction with HCl			
30					Screen Tip Elevation
		medium light gray (N6), medium dark gray (N4) and dark gray (N3) medium hard, not weathered, 5, No weathering or staining			
35			377.8		

Bottom of borehole at 36.0 feet.

SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-13

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

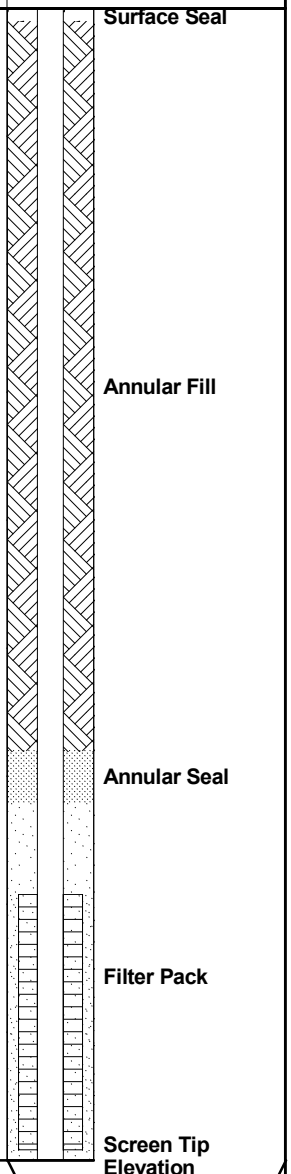
DATE STARTED 12/15/2015 **COMPLETED** 12/15/2015 **SURF. ELEV.** 419.8 **COORDINATES:** N:1,002,342.50 E:465,346.71
CONTRACTOR Cascade Drilling, Inc **EQUIPMENT** **METHOD** Rotosonic
DRILLED BY Mike Hansen **LOGGED BY** C. Stanford **CHECKED BY** G. Dyer
BORING DEPTH 45 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 35 ft. Well installed. Refer to well data sheet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
			419.8
		Fill (FILL) dry, Gravel road fill	419.3
		Clayey Gravel (GC) mottled red (2.5YR 5/8) and reddish yellow (7.5YR 6/8) dry, stiff, not plastic, Angular chert gravels.	416.8
			416.0
5		**Lean Clay (CL)** red (2.5YR 5/8) dry, soft, semi-plastic, Few gravels, no sand.	414.8
		Clayey Gravel (GC) mottled red (2.5YR 5/8) and reddish yellow (7.5YR 6/8) dry, stiff, not plastic, Angular chert gravels.	
10		**Silty Gravel (GW)** very pale brown (10YR 7/3) dry, Angular sandy gravel, few fines	
		mottled red (2.5YR 5/8) and reddish yellow (7.5YR 6/8) dry, stiff, not plastic, Angular chert gravels.	406.8
15		mottled red (2.5YR 5/8) and reddish yellow (7.5YR 6/8) dry, stiff, not plastic, Much larger chert gravels (2-4cm), rounded to subrounded	
		mottled red (2.5YR 5/8) and reddish yellow (7.5YR 6/8) dry, stiff, not plastic, Angular chert gravels.	
20		mottled red (2.5YR 5/8) and reddish yellow (7.5YR 6/8) dry, stiff, not plastic, Large chert fragments (5-8cm)	
		Sandy Lean Clay (CLS) mottled red (2.5YR 5/8) and reddish yellow (7.5YR 6/8) dry, stiff, not plastic, Sandy clay, no gravels, almost shaley fracture	396.8
25		**SANDSTONE** medium light gray (N6) very hard, not weathered, Medium grained, no HCl reaction, iron staining, very moist	
		medium light gray (N6) and strong brown (7.5YR 5/8) very hard, slightly weathered, Medium grained sandstone within soft clay matrix, iron staining thoughout, very moist to wet	
30			
35			384.8
		LIMESTONE gray / light olive gray (5Y 6/1) medium hard, Vigorous HCl reaction, minor amounts of pyrite.	
40			
45			374.8

Bottom of borehole at 45.0 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 422.74



SOUTHERN COMPANY

BORING LOG

BORING GN-GSA-MW-14

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

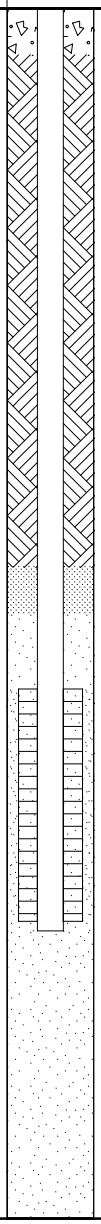
DATE STARTED 5/3/2016 **COMPLETED** 5/6/2016 **SURF. ELEV.** 422.5 **COORDINATES:** N:1,003,222.16 E:464,632.71
CONTRACTOR **EQUIPMENT** **METHOD**
DRILLED BY **LOGGED BY** **CHECKED BY**
BORING DEPTH 52 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 35 ft.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
		Clayey Sand (SC) clayey sand; red-brown; trace limestone gravel; dry Soil - showing signs of moisture and slight increase in clay content at 15 feet bgs (classify as damp) Between 30-38' bgs soil becomes wet (groundwater perched on top of underlying clay)	422.5
10			
20			
30			
			384.5
40		**Fat Clay (CH)** plastic, fat clay with trace sand; tan-brown; wet, Hole caved to 39.84'	
			377.5
50		**Limestone (LIMESTONE)** limestone, gray	
			370.5

Bottom of borehole at 52.0 feet.

Natural Gamma
75 150 225

WELL DATA
Top of casing Elev. = 426.06



SOUTHERN COMPANY

BORING LOG

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 5/2/2016 **COMPLETED** 5/2/2016 **SURF. ELEV.** 422.5 **COORDINATES:** N:1,003,002.35 E:464,146.68
CONTRACTOR **EQUIPMENT** **METHOD**
DRILLED BY **LOGGED BY** **CHECKED BY**
BORING DEPTH 46.31 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 35 ft.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION	Natural Gamma (75 / 150 / 225)	WELL DATA (Top of casing Elev. = 426.19)
		Clayey Sand (SC) clayey sand; red-brown; trace limestone gravel; dry Soil - showing signs of moisture between 15 and 20' bgs (classify as damp); slight increase in clay content	422.5		Surface Seal
5					
10					
15					Annular Fill
20					
25					
30		clayey sand; higher clay content than above; trace limestone gravel; increase moisture content at 30' feet and increase towards BOH (noted no rare pebble)			Annular Seal
35					
40					Filter Pack
			378.5		
45		**Limestone (LIMESTONE)** limestone, gray	376.2		Screen Tip Elevation

Bottom of borehole at 46.3 feet.

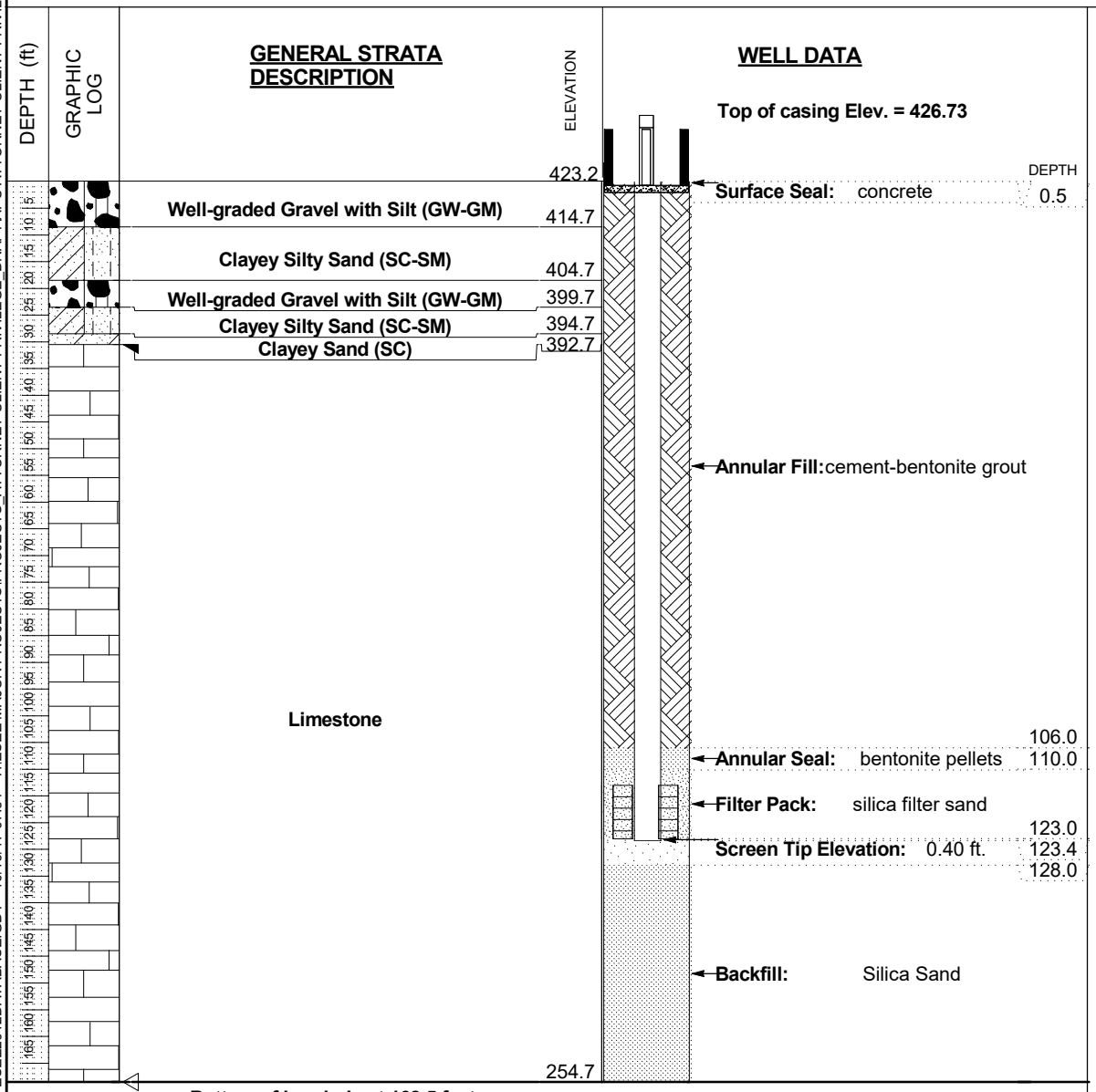
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 11/4/2015 **COMPLETED** 11/5/2015 **SURF. ELEV.** 423.2 **COORDINATES:** N:1,002,932.67 E:465,110.34
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger; HQ Rock Core
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 168.5 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 30.5 ft. Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches **Screen Diameter:** 2 inches
Casing Material: Schedule 40 PVC **Screen Length:** 10 feet **Screen Material:** PVC
Casing Length: 127.38 feet **Screen Mesh:** 0.010 **PrePack Screen:** Yes

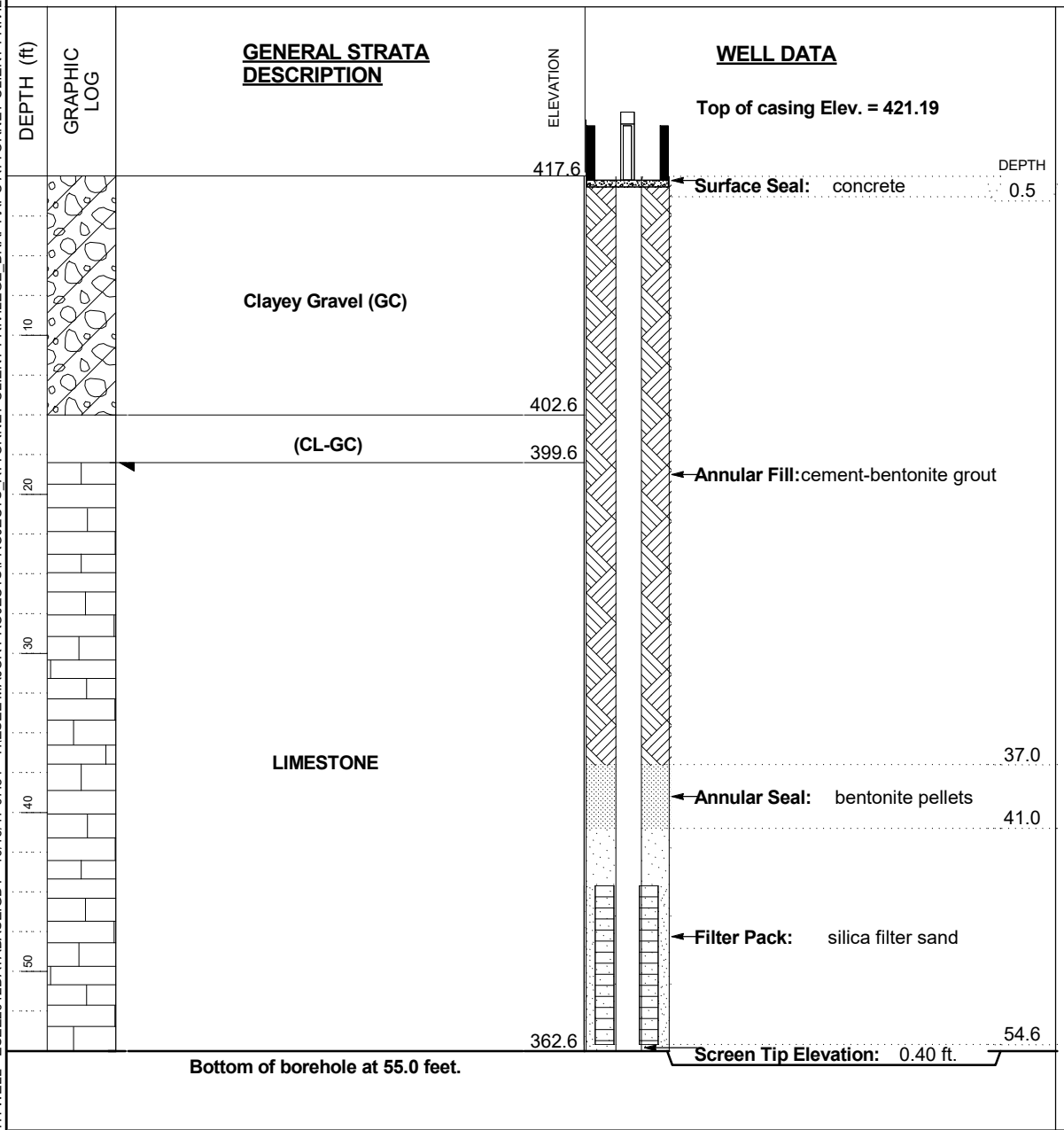
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 1/4/2016 **COMPLETED** 1/5/2016 **SURF. ELEV.** 417.6 **COORDINATES:** N:1,003,344.33 E:465,112.90
CONTRACTOR Cascade Drilling, **EQUIPMENT** **METHOD** Rotosonic
DRILLED BY Mike Hansen **LOGGED BY** C. Stanford **CHECKED BY** G. Dyer
BORING DEPTH 55 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 18 ft. Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 58.71 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

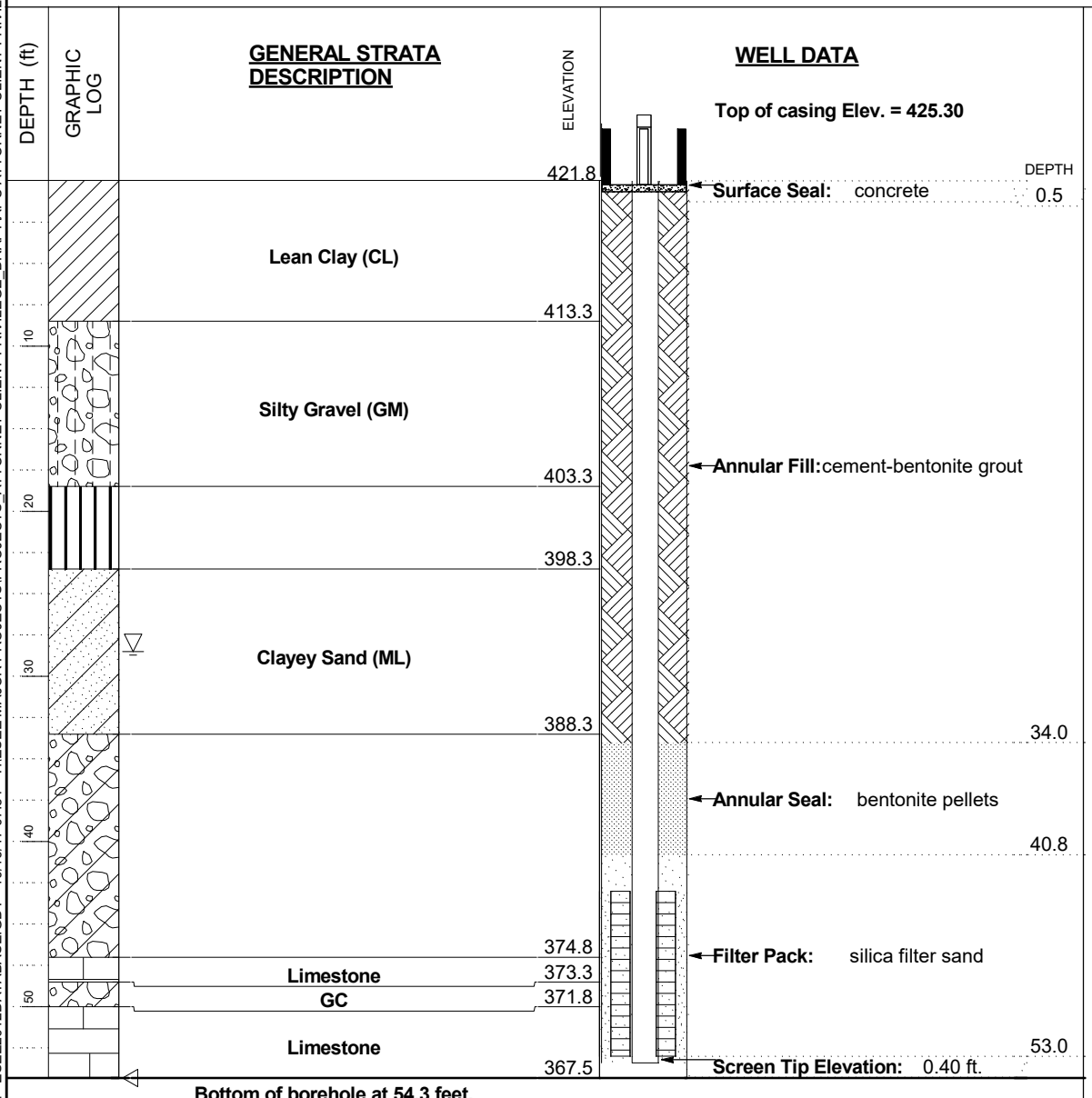
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/21/2015 **COMPLETED** 10/21/2015 **SURF. ELEV.** 421.8 **COORDINATES:** N:1,003,093.69 E:464,357.74
CONTRACTOR SCS Field Services **EQUIPMENT** **METHOD** HQ Rock Core
DRILLED BY T. Milam **LOGGED BY** S.McDonald **CHECKED BY** G. Dyer
BORING DEPTH 54.3 ft. **GROUND WATER DEPTH: DURING** 28.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 53 ft. Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 56.64 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

BORING GN-GSA-MW-04

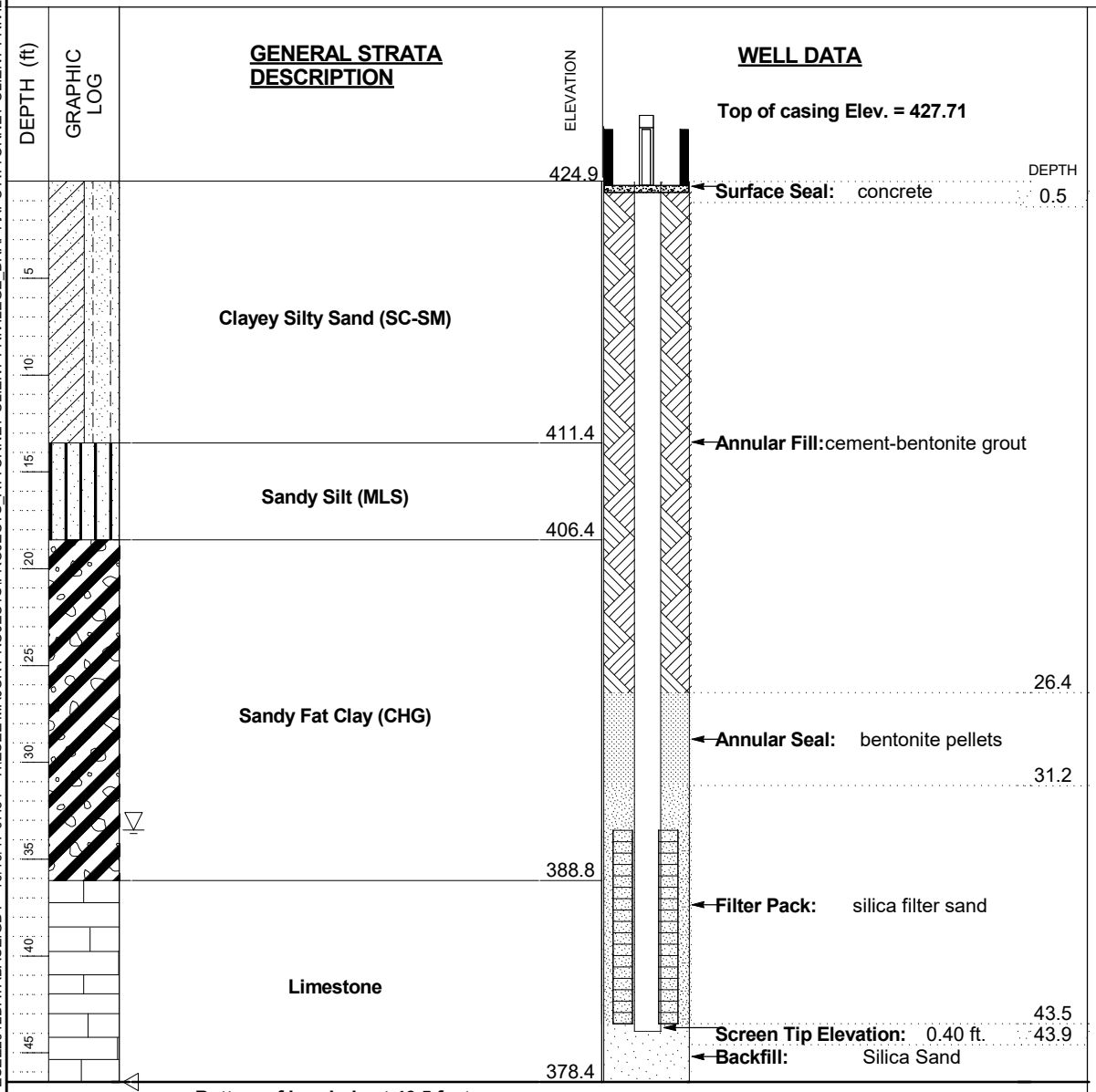
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/27/2015 **COMPLETED** 10/27/2015 **SURF. ELEV.** 424.9 **COORDINATES:** N:1,002,849.78 E:463,873.54
CONTRACTOR SCS Field Services **EQUIPMENT** **METHOD** Hollow Stem Auger; HQ Rock Core
DRILLED BY T. Milam **LOGGED BY** S.McDonald **CHECKED BY** G. Dyer
BORING DEPTH 46.5 ft. **GROUND WATER DEPTH: DURING** 33.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 36.2 ft. Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 46.74 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

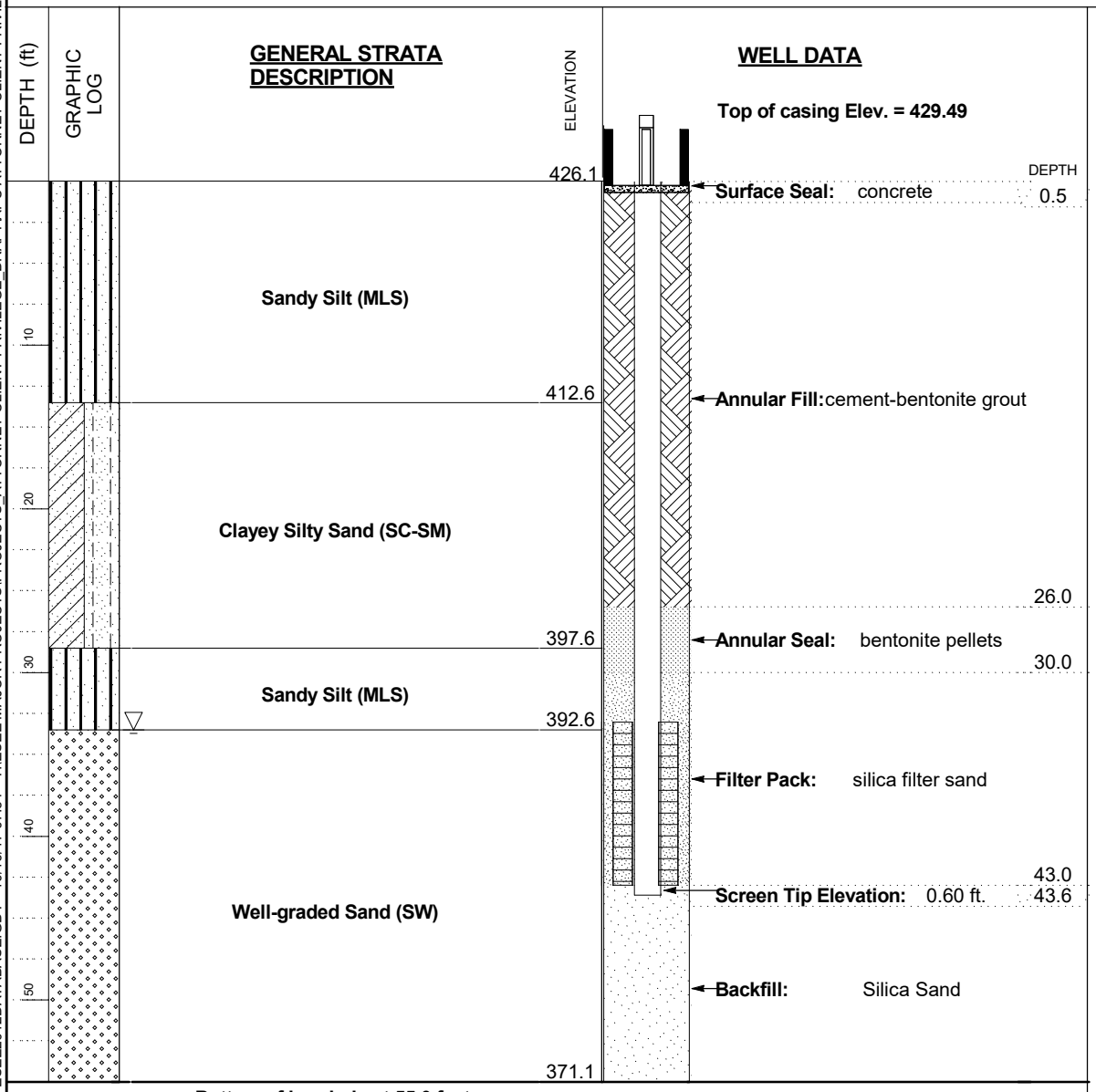
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 11/19/2015 **COMPLETED** 11/19/2015 **SURF. ELEV.** 426.1 **COORDINATES:** N:1,002,321.38 E:464,049.62
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 55 ft. **GROUND WATER DEPTH: DURING** 33.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 47.42 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

SOUTHERN COMPANY

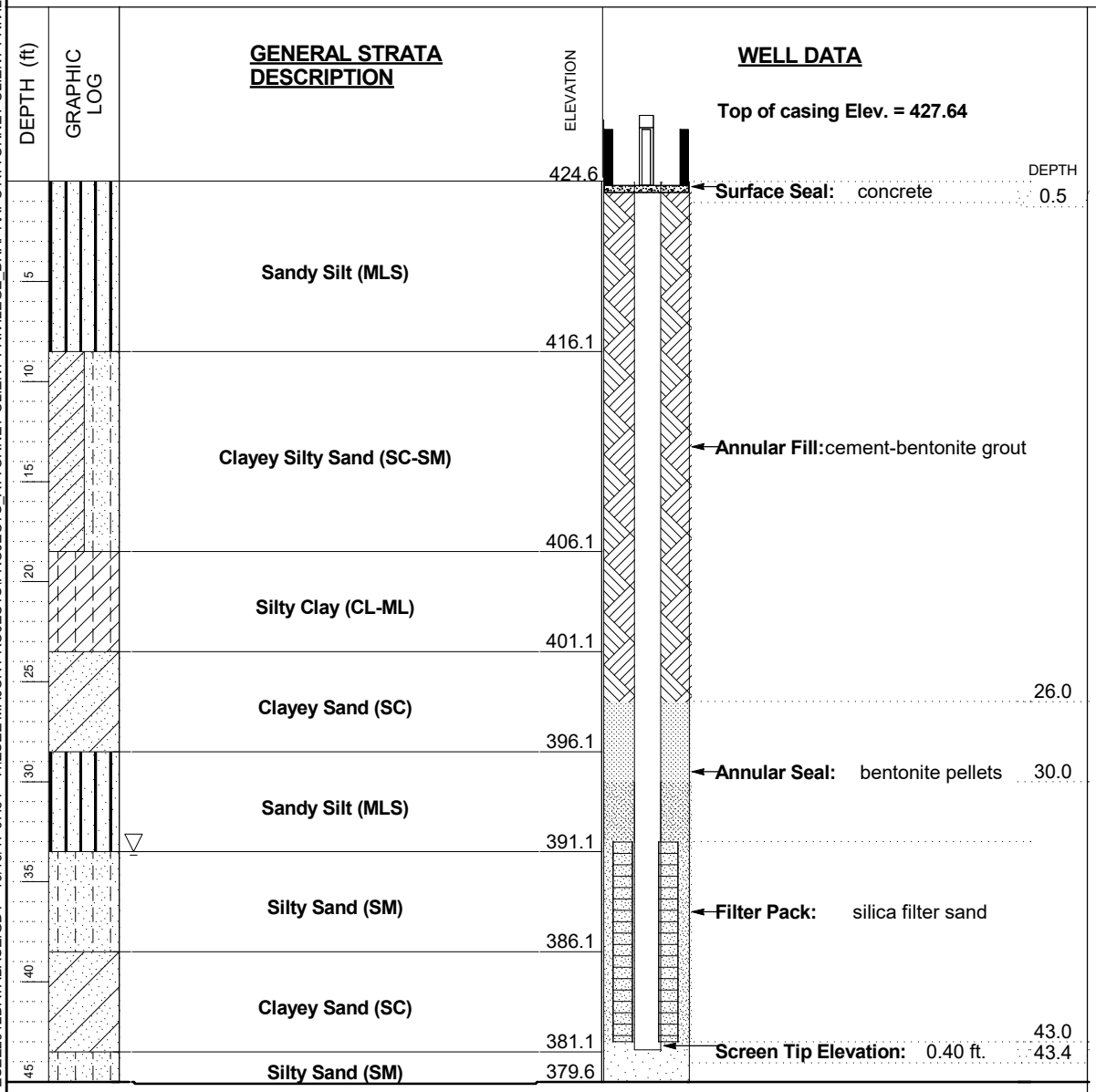
LOG OF WELL INSTALLATION

BORING GN-GSA-MW-06

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 11/17/2015 **COMPLETED** 11/17/2015 **SURF. ELEV.** 424.6 **COORDINATES:** N:1,001,935.61 E:464,191.94
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 45 ft. **GROUND WATER DEPTH: DURING** 33.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 47.34 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

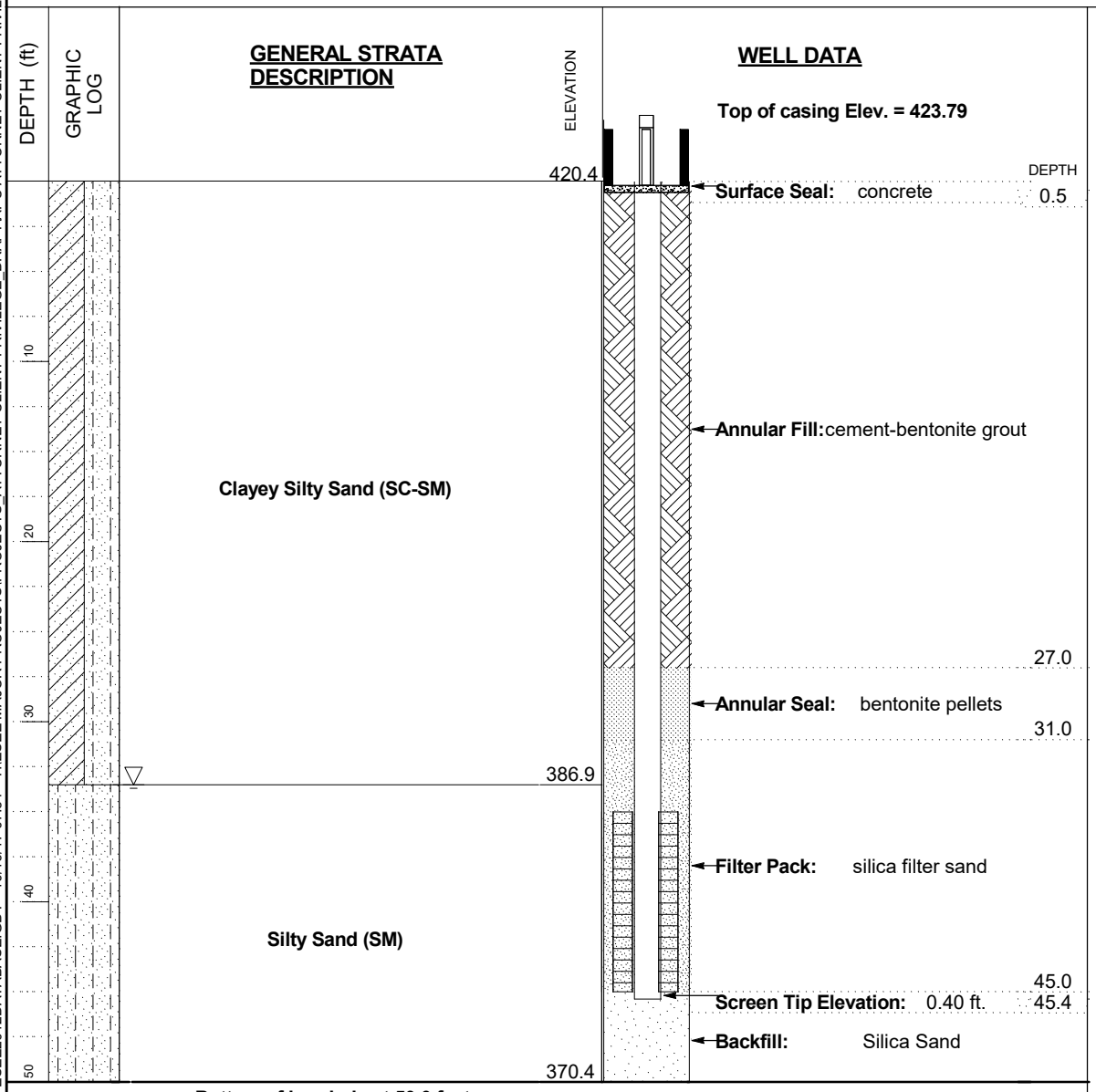
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 11/9/2015 **COMPLETED** 11/10/2015 **SURF. ELEV.** 420.4 **COORDINATES:** N:1,001,142.07 E:464,485.43
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 50 ft. **GROUND WATER DEPTH: DURING** 33.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches **Screen Diameter:** 2 inches
Casing Material: Schedule 40 PVC **Screen Length:** 10 feet **Screen Material:** PVC
Casing Length: 48.97 feet **Screen Mesh:** 0.010 **PrePack Screen:** Yes

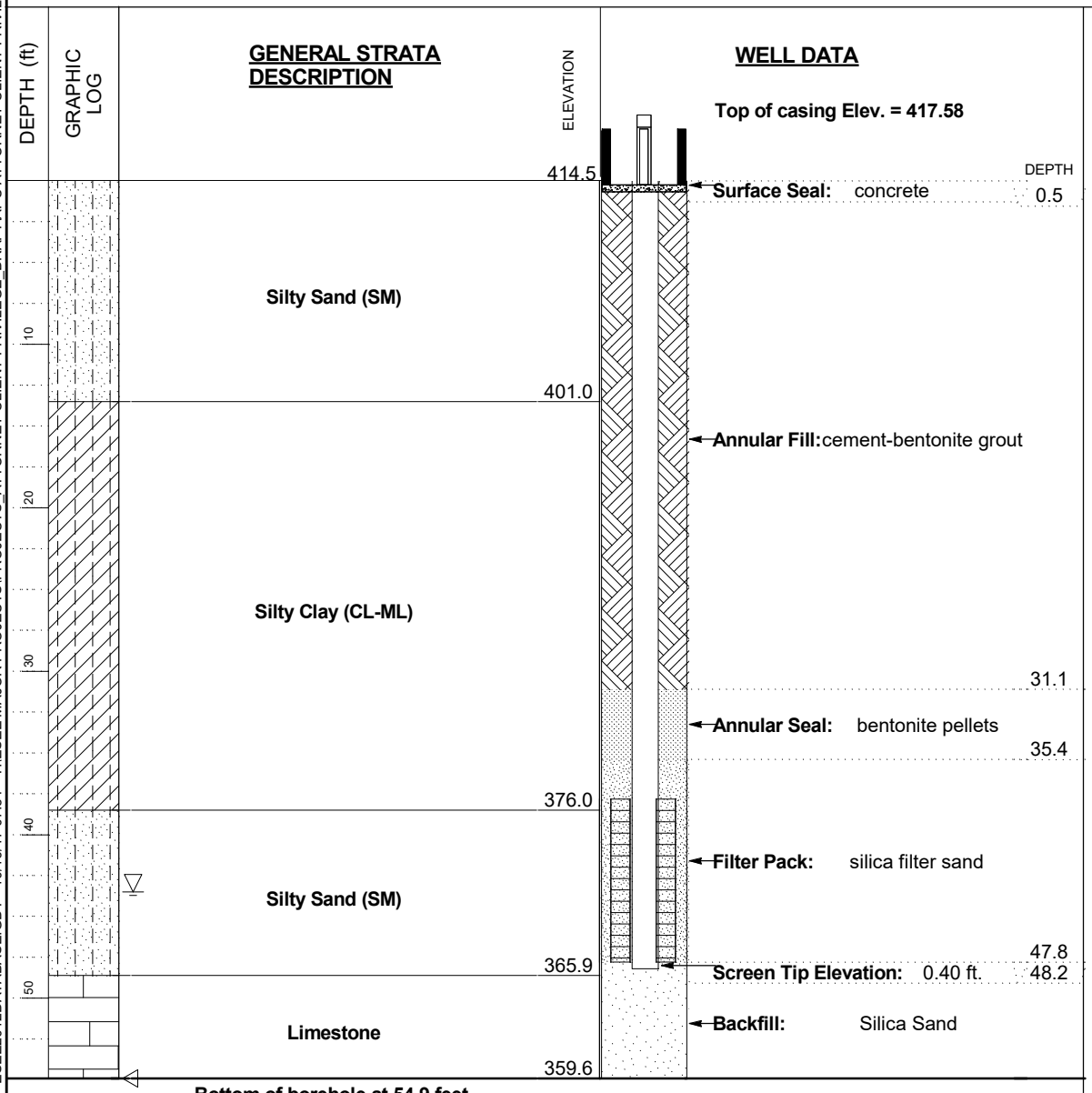
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/28/2015 **COMPLETED** 10/28/2015 **SURF. ELEV.** 414.5 **COORDINATES:** N:1,000,455.33 E:464,781.68
CONTRACTOR SCS Field Services **EQUIPMENT** **METHOD** Hollow Stem Auger; HQ Rock Core
DRILLED BY T. Milam **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 54.9 ft. **GROUND WATER DEPTH: DURING** 43.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 51.53 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

BORING GN-GSA-MW-09

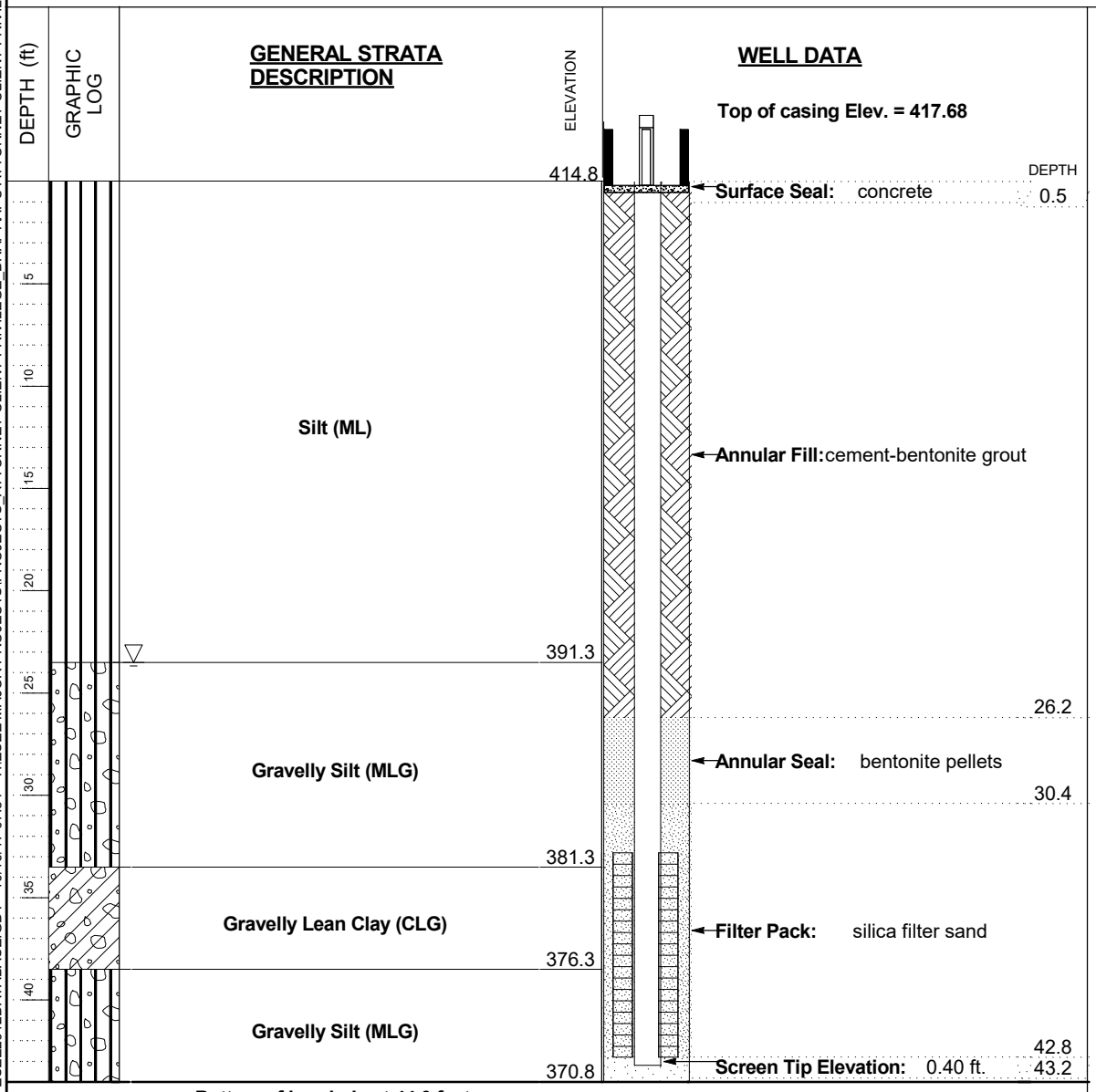
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/29/2015 **COMPLETED** 10/29/2015 **SURF. ELEV.** 414.8 **COORDINATES:** N:1,000,625.59 E:465,070.63
CONTRACTOR SCS Field Services **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY T. Milam **LOGGED BY** S.McDonald **CHECKED BY** G. Dyer
BORING DEPTH 44 ft. **GROUND WATER DEPTH: DURING** 23.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 43 ft. Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 46.95 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

BORING GN-GSA-MW-10

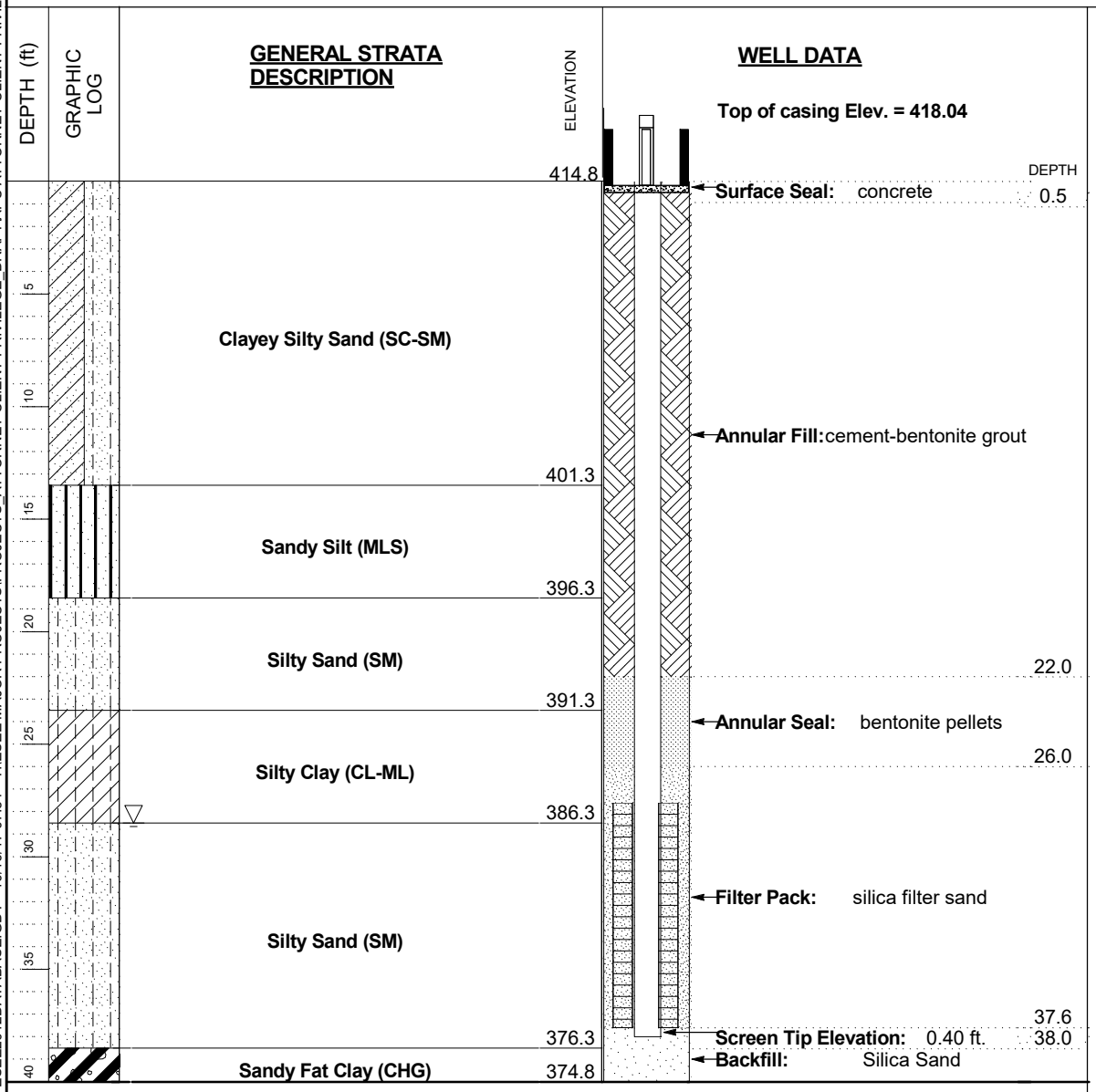
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 12/9/2015 **COMPLETED** 12/9/2015 **SURF. ELEV.** 414.8 **COORDINATES:** N:1,000,898.07 E:465,327.37
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 40 ft. **GROUND WATER DEPTH: DURING** 28.5 ft. **COMP.** **DELAYED**
NOTES Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 41.91 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

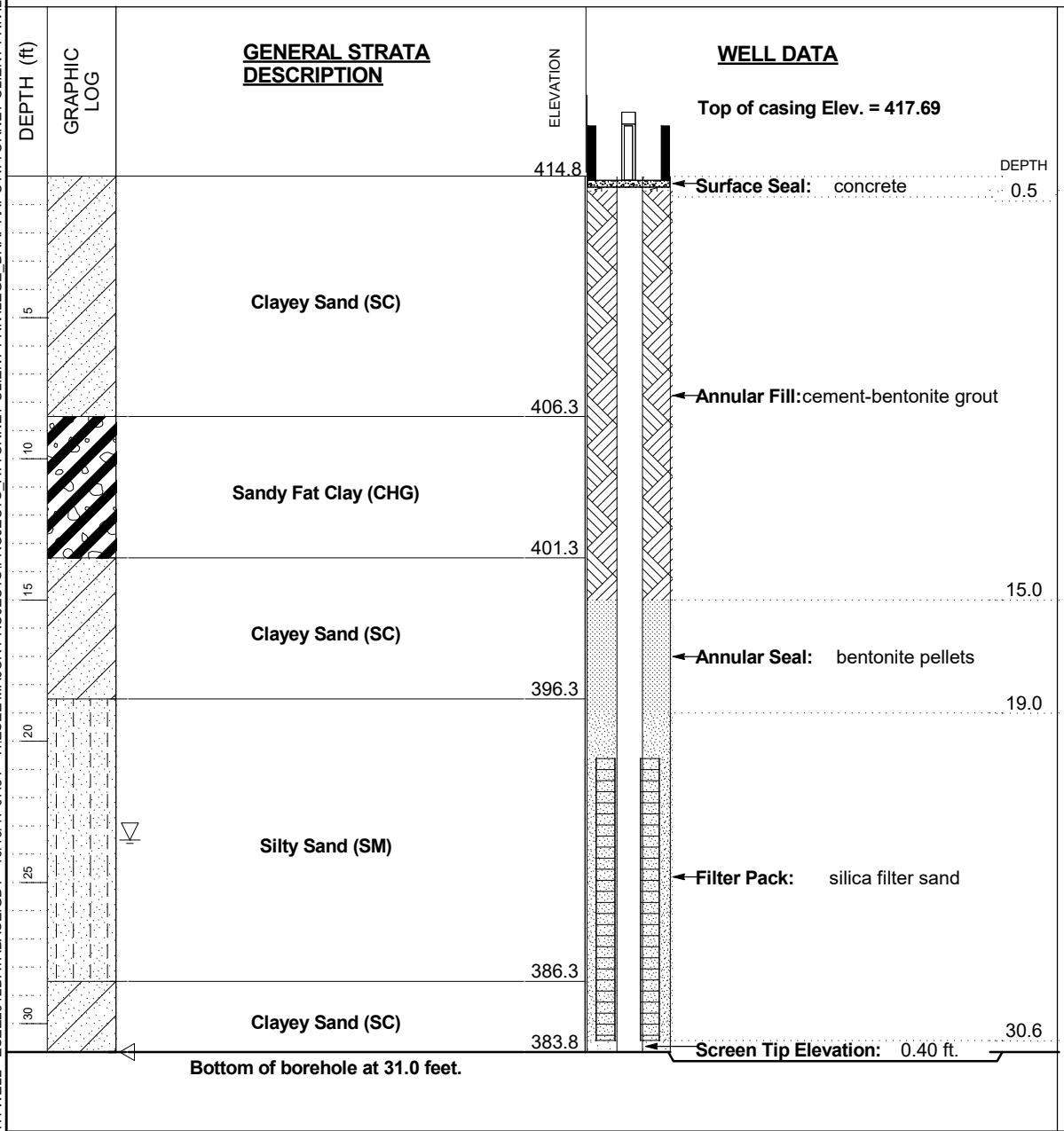
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 11/12/2015 **COMPLETED** 11/12/2015 **SURF. ELEV.** 414.8 **COORDINATES:** N:1,001,309.48 E:465,221.83
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 31 ft. **GROUND WATER DEPTH: DURING** 23.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 31 ft. Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 34.61 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

SOUTHERN COMPANY

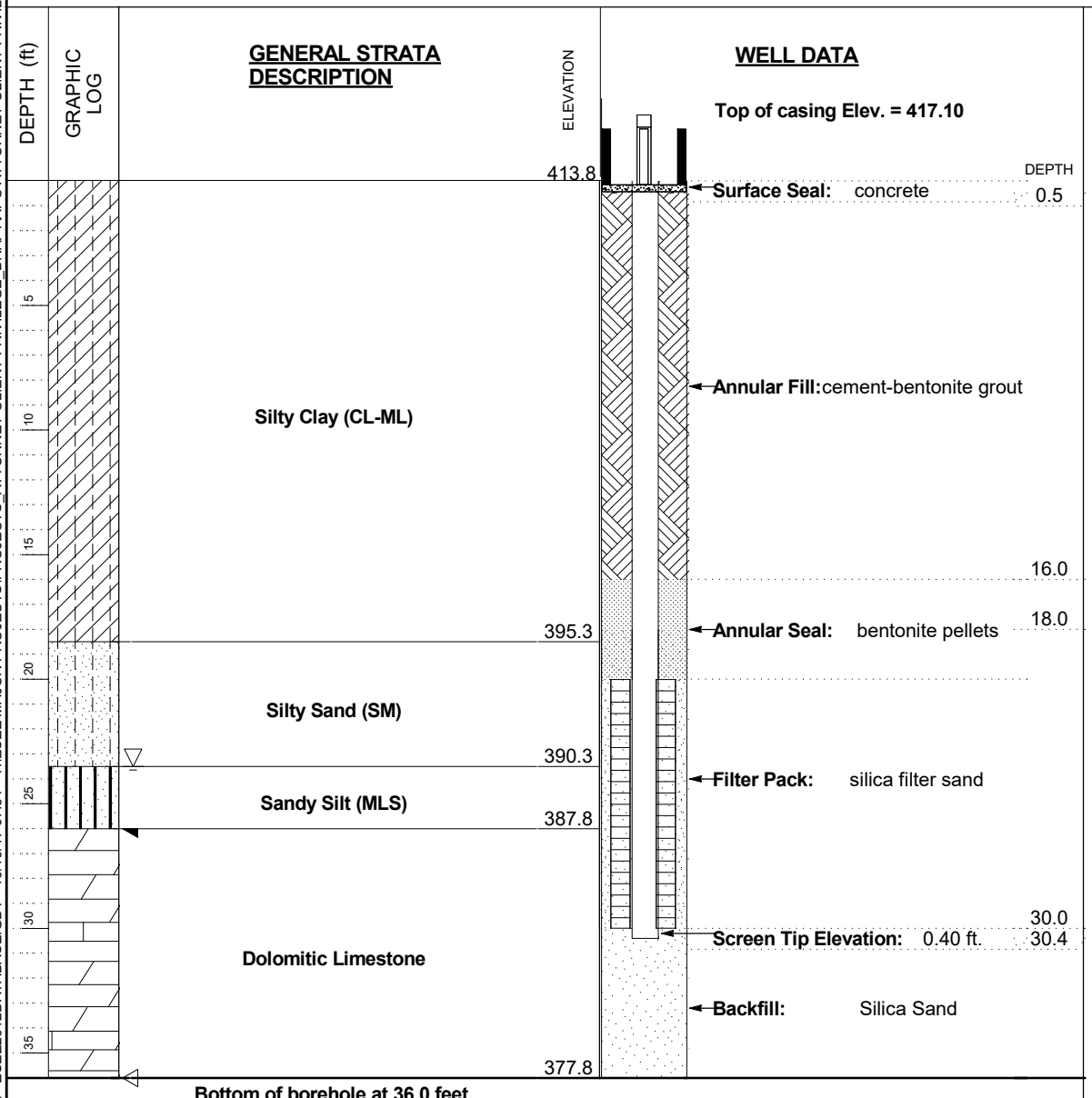
LOG OF WELL INSTALLATION

BORING GN-GSA-MW-12

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 10/29/2015 **COMPLETED** 10/29/2015 **SURF. ELEV.** 413.8 **COORDINATES:** N:1,001,872.32 E:465,065.28
CONTRACTOR TTL, Inc. **EQUIPMENT** **METHOD** Hollow Stem Auger; HQ Rock Core
DRILLED BY D. Campbell **LOGGED BY** J. Williams **CHECKED BY** G. Dyer
BORING DEPTH 36 ft. **GROUND WATER DEPTH: DURING** 23.5 ft. **COMP.** **DELAYED**
NOTES Begin Engineering Log at 26 ft. Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 33.34 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

BORING GN-GSA-MW-13

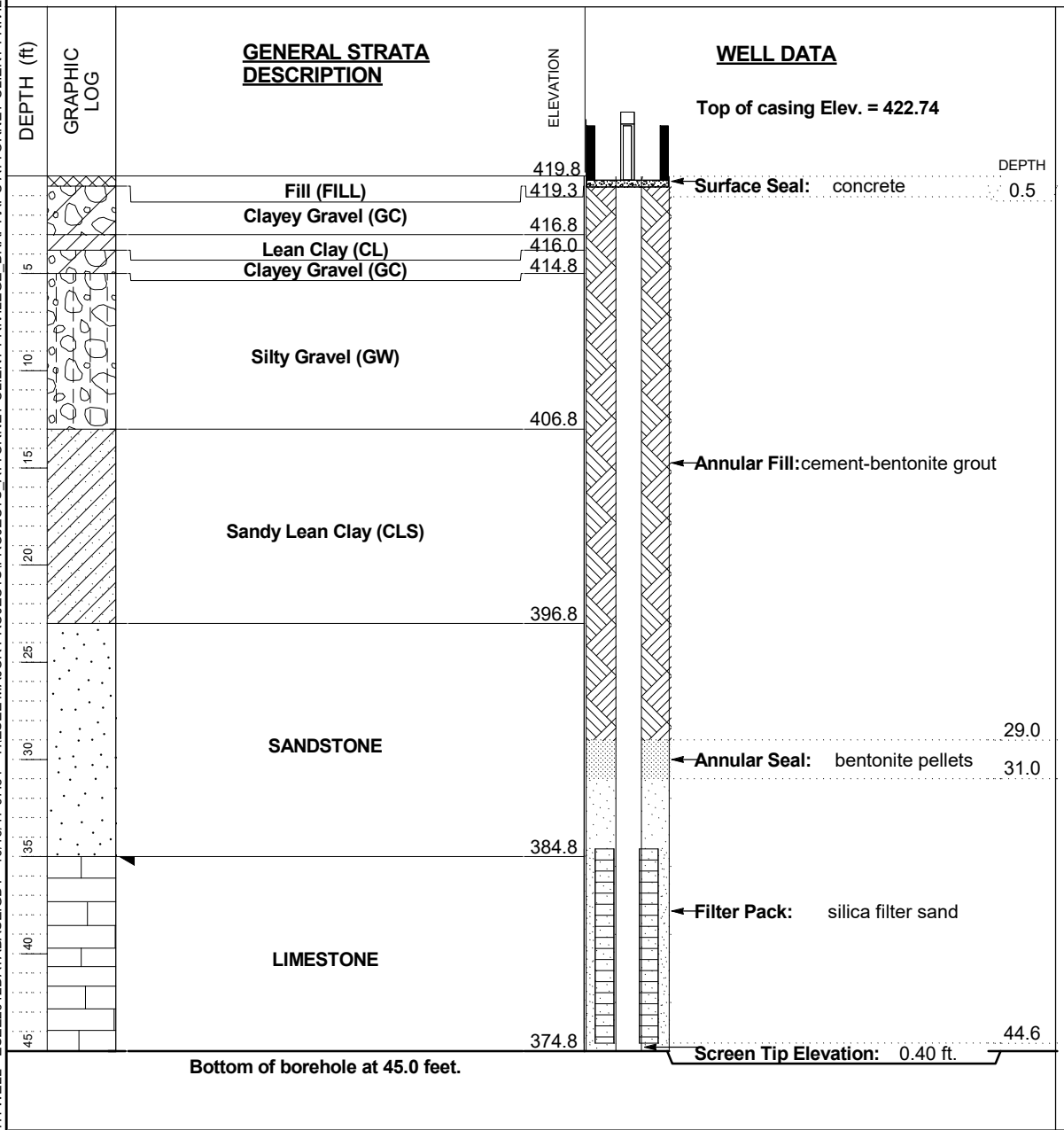
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 12/15/2015 **COMPLETED** 12/15/2015 **SURF. ELEV.** 419.8 **COORDINATES:** N:1,002,342.50 E:465,346.71
CONTRACTOR Cascade Drilling, Inc **EQUIPMENT** **METHOD** Rotosonic
DRILLED BY Mike Hansen **LOGGED BY** C. Stanford **CHECKED BY** G. Dyer
BORING DEPTH 45 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 35 ft. Well installed. Refer to well data sheet.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 48.56 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

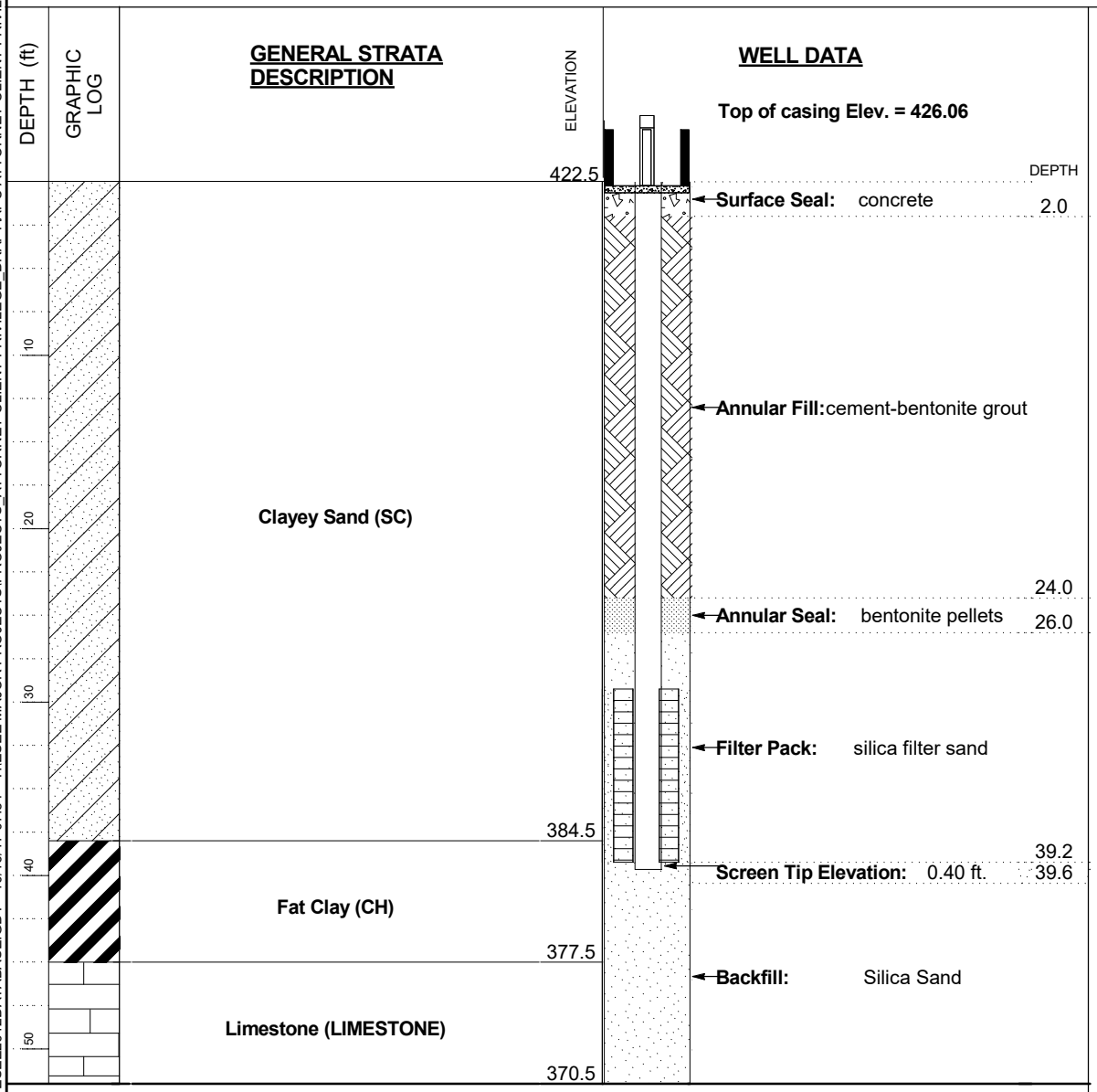
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 5/3/2016 **COMPLETED** 5/6/2016 **SURF. ELEV.** 422.5 **COORDINATES:** N:1,003,222.16 E:464,632.71
CONTRACTOR **EQUIPMENT** **METHOD**
DRILLED BY **LOGGED BY** **CHECKED BY**
BORING DEPTH 52 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 35 ft.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 45.38 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

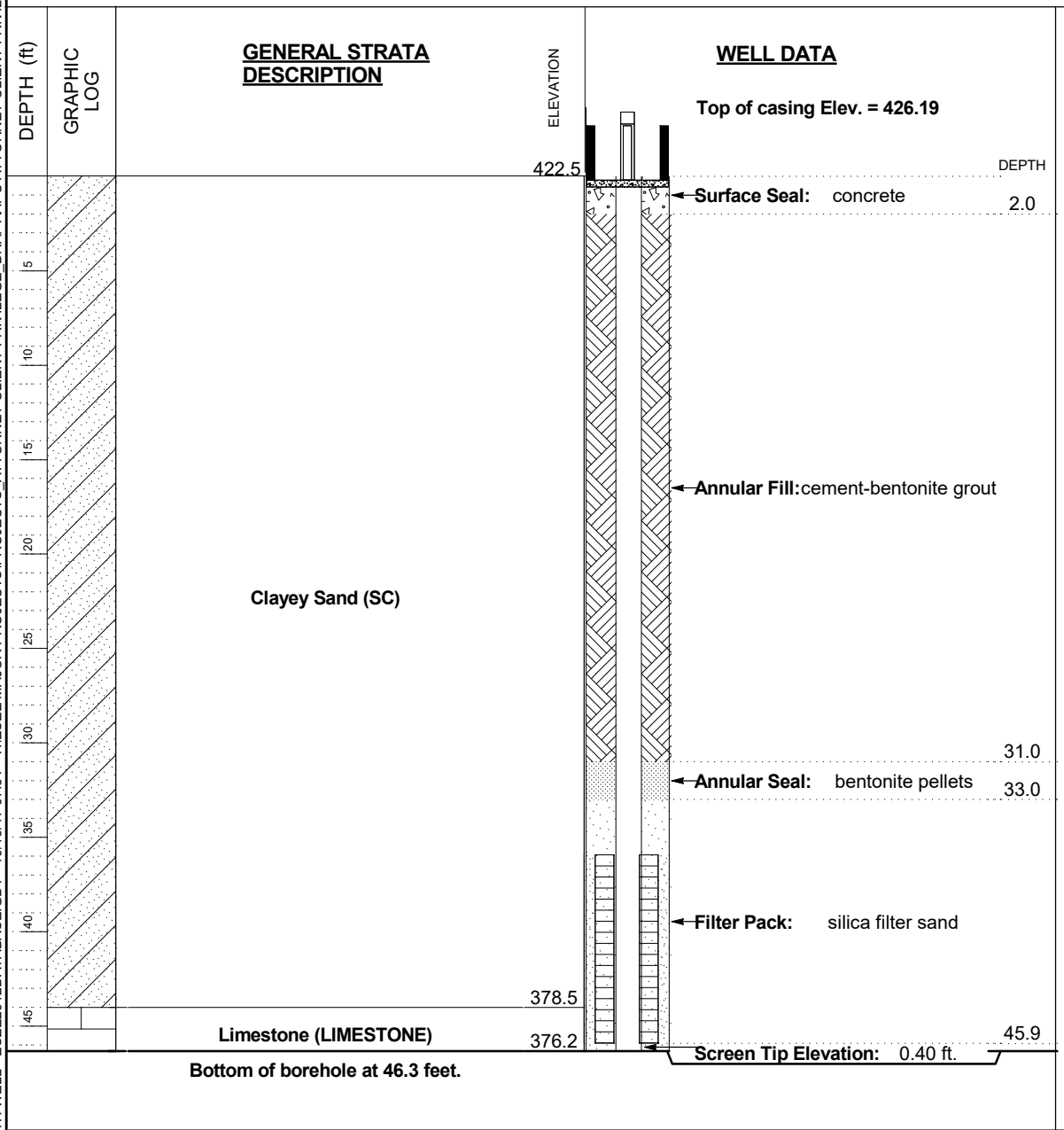
SOUTHERN COMPANY

LOG OF WELL INSTALLATION

SOUTHERN COMPANY SERVICES, INC.
EARTH SCIENCE AND ENVIRONMENTAL ENGINEERING

PROJECT Pland Gaston Gypsum Pond
LOCATION

DATE STARTED 5/2/2016 **COMPLETED** 5/2/2016 **SURF. ELEV.** 422.5 **COORDINATES:** N:1,003,002.35 E:464,146.68
CONTRACTOR **EQUIPMENT** **METHOD**
DRILLED BY **LOGGED BY** **CHECKED BY**
BORING DEPTH 46.31 ft. **GROUND WATER DEPTH: DURING** **COMP.** **DELAYED**
NOTES Begin Engineering Log at 35 ft.



WELL SPECIFICATIONS

Casing Diameter: 2 inches
Casing Material: Schedule 40 PVC
Casing Length: 49.97 feet
Screen Diameter: 2 inches
Screen Length: 10 feet
Screen Mesh: 0.010
Screen Material: PVC
PrePack Screen: Yes

Appendix B

ALABAMA POWER COMPANY
PLANT GASTON
GYPSUM POND
STATISTICAL ANALYSIS PLAN

Prepared for

Alabama Power Company
Birmingham, Alabama

Prepared by

Groundwater Stats Consulting
Mobile, Alabama

Revised August 2020

ALABAMA POWER COMPANY
PLANT GASTON
GYPSUM POND
STATISTICAL ANALYSIS PLAN

Kristina L. Rayner
Groundwater Stats Consulting, LLC
Originator

Gregory T. Whetstone, P.E.
Southern Company Services, Inc.
Reviewer

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

This updated Statistical Analysis Plan (SAP) describes the site-specific statistical analysis approach that will be used to evaluate groundwater at Alabama Power Company's Plant Gaston Gypsum Pond pursuant to ADEM Admin. Code r. 335-13-15-.06 and 40 CFR Part 257. 90 through 95 under detection and assessment monitoring programs.

A compliance groundwater monitoring well system was installed pursuant to requirements of 40 CFR 257.91(e)(1). A background well network is installed upgradient of the CCR unit. Downgradient monitoring wells were installed along the downgradient waste boundary pursuant to 40 CFR 257.91(a)(2). The compliance monitoring well network is described in the site-specific groundwater monitoring plan and summarized in the attached Table 1.

Alabama Power Company conducted 8 background monitoring sample events beginning in 2016. Samples were collected from the compliance monitoring wells and analyzed for CCR Appendix III and IV parameters pursuant to 40 CFR 257.91 Appendix III and IV parameters are as follows:

1) Appendix III (Detection Monitoring) - boron, calcium, chloride, fluoride, pH, sulfate, and TDS
2) Appendix IV (Assessment Monitoring) – antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium

This updated SAP has been developed based upon the characteristics of the groundwater quality data collected since groundwater monitoring was implemented in 2016 following the requirements in 40 CFR 257.91[1], and the United States Environmental Protection Agency (USEPA) Unified Guidance (March 2009)[2]. The plan describes:

[1] Final Rule: Disposal of Coal Combustion Residuals from Electric Utilities, 2015.
[2] U.S. EPA, March 2009. *Unified Guidance*, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D.C.

1) Background data collection, management, and updates;
2) Statistical concepts applicable to detection and assessment monitoring programs;
3) Site-specific statistical analysis methods for Detection Monitoring; and
4) Statistical approach for Assessment Monitoring and Corrective Action.

As part of ongoing site activities, installation of additional wells may be necessary to characterize site conditions or supplement the assessment monitoring well network. The disposition of these additional wells will be described in the site groundwater monitoring plan. Procedures for statistically evaluating additional wells are described in this SAP.

Any change to the statistical analysis plan (e.g. statistical analysis method, background period, background data set, well network, screening method, etc.) will only be implemented upon receipt of approval from the Alabama Department of Environmental Management (Department).

2.0 BACKGROUND

This section describes the establishment, screening, update, and management of the background data sets used for detection, assessment and corrective action phases of groundwater monitoring. Included are descriptions of the tests that are used to determine whether the potential background data represent site-specific conditions and the procedures used to update (expand or truncate) the background data set. Also described are procedures that will be used to update the data set with more current monitoring data or as new background monitoring wells are installed.

Changes or updates to background updates will only be made after Department approval.

2.1 Background Screening

Background is determined based on site-specific conditions such upgradient wells, wells not in the groundwater flow path of the unit, or wells determined to not be affected by the disposal unit. Once background wells are selected based on site-specific conditions, the data are screened as follows:

2.1.1 Outlier Testing

An outlier is defined as an observation that is unlikely to have come from the same distribution as the rest of the data. A statistical outlier test, such as the 1989 EPA Outlier Test [3]or Tukey's Outlier Test as discussed in the USEPA Guidance, will be performed on the monitoring well data when time series plots or box and whiskers plots indicate the presence of extreme observations relative to other observations. The outlier test will serve as a data quality check to help identify errors from data entry and other sources.

Statistical outliers in the background data will be deselected unless it can be proven that the data point is not an anomalous value and does represent naturally occurring variation. This is conservative from a regulatory perspective in that it ensures that the background limits are not artificially elevated. When outliers are identified, they are flagged in the data set and the values excluded from background limit calculations. Re-testing for outliers will be performed when background updates are proposed.

2.1.2 Testing and Adjusting for Seasonal Effects

Testing and adjusting data for seasonal factors ensures that seasonal effects will not affect the test results. When seasonal effects are suspected, the Kruskal-Wallis seasonality test will be used to determine whether the seasonal effects are statistically significant when there are sufficient data to test for seasonality. When seasonal effects are confirmed, the data will be de-seasonalized prior to calculating a statistical limit. Data are de-seasonalized by subtracting the seasonal mean and adding back the grand mean to each observation. Background data will be re-tested when there are at least four new values available and a background update is proposed.

2.1.3 Temporal Trend Testing

The Sen's Slope/Mann-Kendall statistical analysis will be performed on all well/constituent pairs to evaluate concentrations over time. The Sen's Slope Estimator will be used to estimate the rate of change (increasing, no change, or decreasing) for each constituent at each well. The Mann Kendall statistic will be used to determine whether each of those trends is statistically significant. The Sen's Slope/Mann Kendall analysis requires at least five observations.

[3] 1953, "Processing data for outliers", *Biometrics*, Vol. 9, pp.74-89.

When a significant trend is present, older historical values may be deselected from the background data prior to computing background limits in cases where groundwater is presumed not to be impacted by the unit. The resulting limits will reflect more current conditions and will not be influenced by older, historical conditions that are no longer relevant. If upgradient concentration levels are changing over time (i.e. trending upward or downward), the prospective background data set may need to be truncated, removing older data to ensure that the resulting limits continue to represent current natural conditions.

For instance, when background concentration levels are increasing over time due to upgradient water quality changes, if the background data sets are not adjusted, the established PLs could result in increased false positive or false negative risk. In some cases, including older historical data in the background data set may result in overly sensitive limits and an increased chance of false positive readings. In other cases, using all background data when there are temporal changes in background levels may artificially elevate limits. This scenario may occur even when there is a decreasing trend in background concentration levels. An elevated limit under these circumstances is a direct result of an inflated standard deviation that is used in the computation of the parametric limit, which in turn will increase the risk of false negative test outcomes.

Well/constituent pairs that have increasing or decreasing concentration levels over time will be evaluated to determine if earlier data are no longer representative of present-day groundwater quality. In those cases, earlier data may be deselected prior to construction of limits to reduce variation as well as to provide limits that are conservative from a regulatory perspective that will detect future changes in groundwater quality.

Background limits also need to allow for random variation in groundwater concentration levels that are naturally present at a site. The availability of multiple background wells can give an indication of the natural variability in groundwater constituent levels across a site.

2.1.4 Sample Size

While a parametric prediction limit may be constructed with as little as four samples per well, the CCR Rule and the EPA Unified Guidance recommend that a minimum of at least 8 independent background observations be collected for constructing statistical limits. The reliability of the statistical results is greatly enhanced by increasing the sample size to

eight or more. An increased sample size tends to more accurately characterize the variation and typically reduce the probability of erroneous conclusions. Furthermore, if a nonparametric prediction limit is required, the confidence level associated with the test will be dependent on the number of background data available as well as the number of comparisons to the statistical limit.

2.1.5 Non-Detect Data

When data contain <15% nondetects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit (RL) utilized for nondetects is the practical quantification limit (PQL) used by the laboratory.

When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit. Trace (or estimated) values which are reported above the method detection limit (MDL) and below the PQL/RL are used in the statistical analysis as reported by the laboratory. These values are flagged with "J" to distinguish between estimated values and values reported above the PQL.

If detection limits change over a period of analysis, then a statistically significant trend could be the result of increasing or decreasing laboratory precision and not an actual change in water quality. Under those circumstances, an appropriate substitution of the detection limit will be considered, such as the median or most recent detection limit.

2.2 Updating Interwell Background

The following describes the process that will be used to update interwell background data sets. Background updates described below will only be performed after Department approval.

Interwell statistical methods are constructed by pooling upgradient well data from 2 or more upgradient wells. For the Detection Monitoring program, background-derived Prediction Limits will be updated during each semi-annual event by incorporating the most recent sampling results from the existing background well network into the

background data set. New background data will be screened for any new outliers as described above.

For the Assessment and Corrective Action program, background-derived tolerance limits are used to construct background limits using pooled upgradient well data for comparison against established standards. The tolerance limits will be updated every 2 years after screening as described above.

Once background has been established, the background well network may be updated by (1) adding wells to the background well network, or (2) removing wells and data from the background well network. The following describes the additional statistical screening steps that will be taken to update the background after a site-specific determination is made that the wells meet the hydraulic and geochemical requirements of a background location.

2.2.1 Adding to the Background Well Network

The background data set may be updated or adjusted by incorporating new wells into the network or installing new background monitoring wells. When new wells are installed, the following process will be used to statistically evaluate the results and incorporate them into the background data set upon receipt of ADEM approval.

Prior to incorporating new upgradient well data for construction of statistical limits, Tukey's outlier test and visual screening are used to evaluate data. Any confirmed outliers are flagged as such in the database and deselected prior to construction of interwell prediction limits. Any flagged data are displayed in a lighter font and as a disconnected symbol on the time series reports, as well as in a lighter font on the accompanying data pages. A summary of Tukey's test results and flagged values will be provided with the report.

Upgradient well data will be further tested for trends as described earlier. When no statistically significant trends are identified, all new well data will be incorporated into the background. Any records with trending data will be evaluated on a case by case basis, and records may require deselection if historical data are no longer representative of present-day groundwater quality conditions. Interwell prediction limits using all upgradient well data are re-calculated as a result of this screening.

2.2.2 Removing Wells and Data from Background

As additional background data are collected, or site conditions change, a recommendation may be made to remove a well from the background network for any number of reasons (e.g. removal, change in groundwater flow conditions, change in chemistry, vandalism, etc.). If an upgradient well will no longer be part of the background network, the historical data from that well will no longer be included in the construction of interwell limits (which pool upgradient well data) without Department approval.

When wells are proposed for removal from the network, a site-specific statistical and geochemical evaluation will be made to identify the population(s) of data that may not represent background conditions. A proposal will be submitted to the Department for approval identifying the recommended use or disuse of historical data from the well(s) proposed for removal. The proposal will include statistical data screening and will explain the rationale for the proposed use of the data.

In the case where an upgradient well is no longer sampled (i.e. due to well damage, etc.), but historical data are still representative of upgradient water quality, an evaluation will be conducted as described below to determine whether data are still representative of background and should continue to be included in the background data set. When demonstration shows that groundwater quality from a well is still representative of naturally occurring groundwater quality upgradient of the facility, this data will be used in construction of statistical limits with ADEM approval. In cases where data from upgradient wells removed from the network do not represent upgradient groundwater quality, a proposal will be made for ADEM approval whereby interwell prediction limits will be re-calculated using data from only those upgradient wells in the network.

When preparing a background data evaluation for Department approval, the statistical portion of the evaluation will be accomplished by:

i. Using the ANOVA to determine whether significant variation exists among upgradient wells which would prevent the well's data from being included in construction of interwell prediction limits;
ii. Visual screening using Time Series and Box Plots to determine whether measurements are similar to neighboring upgradient wells;
iii. Screening the background data set for outliers as described above; and

iv. Performing trend tests to identify statistically significant increasing or decreasing trends which may require adjustment of the record to eliminate trending data and reduce variation.

2.3 Updating Intrawell Background

Intrawell statistical methods may be used at well locations that have not been impacted by a release from the unit being monitored. When using intrawell methods, once the background limits are established, data will not be evaluated again for updating until a minimum of 4 new samples are available, or every 2 years[4]. Data will be screened for outliers and trends as described above.

When updating an intra-well background, data are tested for suitability of updating by consolidating new sampling observations with the screened background data. Before updating the data for intrawell testing, it is necessary to verify that the most recent observations represent an unimpacted state as compared with the existing background. Data are first screened for outliers and, when confirmed, flagged as such in the database and deselected prior to constructing statistical limits. This step results in statistical limits that are conservative from a regulatory perspective.

The Mann-Whitney (Wilcoxon Rank Sum) two-sample test is then used to compare the median of the first group of background observations to the median of the more recent 4 or more observations. If the most recent data group is not found to be statistically different than the older data, the background data set may be updated and the prediction limits will be reconstructed to include the more recent background samples. When statistical differences are identified by the Mann Whitney test, statistical limits may not be eligible for updating. When more samples are available, data will be tested again for suitability of updating background data sets. In the event it is determined that the historical data are no longer representative of present-day groundwater quality in the absence of suspected impacts, only the more recent 8 or more measurements will be used to update the prediction limits.

[4] US EPA Unified Guidance, March 2009. *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities – Section 5.3*. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D.C.

3.0 STATISTICAL APPROACH FOR DETECTION MONITORING

The following sections describe the concepts related to developing a site-specific SAP for detection monitoring. The statistical evaluation includes screening upgradient well data to characterize groundwater upgradient of the facility and determine whether intrawell or interwell methods are recommended as the most appropriate statistical method for each Appendix III constituent.

3.1 Statistical Method

When data from multiple upgradient wells are available, a determination will be made as to whether the upgradient well data appear to come from the same population or whether there is evidence of spatial variation upgradient of the facility. Data for each constituent are plotted using box and whisker plots to assist in making this determination, providing visual representation of concentrations within and across wells. Analysis of Variance (ANOVA) may be used initially to statistically evaluate whether significant spatial variation exists at each unit.

Interwell prediction limits (PLs) pool upgradient well data to construct statistical limits which are used to evaluate data at downgradient wells. These tests are appropriate when the ANOVA determines that no significant spatial variation exists among the background wells.

In the event the ANOVA determines:

1) evidence of significant spatial variation upgradient of the facility, or
2) that there are insufficient upgradient well data, or
3) that interwell methods will not adequately address the question of a change in groundwater quality at any of the downgradient wells,

the USEPA Unified Guidance recommends switching from interwell methods to intrawell methods when it can be reasonably demonstrated that no impact from the CCR unit is present for well/constituent pairs in detection monitoring.

Intrawell PLs, which compare the most recent sample from a given well to statistical limits constructed from historical measurements at the same well, are extremely useful for

rapidly detecting changes over time at a given location. Intrawell methods remove the influence of on-site spatial variation in well-to-well concentration levels. Site monitoring data are evaluated for the appropriateness of intrawell methods, including screening of background data from within each well for trends, seasonality when sufficient data are available, and outliers.

3.2 Prediction Limits

The use of PL tests is restricted to Appendix III parameters recently sampled at groundwater monitoring wells to represent *current* conditions. Background stability will be tested using temporal and seasonal trend tests, utilizing de-seasonalizing adjustments when seasonal trends are present. Moreover, statistical conditions including background sample size requirements as specified in USEPA guidance and regulations will be verified prior to the use of each statistical approach.

3.3 Criteria for Using the Interwell Statistical Methodology

There are a number of conditions that need to be met before an interwell statistical analysis can be considered appropriate for a specific site. These conditions are described in this section.

1. Ensuring that the aquifer underlying the site is continuous and that all monitoring wells are screened in the same level;
2. Ensuring that limits will be adequately sensitive in detecting a facility release;
3. Ensuring that limits reflect current background conditions; and
4. Ensuring that confounding factors will not confuse the results.

3.3.1 Aquifer Designation and Monitoring Wells

Where the uppermost aquifer underlying a site is discontinuous, where downgradient monitoring wells are screened in differing levels, or where the upgradient monitoring well network is limited, EPA recommends performing intrawell analyses, to avoid confusing an impact caused by a release from the facility with a difference between wells caused by heterogeneous hydrogeology.

The statistical approach for constituents of concern will be based on interwell or intrawell PLs, and in some cases a combination of both methods, as a result of evaluation of spatial variation at the site. Box and whisker plots may be provided to demonstrate

concentration levels within each well and across wells. When significant differences exist in concentration levels, particularly between upgradient wells, this indicates spatial variation in the groundwater quality. Spatial variation and/or limited upgradient well data would tend to create statistical limits that are:

1) not conservative from a regulatory perspective; or
2) not representative of background water quality.

3.4 Criteria for Using an Intrawell Statistical Methodology

The following is a description of the criteria that a site must meet to use an intrawell statistical methodology if it is determined that interwell methods are not appropriate.

3.4.1 Screening of Prospective Historical Background Data

Prior to using an intrawell analysis, it will be necessary to demonstrate that there have been no potential prior impacts at downgradient wells on the prospective historical background data as a result of the current practices at the Site. In addition to an independent investigation for prior impacts, prospective background data for intrawell tests will be screened for trends, seasonality and outliers as described above. If intrawell analyses are not feasible due to elevated concentrations in downgradient wells relative to concentrations upgradient of the facility, as determined during the screening process, interwell analyses will initially be utilized until further evidence supports the use of intrawell testing.

3.4.2 Stable Naturally Occurring Concentrations

The background data screening procedure described here is designed to check for stable background conditions, and account for existing groundwater quality from past or present activities in the area. While having pre-waste data is ideal for characterization of groundwater quality prior to waste placement, these facilities do not have pre-waste data.

The Sen's Slope/Mann-Kendall test for increasing or decreasing temporal trends will be used to test prospective background data when time series plots indicate the possibility of either increasing or decreasing trends over time. In the case where significant trends are found, unrepresentative values will be deselected only when it is clear that the trend is not the result of contamination. Assuming no alternative source, if similar trends and/or concentration levels are noted upgradient of the unit for the same parameters, it will be

assumed that concentration levels represent natural variation in groundwater, and thus, earlier data will be removed so that compliance limits reflect current groundwater conditions upgradient of the unit.

3.5 Site-Wide False Positive Rates (SWFPR) and Statistical Power

The USEPA Unified Guidance recommends an annual site-wide false positive rate of 10%, which is distributed equally among the total number of sampling events. A site-wide false positive rate of 5% is targeted for each semi-annual sampling event. USEPA also requires demonstration that the statistical methodology selected for a facility will provide adequate statistical power, as discussed in Section 3.7 to detect a release, should one occur.

3.6 Determination of Future Compliance Observations Falling Within Background Limits

Intrawell or interwell upper PL are constructed with a test-specific alpha based on the overall site-wide false positive rate (SWFPR) of 5% for each sampling event. Any compliance observation that exceeds the background prediction limit will be followed with one or two independent resamples, depending on the resample plan, to determine whether the initial exceedance is verified.

The following pretests are used to ensure that the statistical test criteria are met:

1) *Data Distribution*. The distribution of the data will be tested using either the Shapiro-Wilk test (for background sample sizes of 50 or less) or the Shapiro-Francia test (for background sample sizes greater than 50). Non-normally distributed data will be transformed using the ladder of powers[5] to normalize the data prior to construction of background limits. When background data cannot be normalized, nonparametric PL will be calculated.

2) *Handling Non-Detects*. Simple substitution per USEPA Guidance[6] will be used when non-detects comprise less than or equal to 15% of the individual well data. Simple substitution refers to the practice of substituting one-half the reporting or

[5] 1992, *Statistical Methods In Water Resources*, Elsevier, Helsel, D. R., & Hirsch, R. M.
[6] June 1992, *Addendum to Interim Final Guidance, Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities.* Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D.C.

detection limit for non-detects. When the proportion of non-detects (NDs) in background falls between 16 and 50%, a non-detect adjustment such as the Kaplan-Meier or Regression on Order Statistics (ROS) method for adjustment of the mean and standard deviation will be used prior to constructing a parametric prediction limit. When the proportion of non-detects exceeds 50%, or when the data cannot be normalized, a nonparametric prediction limit will be used.

3.7 Statistical Power

The USEPA Unified Guidance also requires that facilities achieve adequate statistical power to detect a release, even if only at one facility well and involving a single constituent. More specifically, EPA recommends power of approximately 55% when concentration levels are 3 standard deviations above the background mean, or approximately 80% power at 4 standard deviations above the background mean.

The performance of a given testing strategy is displayed in Power Curves which are based on the particular statistical method chosen combined with the resampling plan, the false positive rate associated with the statistical test, as well as the number of background samples available and the size and configuration of the monitoring network.

Power Curves for the PLs following this report demonstrate that the specified plan has the power to detect a release in downgradient wells and meet or exceed at least one of the power recommendations. As more data are collected during routine semi-annual sampling events and the background sets are expanded, the power requirements will exceed recommended power requirements.

4.0 STATISTICAL APPROACH FOR ASSESSMENT MONITORING & CORRECTIVE ACTION

The following describes the general statistical procedures that will be used if a facility enters Assessment or Corrective Action monitoring because of SSIs in the Detection monitoring program. Site-specific and event-specific SAPs may be developed at that time according to permit or regulatory requirements.

4.1 Assessment Monitoring

Assessment Monitoring may be initiated when there is a confirmed SSI over background in one or more wells for any of the Appendix III parameters. Wells are sampled for Appendix IV parameters semiannually concurrent with Appendix III constituents.

When in assessment monitoring, Appendix IV constituent concentrations are compared to Groundwater Protection Standards (GWPS), or other applicable standards, using Confidence Intervals. Upgradient well data are screened for outliers and trends as described above and tolerance limits are used to develop background limits. GWPS may be based on background limits when background concentrations are higher than the established Maximum Contaminant Levels (MCLs) or other rule-specified GWPS.

Parametric confidence intervals around the population mean will be constructed at the 99% confidence level when data follow a normal distribution, and around the geometric mean (or population median) when data follow a transformed-normal distribution.

Non-parametric confidence intervals will be constructed when data do not pass a normality test and cannot be normalized via a transformation. The confidence level associated with the non-parametric tests is dependent on the number of values used to construct the interval. Confidence intervals require a minimum of four samples; however, a minimum of eight samples are recommended. When non-parametric confidence intervals are constructed, a maximum of eight of the most recent samples will be used in the comparison. When a well/constituent pair does not have the minimum sample requirement, the well/constituent pair will continue to be reported and tracked using time series plots and/or trend tests until such time that enough data are available.

In Assessment Monitoring, when the Lower Confidence Limit (LCL), or the entire interval, exceeds the GWPS as discussed in the USEPA Unified Guidance (2009), the result is recorded as an SSI.

4.2 Corrective Action

If groundwater corrective action is triggered, semi-annual sampling of the assessment monitoring wells will continue and Confidence Intervals will monitor the progress of remediation efforts. Confidence Intervals are compared to GWPS and the entire interval must fall below a specified limit (i.e. the Upper Confidence Limit [UCL] must be below the

limit) to demonstrate compliance. A site-specific monitoring program will be developed based on the final corrective action plan and points-of-compliance.

5.0 SITE-SPECIFIC STATISTICAL ANALYSIS METHODS

A site-specific statistical analysis approach was developed after applying the screening criteria described previously. Results of the site-specific screening are presented in Appendix A, Background Screening and Compliance Evaluation. The following is a detailed description of the statistical analysis methodology that will be used for groundwater quality analysis at the site when monitored constituents are present in any of the downgradient wells.

Background sampling began in February 2016. The monitoring well network is described on Table 1.

For the statistical analysis of analytical results obtained from the existing monitoring well network, (1) the number of samples collected will be consistent with the appropriate statistical procedures as recommended by the CCR Rule and the USEPA Unified Guidance; (2) the statistical method will comply with the EPA-recommended performance standards; and (3) determination of whether or not there is a statistically significant increase (SSI) over background values in the future will be completed per the above-mentioned regulations.

5.1 Detection Monitoring Program

Groundwater quality data will be evaluated through use of interwell prediction limits, combined with a 1-of-2 resampling strategy for boron, fluoride and pH. Intrawell prediction limits, combined with a 1-of-2 resampling approach, will be used to evaluate calcium, chloride, sulfate, and TDS. If a statistical exceedance is found, one independent resample will be collected to determine whether the initial exceedance is verified.

If the initial finding is not verified by resampling, the resampled value will replace the initial finding. When the resample confirms the initial finding, the exceedance will be reported. The Sen's Slope/Mann Kendall trend test will be used, in addition to PL, to statistically evaluate concentration levels over time and determine whether concentrations are increasing, decreasing, or stabilizing.

The chance of false positive results increases with increasing numbers of statistical tests. The total number of statistical tests for a facility is the number of parameters tested multiplied by the number of monitoring wells. In an effort to reduce the overall number of statistical tests performed at each semi-annual sampling event, thereby lowering the chance of a false exceedance while maintaining a high degree of statistical confidence that a release will be detected, Plant Gaston Gypsum Pond will:

1) Monitor constituents in wells with detections (i.e. excluding well/constituent pairs with 100% nondetects); and
2) Incorporate a 1-of-2 retesting strategy

The following statistical methods will be used:

5.1.1 Parametric Prediction Limits

These limits will be computed per USEPA Unified Guidance when data can be normalized, possibly via transformation. The test alpha will be calculated based on the following configuration:

Annual SWFPR = 0.10
1-of-2 resampling plan with a minimum of 8 background samples for interwell tests
1-of-2 resampling plan with a minimum of 12 background samples for intrawell tests
w= 10 (number of compliance wells)
c= 7 constituents

5.1.2 Nonparametric Prediction Limits

The highest background value will be used to set the upper nonparametric prediction limit. The associated confidence level takes into account the prospect of additional future compliance values (retests) when there is an initial exceedance. The achieved confidence level is determined based on the background sample size, the number of monitoring wells in the network, and the number of proposed retests, using tables provided in the USEPA Unified Guidance[7].

[7] USEPA Unified Guidance, March 2009. *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities*. Office of Solid Waste Management Division, U.S. Environmental Protection Agency, Washington, D.C.

5.1.3 Retesting Strategy

When the prediction limit analyses indicate initial exceedances, discrete verification resamples from the indicating well(s) will be collected within 90 days and prior to the next regularly scheduled sampling event. If the initial exceedance is verified, a confirmed SSI will be reported. For the test to be valid, the resample needs to be statistically independent which requires that sufficient time elapse between the initial sample and resample. A minimum time interval between samples will be established to ensure that separate volumes of groundwater are being sampled.

5.1.4 Background Data Set

Interwell tests, which compare downgradient well data to statistical limits constructed from all pooled upgradient well data after careful screening, are appropriate when average concentrations are similar across upgradient wells. Intrawell tests, which compare compliance data from a single well to screened historical data within the same well, are appropriate when upgradient wells exhibit spatial variation; when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective; and when downgradient water quality is unimpacted compared to upgradient water quality for the same parameter. Because upgradient well data represent natural groundwater quality upgradient of the facility, intrawell prediction limits are also constructed on these wells. A minimum of 8 background samples are required for both interwell and intrawell tests.

The background data set will be managed, screened and updated as described previously after receipt of Department approval.

5.2 Assessment Monitoring Program

Assessment monitoring will be performed following the procedures described in Section 4.0. When assessment monitoring is initiated, Appendix IV constituents are sampled semi-annually, and concentrations in downgradient wells are statistically compared as described below to GWPS. Following the Unified Guidance, the Maximum Contaminant Level (MCL) is used as the GWPS. When reported concentrations in upgradient wells are higher than the established MCLs, background limits may be developed as described

below from an interwell tolerance limit using the pool of all approved upgradient well data (see Chapter 7 of the Unified Guidance).

Parametric tolerance limits, which are used when pooled upgradient well data follow a normal or transformed-normal distribution, may be constructed on upgradient well or wells with the highest average concentrations with Department approval. This step serves to reduce the effect of spatial variation on the standard deviation in the parametric case when calculating a GWPS. Non-parametric tolerance limits will be constructed when data do not follow a normal or transformed-normal distribution or when a parametric tolerance limit is not approved.

For constituents without established MCLs, the CCR-rule specified limits will be used as the GWPS unless Department-approved background is higher as calculated from interwell tolerance limit as described above. Appendix IV background data are screened for outliers and extreme trending patterns that would lead to artificially elevated statistical limits.

Confidence Intervals are then constructed using a maximum of 8 of the most recent assessment measurements from a given downgradient well for comparison to the GWPS to determine compliance.

Parametric tolerance limits (i.e. UTLs) are calculated when data follow a normal or transformed-normal distribution using pooled upgradient well data as described above for Appendix IV parameters with a target of 95% confidence and 95% coverage. When data sets contain greater than 50% nondetects or do not follow a normal or transformed-normal distribution, the confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples. The UTLs are then used as background levels for establishing the GWPS under case 3 below.

As described in 40 CFR § 257.95(h)(1)-(3) the GWPS is:

1. The maximum contaminant level (MCL) established under 40 CFR § 141.62 and 141.66.
2. Where an MCL has not been established:
   (i) Cobalt 0.006 mg/L;
   (ii) Lead 0.015 mg/L;

(iii) Lithium 0.040 mg/L; and

(iv) Molybdenum 0.100 mg/L.

3. Background levels for constituents where the background level is higher than the MCL or rule-specified GWPS.

In assessment monitoring, when the Lower Confidence Limit (LCL), or the entire confidence interval, exceeds the GWPS as discussed in the USEPA Unified Guidance (2009), the result is recorded as an SSL.

With Department approval, the background limits will be updated and compared to the MCLs and CCR-rule specified limits for Appendix IV constituents every two years to determine whether the established limit or background will be used as the GWPS in the confidence interval comparisons, as discussed above.

5.3 Corrective Action Monitoring Program

When implemented, groundwater corrective action will include a remedy monitoring program. The remedy monitoring program will be prepared under separate cover and include details regarding statistical analysis of results.

6.0 BIBLIOGRAPHY

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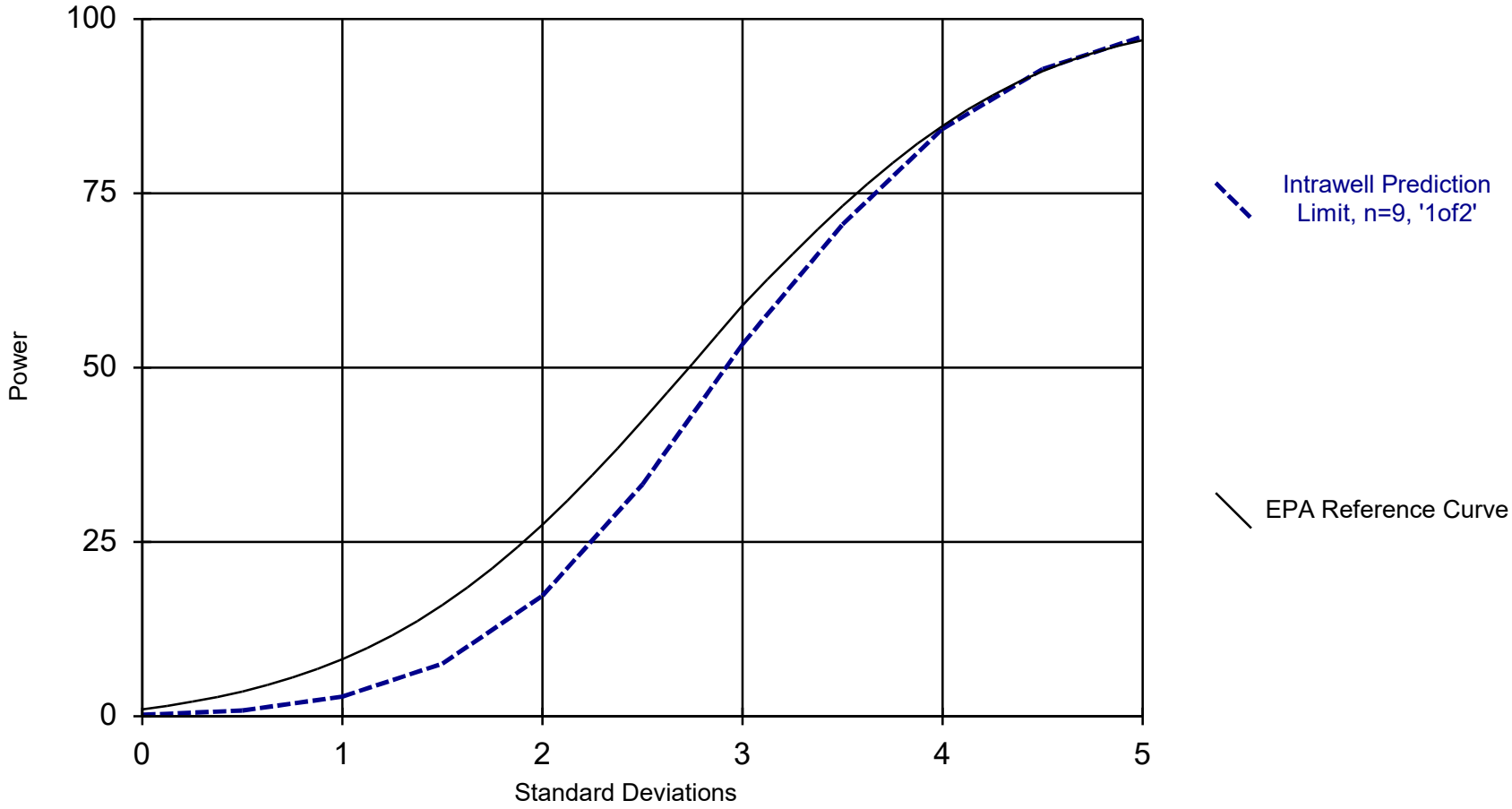
Figures

Table 1.
Groundwater Monitoring Well Network Details

Well Name	Purpose	Installation Date	Northing	Easting	Ground Elevation	Top of Casing Elevation	Well Depth (ft.) Below Top of Casing	Top of Screen Elevation (ft.) below TOC	Bottom of Screen Elevation (ft.) below TOC	Screen Length (ft.)
GN-GSA-MW-1	Downgradient	11/5/2015	1002932.67	465110.34	423.21	426.73	127.38	309.75	299.75	10
GN-GSA-MW-2	Upgradient	10/28/2015	1003344.33	465112.90	417.63	421.19	58.71	372.88	362.88	10
GN-GSA-MW-3	Upgradient	10/21/2015	1003093.69	464357.74	421.84	425.30	56.64	379.06	369.06	10
GN-GSA-PZ-4	Water-Level only	10/27/2015	1002849.78	463873.54	424.87	427.71	46.50	391.37	381.37	10
GN-GSA-MW-5	Downgradient	11/19/2015	1002321.38	464049.62	426.08	429.49	47.42	392.47	382.47	10
GN-GSA-MW-6	Downgradient	11/17/2015	1001935.61	464191.94	424.55	427.64	47.34	390.70	380.70	10
GN-GSA-MW-7	Downgradient	11/10/2015	1001142.07	464485.43	420.38	423.79	48.97	385.22	375.22	10
GN-GSA-MW-8	Downgradient	10/28/2015	1000455.33	464781.68	414.51	417.58	51.53	376.45	366.45	10
GN-GSA-MW-9	Downgradient	10/29/2015	1000625.59	465070.63	414.76	417.68	46.95	381.13	371.13	10
GN-GSA-MW-10	Downgradient	12/9/2015	1000898.07	465327.37	414.78	418.04	41.91	386.53	376.53	10
GN-GSA-MW-11	Downgradient	11/12/2015	1001309.48	465221.83	414.81	417.69	34.61	393.48	383.48	10
GN-GSA-MW-12	Downgradient	10/29/2015	1001872.32	465065.28	413.80	417.10	33.34	394.16	384.16	10
GN-GSA-MW-13	Downgradient	12/15/2015	1002342.50	465346.71	419.82	422.74	48.56	384.58	374.58	10
GN-GSA-MW-14S	Upgradient	5/3/2016	1003222.16	464632.71	420.32	424.06	45.38	391.08	381.08	10
GN-GSA-MW-15	Upgradient	5/5/2016	1003002.35	464146.68	422.53	426.19	49.97	386.62	376.62	10

Notes:
1. Northing and easting are in feet relative to the State Plant Alabama West North America Datum of 1983.
2. Elevations are in feet relative to the North American Vertical Datum of 1988.
3. Top of screen and bottom of screen depths are calculated relative Top of Casing elevation and less the well sump length of 0.4’.

Power Curve

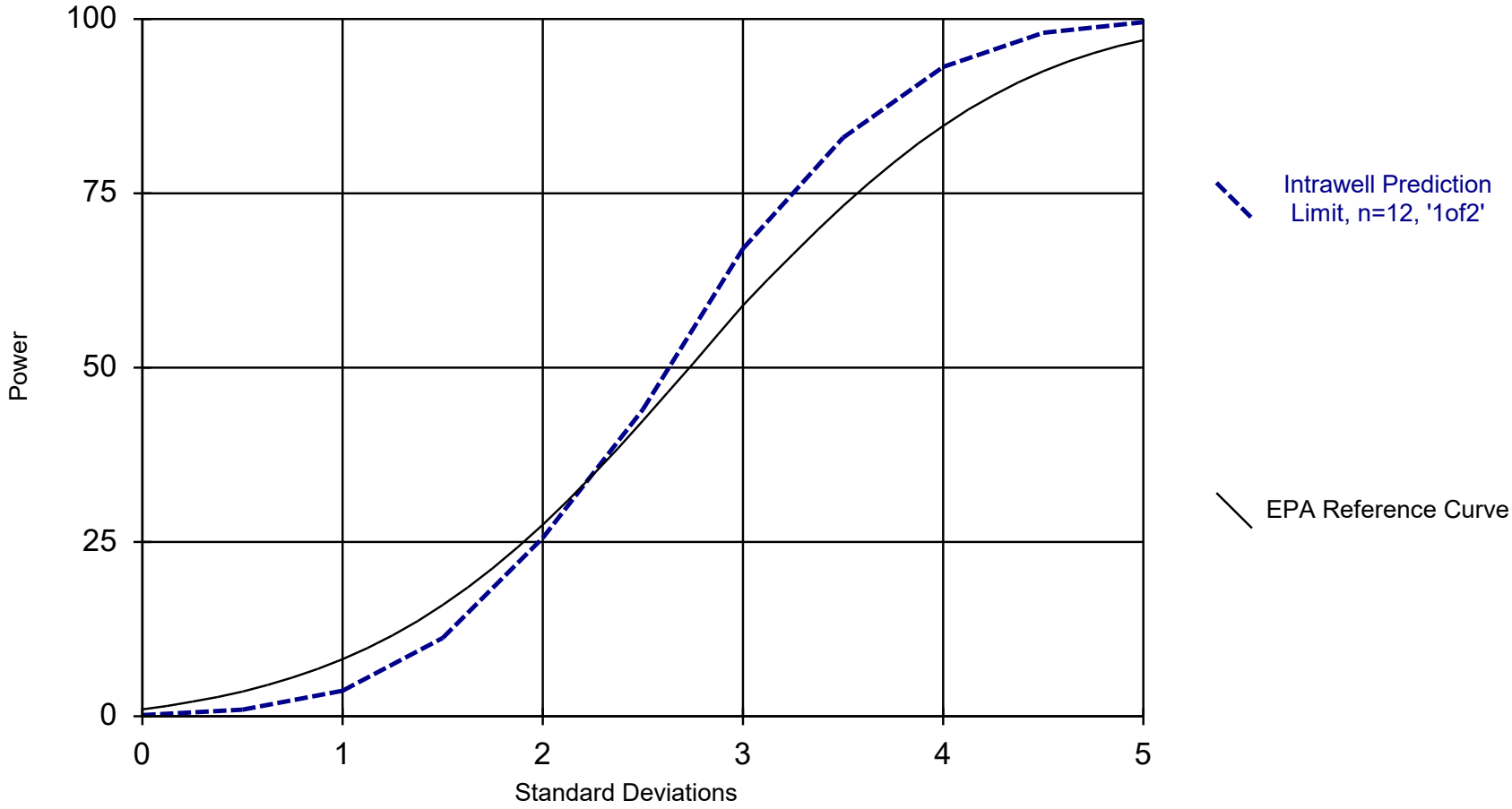


Kappa = 2.961, based on 10 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 4/9/2020 4:07 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Power Curve

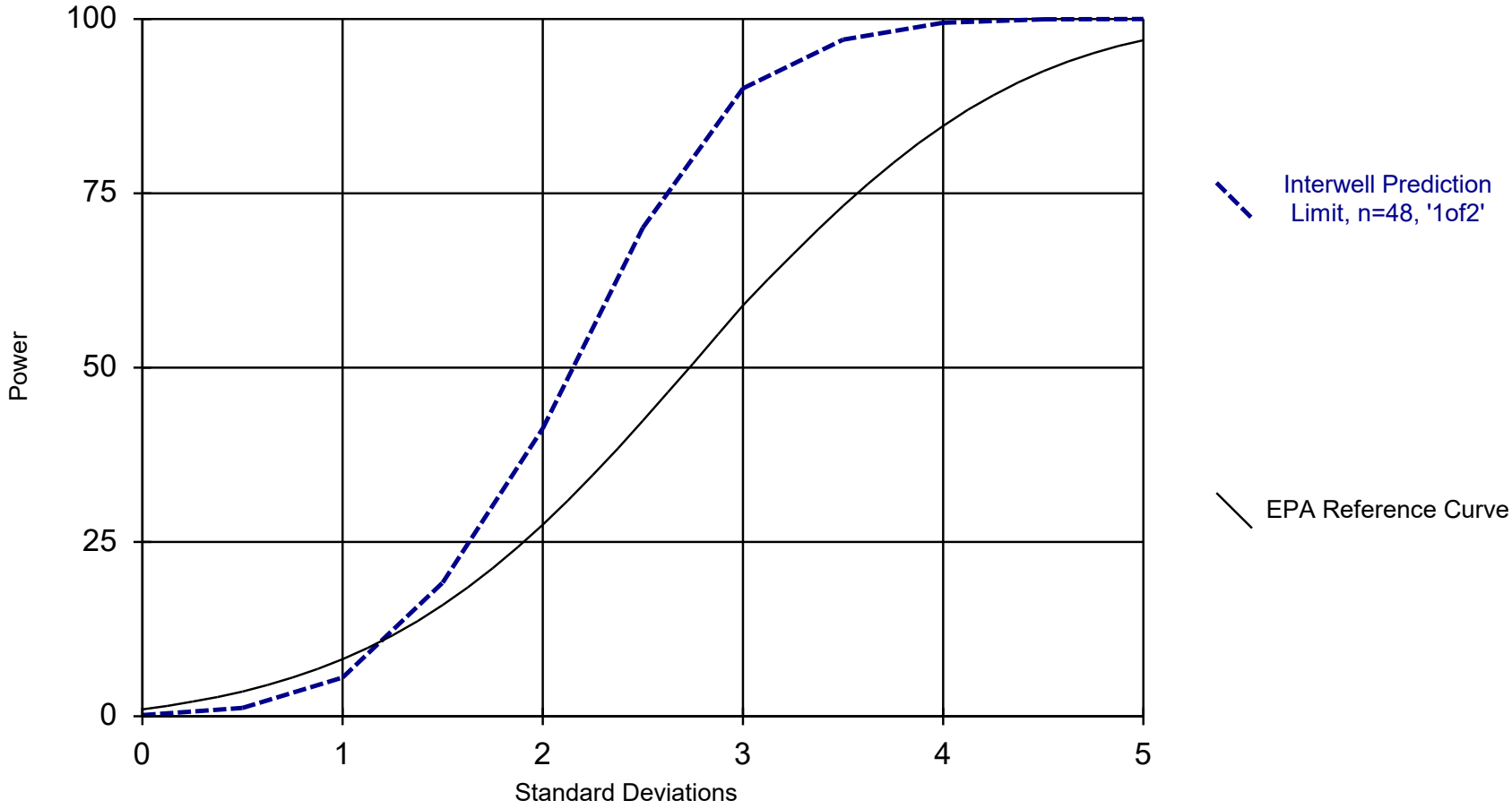


Kappa = 2.599, based on 10 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 4/9/2020 3:51 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

Power Curve



Kappa = 2.039, based on 10 compliance wells and 7 constituents, evaluated semi-annually (this report reflects annual total).

Analysis Run 4/9/2020 3:45 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

Appendix A
Background Screening and Compliance Evaluation

GROUNDWATER STATS CONSULTING

September 27, 2019

Southern Company Services
Attn: Mr. Greg Dyer
3535 Colonnade Parkway
Birmingham, AL 35243

Re: Plant Gaston Gypsum Pond
Background Update - 2019

Dear Mr. Dyer,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the screening for the proposed update of prediction limits with data through May 2019 for Alabama Power Company's Plant Gaston Gypsum Pond. The analysis complies with the federal rule for the Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule, 2015) as well as with the USEPA Unified Guidance (2009).

Sampling began at site for the CCR program in 2016. The monitoring well network, as provided by Southern Company Services, consists of the following:

- **Upgradient wells:** GN-GSA-MW-2, GN-GSA-MW-3, GN-GSA-MW-14S, and GN-GSA-MW-15; and
- **Downgradient wells:** GN-GSA-MW-1 , GN-GSA-MW-5, GN-GSA-MW-6, GN-GSA-MW-7, GN-GSA-MW-8, GN-GSA-MW-9, GN-GSA-MW-10, GN-GSA-MW-11, GN-GSA-MW-12, and GN-GSA-MW-13.

Data were sent electronically to Groundwater Stats Consulting, and the statistical analysis was prepared according to the Statistical Analysis Plan approved by Dr. Kirk Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to Groundwater Stats Consulting. The analysis was reviewed by Dr. Jim Loftis, Civil & Environmental Engineering professor emeritus at Colorado State University and Senior Advisor to Groundwater Stats Consulting.

The CCR program consists of the following constituents:

- **Appendix III** (Detection Monitoring) **-** boron, calcium, chloride, fluoride, pH, sulfate, and TDS;

Time series and box plots for these parameters are provided for all wells and constituents and are used to evaluate concentrations over the entire record for the purpose of updating statistical limits (Figures A and B, respectively). Values in background which have been flagged as outliers may be seen in a lighter font and as a disconnected symbol on the graphs.

Background Update Summary

Intrawell prediction limits, which compare the most recent compliance sample from a given well to historical data from the same well, are updated by testing for the appropriateness of consolidating new sampling observations with the screened background data. This process is described below and requires a minimum of four new data points. Historical data were evaluated for updating with newer data through May 2019 through the use of time series graphs to identify potential outliers when necessary, as well as with the Mann Whitney test for equality of medians. As discussed in the Statistical Analysis Plan (October 2018), intrawell prediction limits are used to evaluate calcium, chloride, sulfate, and TDS at all wells due to natural spatial variation for these parameters.

Interwell prediction limits, which compare the most recent sample from each downgradient well to statistical limits constructed from pooled upgradient well data, are updated during each sample event. Data from upgradient wells are periodically re-screened for newly developing trends, which may require adjustment of the background period to eliminate the trend, as well as for outliers over the entire record. Interwell prediction limits are used to evaluate boron, fluoride, and pH.

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are nondetects, a nonparametric test is utilized. While the false positive rate associated with the parametric limits is based on an annual 10% as recommended by the EPA Unified Guidance (2009), the false positive rate associated with the nonparametric limits is dependent upon the available background sample size, number of future comparisons, and verification resample plan. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and

performing any adjustments as discussed below (US EPA, 2009), data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% nondetects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for nondetects is the practical quantification limit (PQL) as reported by the laboratory.
- When data contain between 15-50% nondetects, the Kaplan-Meier nondetect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric prediction limits are used on data containing greater than 50% nondetects.

Prior to performing prediction limits, proposed background data through May 2019 were reviewed to identify any newly suspected outliers at all wells for calcium, chloride sulfate, and TDS, and at upgradient wells for boron, fluoride, and pH (Figure C). Both Tukey's Test and visual screening are used to identify potential outliers. When identified, values were flagged with "o" and excluded to reduce variation, better represent background conditions, and provide limits that are conservative from a regulatory perspective. Potential outliers that are identified by Tukey's test but are not greatly different from the rest of the data are not flagged. Also, outliers that are not identified as important by Tukey's test may be identified visually. As mentioned above, flagged data are displayed in a lighter font and as a disconnected symbol on the time series reports, as well as in a lighter font on the accompanying data pages. Summaries of both Tukey's test results and of flagged values follow this letter.

For constituents requiring intrawell prediction limits, the Mann-Whitney (Wilcoxon Rank Sum) test was used to compare the medians of historical data through February 2018 to the 3 new compliance samples at each well through May 2019 to evaluate whether the groups are statistically similar at the 99% confidence level, in which case background data may be updated with compliance data (Figure D). Statistically significant differences were found between the two groups for calcium in wells GN-GSA-GW-1, GN-GSA-GW-10, GN-GSA-GW-13; chloride in well GN-GSA-GW-11; sulfate in wells GN-GSA-GW-5 and GN-GSA-GW-8; and TDS in wells GN-GSA-GW-10 and GN-GSA-GW-5. When the test concludes that the medians of the two groups are significantly different, particularly in the downgradient wells, the background are not updated to include the newer data, but will be reconsidered in the future. A summary of these results follows this letter and the

test results are included with the Mann-Whitney test section at the end of this report. The cases listed above for which the Mann-Whitney Test identified a significant difference are shown in the Date Range Table which shows that the background period runs through September 2017 rather than May of 2019 as is the case with the other well/constituent pairs.

The Sen's Slope/Mann Kendall trend test was used to evaluate the entire record of data from upgradient wells for parameters utilizing interwell prediction limits (Figure E). When statistically significant increasing trends are identified in upgradient wells, the earlier portion of data is deselected prior to construction of interwell statistical limits if the trending data would result in statistical limits that are not conservative from a regulatory perspective. No statistically significant trends were noted in upgradient wells, and trend test results may be seen on the Trend Test Summary Table.

Evaluation of Appendix III Parameters

Interwell prediction limits combined with a 1-of-2 verification strategy were constructed for boron, fluoride and pH; and intrawell prediction limits combined with a 1-of-2 verification strategy were constructed for calcium, chloride, sulfate and TDS (Figures F & G, respectively). In the event of an initial exceedance of compliance well data, the 1-of-2 resample plan allows for collection of one additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified, and further research would be required to identify the cause of the exceedance (i.e. impact from the site, natural variation, or an off-site source). If the resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, no further action is necessary. The results of those findings may be found in the Prediction Limit Summary tables following this letter.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for Gaston Gypsum Pond. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,

Andrew T. Collins
Groundwater Analyst

Kristina L. Rayner
Groundwater Statistician

Date Ranges

Date: 9/24/2019 11:39 AM

Plant Gaston Client: Southern Company Data: Gaston GSA

Calcium (mg/L)
- GN-GSA-MW-1 background:3/23/2016-9/7/2017
- GN-GSA-MW-10 background:3/23/2016-9/7/2017
- GN-GSA-MW-13 background:3/23/2016-9/7/2017

Chloride (mg/L)
- GN-GSA-MW-11 background:3/23/2016-9/7/2017

Sulfate (mg/L)
- GN-GSA-MW-5 background:3/23/2016-9/7/2017
- GN-GSA-MW-8 background:3/23/2016-9/7/2017

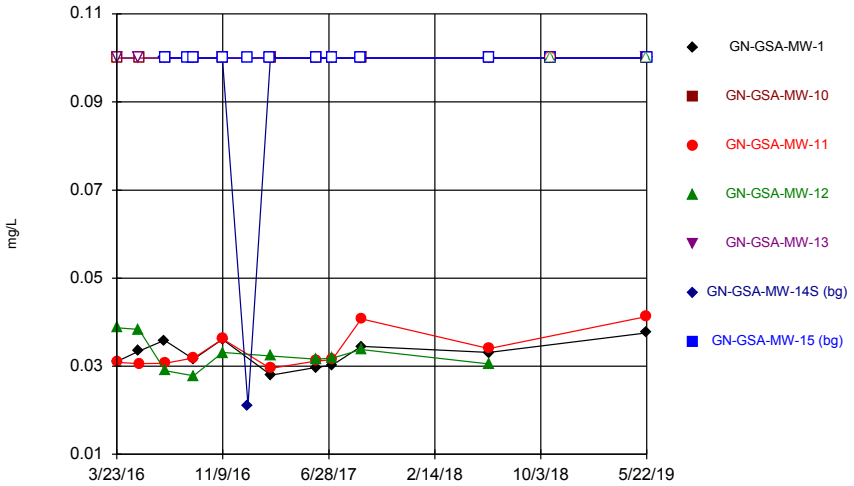
TDS (mg/L)
- GN-GSA-MW-10 background:3/23/2016-9/7/2017
- GN-GSA-MW-5 background:3/23/2016-9/7/2017

Figures

FIGURE A.

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

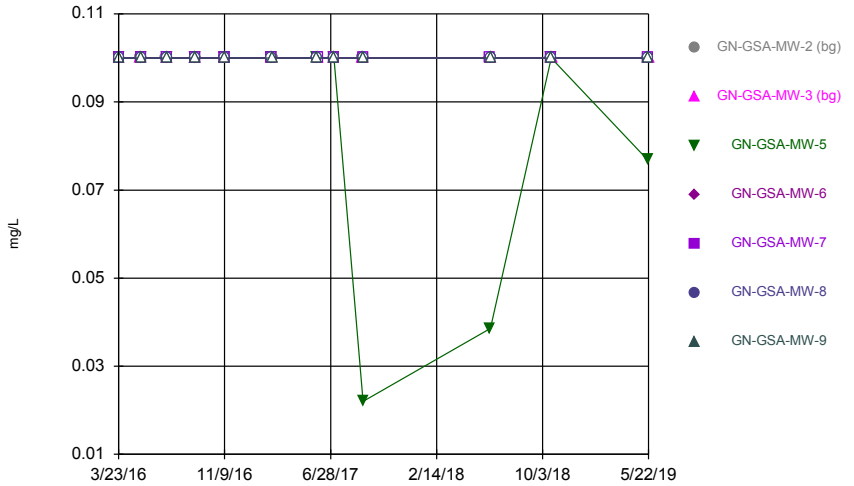
Time Series



Constituent: Boron Analysis Run 9/25/2019 4:03 PM
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

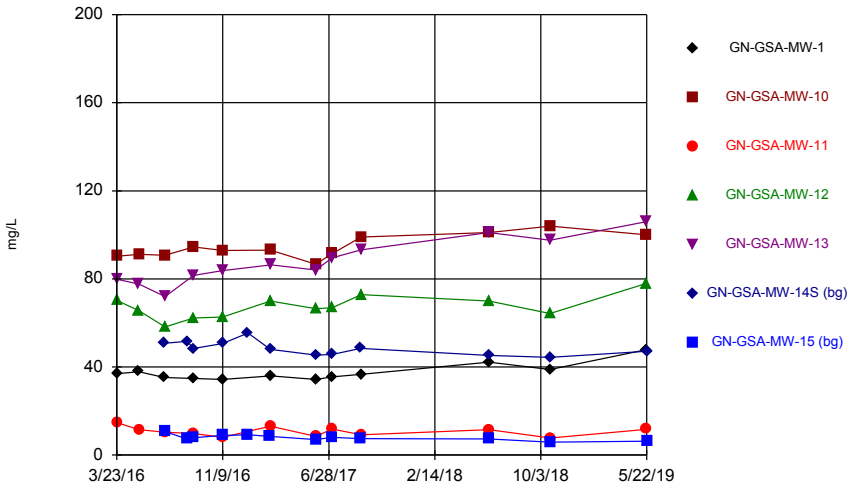
Time Series



Constituent: Boron Analysis Run 9/25/2019 4:03 PM
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Time Series



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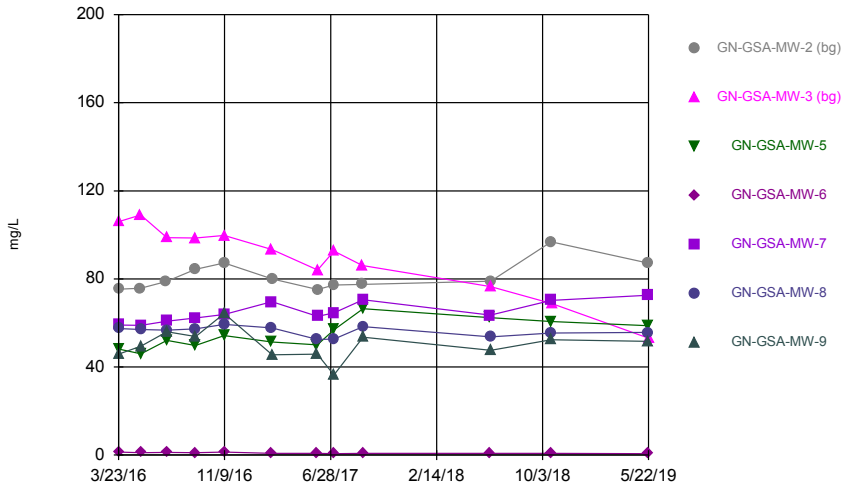
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

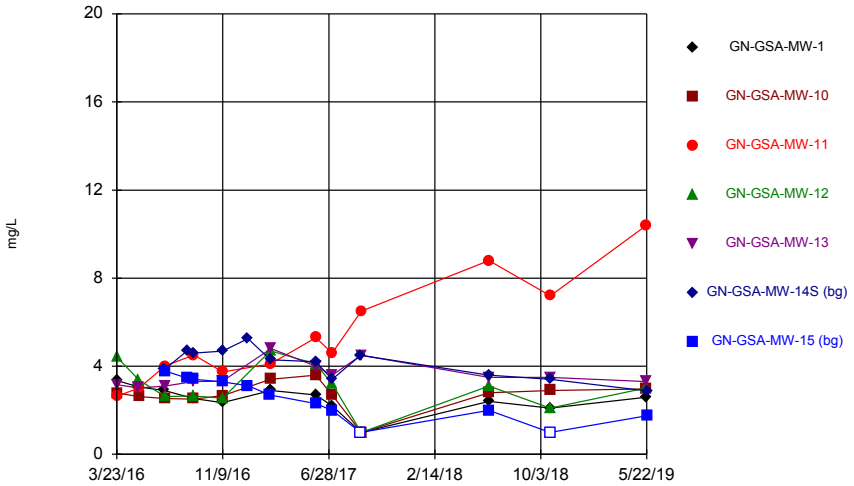
Time Series



Constituent: Calcium Analysis Run 9/25/2019 4:03 PM
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

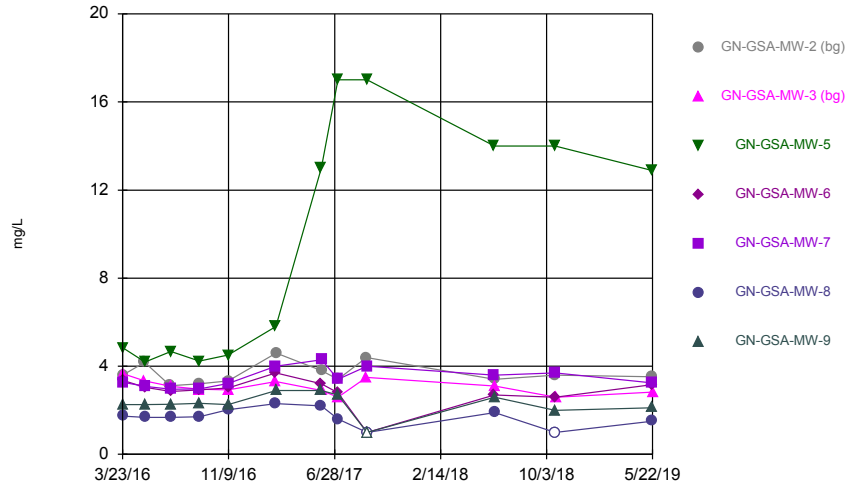
Time Series



Constituent: Chloride Analysis Run 9/25/2019 4:03 PM
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

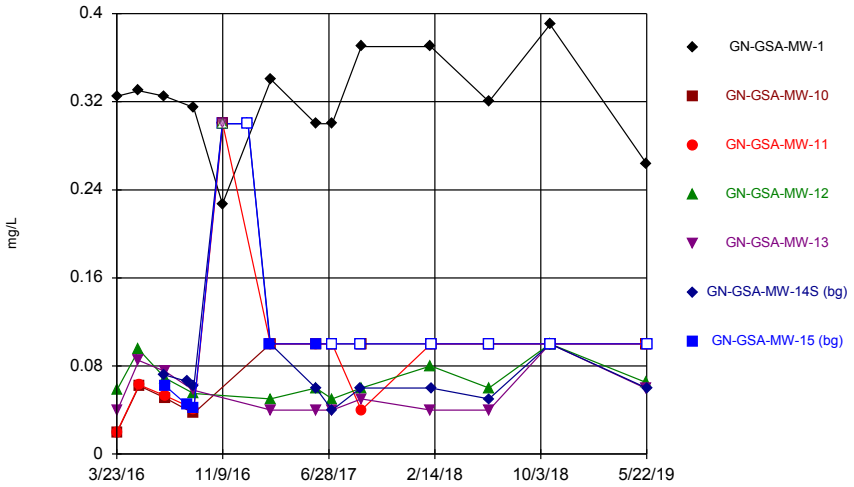
Time Series



Constituent: Chloride Analysis Run 9/25/2019 4:03 PM
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

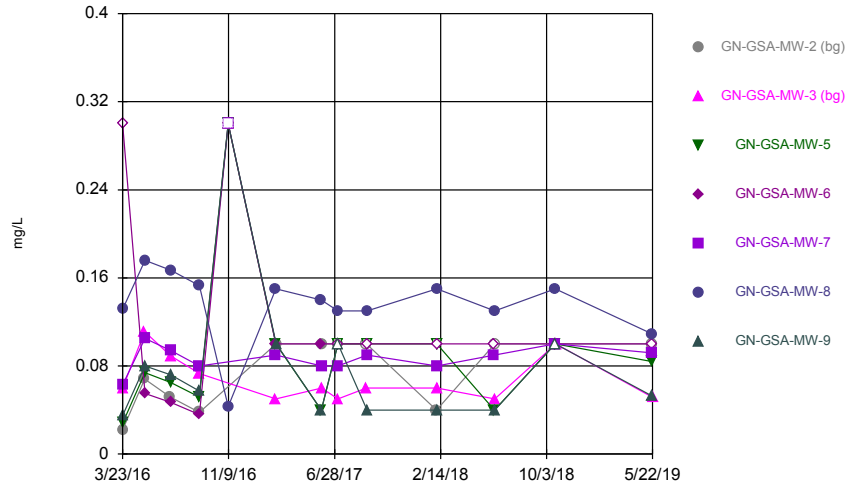
Time Series



Constituent: Fluoride Analysis Run 9/25/2019 4:03 PM
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

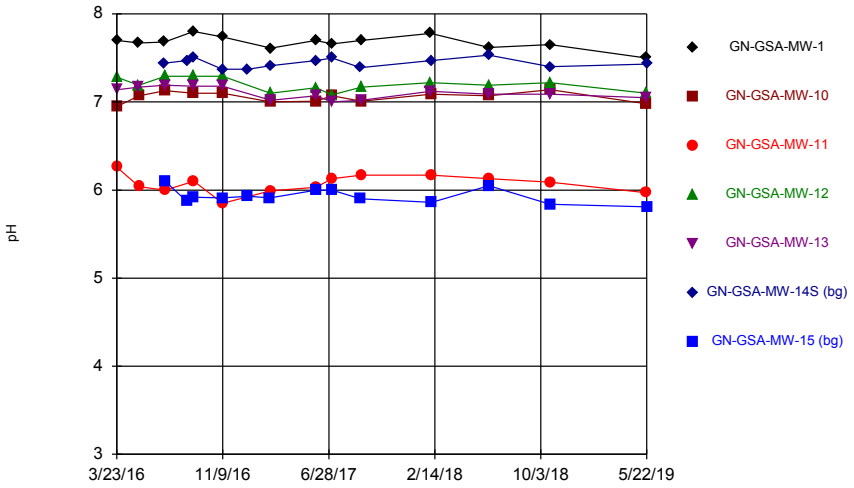
Time Series



Constituent: Fluoride Analysis Run 9/25/2019 4:03 PM
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Time Series

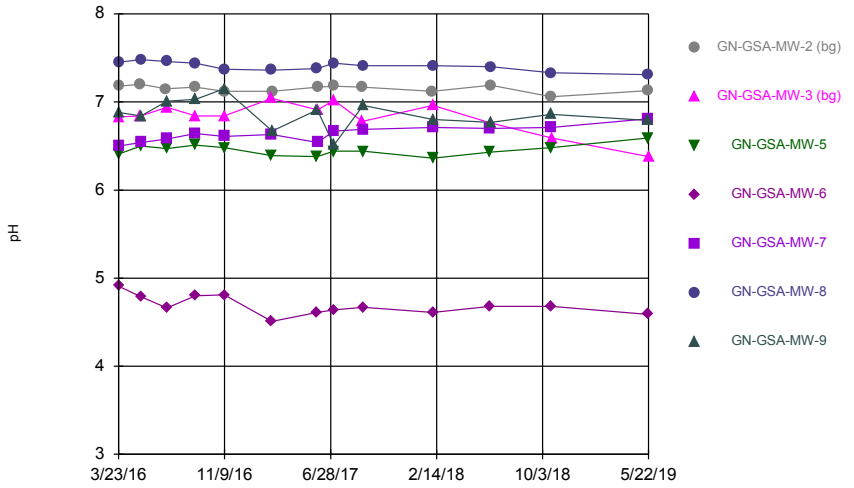


Constituent: pH Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Time Series

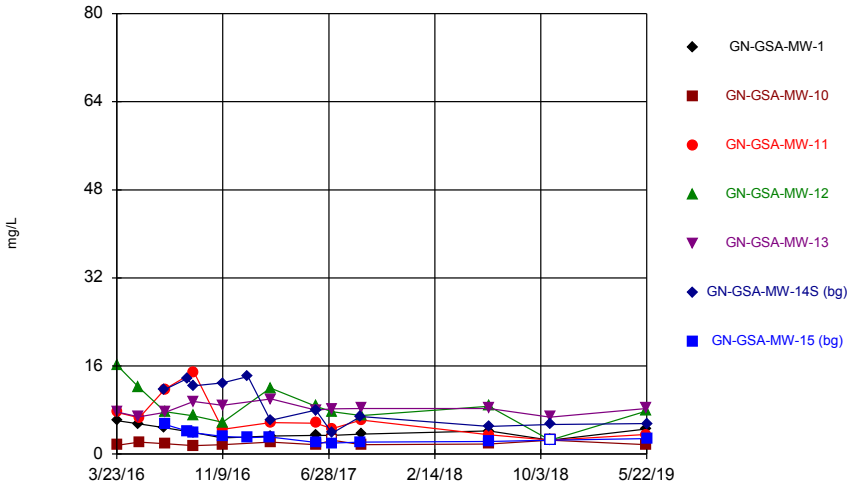


Constituent: pH Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Time Series

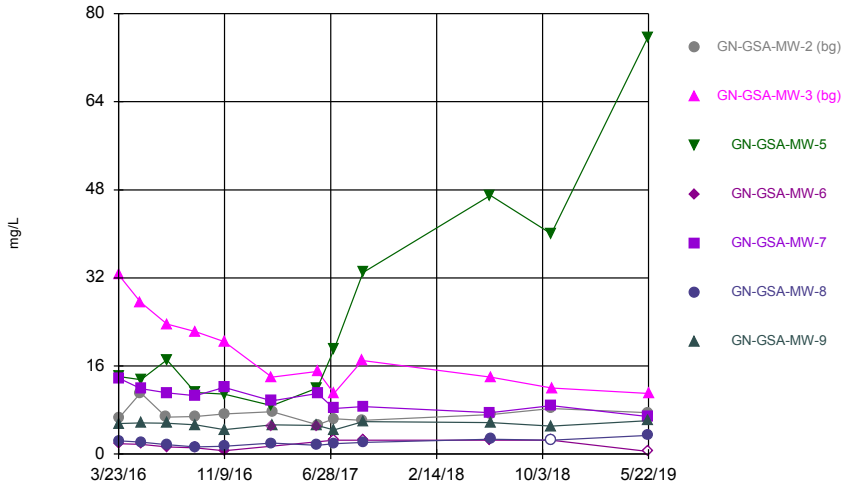


Constituent: Sulfate Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

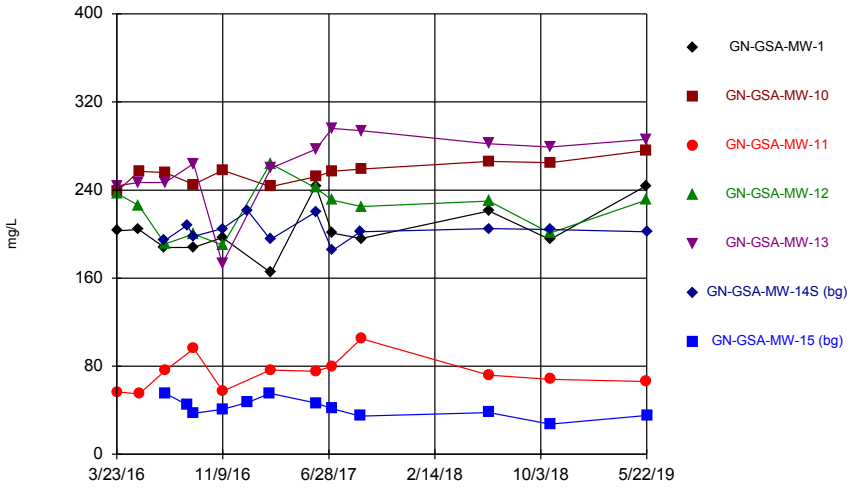
Time Series



Constituent: Sulfate Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Time Series



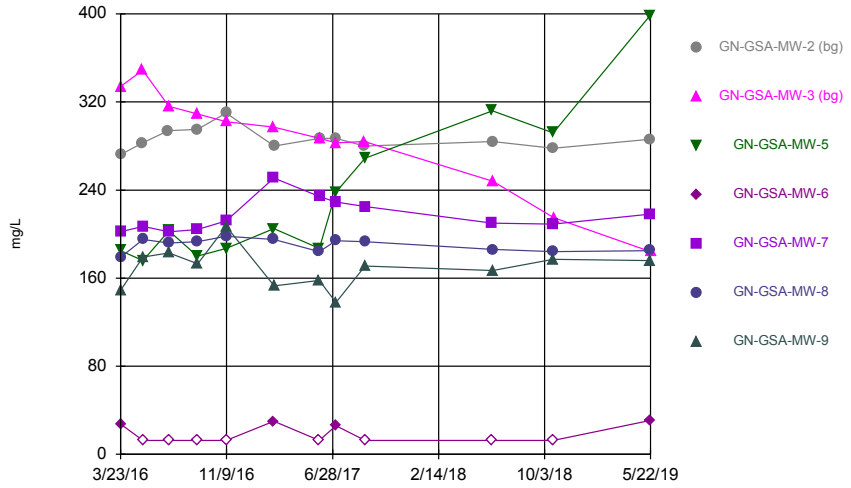
Constituent: TDS Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Time Series



Constituent: TDS Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Time Series

Constituent: Boron (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1	GN-GSA-MW-10	GN-GSA-MW-11	GN-GSA-MW-12	GN-GSA-MW-13	GN-GSA-MW-14S	GN-GSA-MW-15 ...
3/23/2016			0.0309 (J)	0.0387 (J)			
3/24/2016	0.0311 (J)	<0.1			<0.1		
5/10/2016	0.0334 (J)			0.0384 (J)	<0.1		
5/11/2016		<0.1	0.0306 (J)				
7/5/2016	0.0359 (J)					<0.1	
7/6/2016		<0.1	0.0307 (J)	0.029 (J)	<0.1		<0.1
8/23/2016						<0.1	<0.1
9/6/2016	0.0316 (J)	<0.1		0.0278 (J)	<0.1		
9/7/2016			0.0319 (J)			<0.1	<0.1
11/8/2016	0.0361 (J)				<0.1	<0.1	<0.1
11/9/2016		<0.1	0.0362 (J)	0.0331 (J)			
1/3/2017						0.0211 (J)	<0.1
2/20/2017							<0.1
2/21/2017		<0.1	0.0295 (J)	0.0323 (J)		<0.1	
2/22/2017	0.028 (J)				<0.1		
5/31/2017	0.0297 (J)	<0.1	0.0312 (J)	0.0316 (J)	<0.1	<0.1	<0.1
7/5/2017	0.0302 (J)	<0.1	0.0315 (J)	0.0318 (J)	<0.1	<0.1	<0.1
9/5/2017						<0.1	<0.1
9/7/2017	0.0345 (J)	<0.1	0.0408 (J)	0.0338 (J)	<0.1		
6/12/2018	0.0331 (J)	<0.1	0.034 (J)	0.0305 (J)	<0.1	<0.1	<0.1
10/23/2018	<0.1 (J,o)			<0.1 (J,o)	<0.1	<0.1	<0.1
10/24/2018		<0.1	<0.1 (J,o)				
5/21/2019	0.0376 (J)	<0.1	0.0413 (J)	<0.1 (o)	<0.1		
5/22/2019						<0.1	<0.1

Time Series

Constituent: Boron (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2 (bg)	GN-GSA-MW-3 (bg)	GN-GSA-MW-5	GN-GSA-MW-6	GN-GSA-MW-7	GN-GSA-MW-8	GN-GSA-MW-9
3/23/2016	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
3/24/2016						<0.1	
5/10/2016	<0.1	<0.1					
5/11/2016			<0.1	<0.1	<0.1	<0.1	<0.1
7/5/2016	<0.1						
7/6/2016		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
9/6/2016	<0.1		<0.1	<0.1	<0.1	<0.1	
9/7/2016		<0.1					<0.1
11/8/2016	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2/20/2017		<0.1	<0.1	<0.1	<0.1	<0.1	
2/21/2017	<0.1						<0.1
5/30/2017			<0.1	<0.1		<0.1	<0.1
5/31/2017	<0.1	<0.1			<0.1		
7/5/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
9/5/2017	<0.1	<0.1					
9/7/2017			0.022 (J)	<0.1	<0.1	<0.1	<0.1
6/11/2018			0.0386 (J)	<0.1	<0.1		
6/12/2018	<0.1	<0.1				<0.1	<0.1
10/22/2018	<0.1		<0.1 (J)	<0.1	<0.1	<0.1	<0.1
10/23/2018		<0.1					
5/20/2019	<0.1		0.0769 (J)	<0.1	<0.1		
5/21/2019						<0.1	<0.1
5/22/2019		<0.1					

Time Series

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1	GN-GSA-MW-10	GN-GSA-MW-11	GN-GSA-MW-12	GN-GSA-MW-13	GN-GSA-MW-14S	GN-GSA-MW-15 ...
3/23/2016			14.8	70.2			
3/24/2016	36.9	90.3			79.9		
5/10/2016	37.9			65.6	77.6		
5/11/2016		91.1	11.5				
7/5/2016	35.3					50.8	
7/6/2016		90.7	10.4	58.2	72		10.7
8/23/2016						51.7	7.34
9/6/2016	34.8	94.5		62.3	81.6		
9/7/2016			9.73			48.4	7.86
11/8/2016	34.3				83.8	50.7	8.94
11/9/2016		92.9	8.07	62.7			
1/3/2017						55.4	9.21
2/20/2017							8.53
2/21/2017		93.1	13.2	69.9		48	
2/22/2017	35.9				86.4		
5/31/2017	34.3	86.6	8.56	66.5	84.1	45.4	7.02
7/5/2017	35.5	91.5	11.9	66.9	89.5	45.7	8.08
9/5/2017						48.5	7.44
9/7/2017	36.7	99	9.2	72.9	93.2		
6/12/2018	42.2	101	11.5	69.9	101	45.2	7.37
10/23/2018	38.9			64.3	97.6	44.4	5.94
10/24/2018		104	7.73				
5/21/2019	47.8	100	11.7	77.9	106		
5/22/2019						47.1	6.34

Time Series

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2 (bg)	GN-GSA-MW-3 (bg)	GN-GSA-MW-5	GN-GSA-MW-6	GN-GSA-MW-7	GN-GSA-MW-8	GN-GSA-MW-9
3/23/2016	75.3	106	48.1	1.32	59.1		45.9
3/24/2016						57.4	
5/10/2016	75.7	109					
5/11/2016			46	1.13	58.9	57	49.4
7/5/2016	78.8						
7/6/2016		98.7	52.1	1.18	60.8	56.7	56
9/6/2016	84.3		49.7	1.09	62.2	57.3	
9/7/2016		98.6					53.8
11/8/2016	87.2	99.7	54.3	1.32	63.9	59.4	64.3
2/20/2017		93.4	51.3	0.829	69.6	57.7	
2/21/2017	80						45.6
5/30/2017			50	0.743		52.5	45.8
5/31/2017	75.2	84.1			63		
7/5/2017	77.2	92.6	56.9	0.68	64.6	52.7	36.4
9/5/2017	77.5	86.1					
9/7/2017			66.5	0.825	70.5	58.4	53.5
6/11/2018			62.4	0.722	63.5		
6/12/2018	78.9	76.5				53.7	47.6
10/22/2018	96.9		60.6	0.79	70.3	55.4	52.4
10/23/2018		68.8					
5/20/2019	87.3		58.8	0.665	72.5		
5/21/2019						55.7	51.6
5/22/2019		53.1					

Time Series

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1	GN-GSA-MW-10	GN-GSA-MW-11	GN-GSA-MW-12	GN-GSA-MW-13	GN-GSA-MW-14S	GN-GSA-MW-15 ...
3/23/2016			2.64	4.43			
3/24/2016	3.35	2.78			3.16		
5/10/2016	3.06			3.38	3.02		
5/11/2016		2.62	3.02				
7/5/2016	2.9					3.86	
7/6/2016		2.53	4.01	2.62	3.1		3.78
8/23/2016						4.69	3.47
9/6/2016	2.54	2.51		2.65	3.31		
9/7/2016			4.51			4.6	3.4
11/8/2016	2.34				3.32	4.68	3.29
11/9/2016		2.67	3.74	2.55			
1/3/2017						5.25	3.11
2/20/2017							2.7
2/21/2017		3.4	4.1	4.7		4.3	
2/22/2017	2.9				4.8		
5/31/2017	2.7	3.6	5.3	4.1	4	4.2	2.3
7/5/2017	2.2	2.7	4.6	3.2	3.6	3.4	2
9/5/2017						4.5	<2 (U*)
9/7/2017	<2 (U*)	<2 (U*)	6.5	<2 (U*)	4.5		
6/12/2018	2.4	2.8	8.8	3.1	3.5	3.6	2
10/23/2018	2.1			2.1	3.5	3.4	<2 (J)
10/24/2018		2.9	7.2				
5/21/2019	2.6	2.97	10.4	3.02	3.3		
5/22/2019						2.89	1.75

Time Series

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2 (bg)	GN-GSA-MW-3 (bg)	GN-GSA-MW-5	GN-GSA-MW-6	GN-GSA-MW-7	GN-GSA-MW-8	GN-GSA-MW-9
3/23/2016	3.6	3.67	4.84	3.36	3.28		2.26
3/24/2016						1.73	
5/10/2016	4.18	3.34					
5/11/2016			4.19	3.04	3.08	1.68	2.26
7/5/2016	3.12						
7/6/2016		3.08	4.67	2.86	2.96	1.68	2.28
9/6/2016	3.21		4.23	2.92	2.97	1.7	
9/7/2016		2.95					2.32
11/8/2016	3.33	2.92	4.51	3.01	3.22	2.03	2.26
2/20/2017		3.3	5.8	3.7	4	2.3	
2/21/2017	4.6						2.9
5/30/2017			13	3.2		2.2	2.9
5/31/2017	3.8	2.9			4.3		
7/5/2017	3.4	2.6	17	2.8	3.4	1.6 (J)	2.7
9/5/2017	4.4	3.5					
9/7/2017			17	<2 (U*)	4	<2 (U*)	<2 (U*)
6/11/2018			14	2.7	3.6		
6/12/2018	3.4	3.1				1.9 (J)	2.6
10/22/2018	3.6		14	2.6	3.7	<2	2
10/23/2018		2.6					
5/20/2019	3.53		12.9	3.16	3.25		
5/21/2019						1.51	2.12
5/22/2019		2.83					

Time Series

Constituent: Fluoride (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1	GN-GSA-MW-10	GN-GSA-MW-11	GN-GSA-MW-12	GN-GSA-MW-13	GN-GSA-MW-14S...	GN-GSA-MW-15 ...
3/23/2016			0.02 (J)	0.058 (J)			
3/24/2016	0.325	0.02 (J)			0.039 (J)		
5/10/2016	0.33			0.095 (J)	0.085 (J)		
5/11/2016		0.062 (J)	0.063 (J)				
7/5/2016	0.325					0.072 (J)	
7/6/2016		0.051 (J)	0.053 (J)	0.069 (J)	0.075 (J)		0.062 (J)
8/23/2016						0.066 (J)	0.045 (J)
9/6/2016	0.315	0.037 (J)		0.055 (J)	0.058 (J)		
9/7/2016			0.041 (J)			0.062 (J)	0.042 (J)
11/8/2016	0.227 (J)				0.3 (U,o)	<0.3	<0.3
11/9/2016		0.3 (U,o)	<0.3	<0.3 (o)			
1/3/2017						<0.3	<0.3
2/20/2017							0.1
2/21/2017		0.1	0.1	0.05 (J)		0.1	
2/22/2017	0.34				0.04 (J)		
5/31/2017	0.3	0.1	0.1	0.06 (J)	0.04 (J)	0.06 (J)	0.1
7/5/2017	0.3	<0.1	<0.1	0.05 (J)	0.04 (J)	0.04 (J)	<0.1
9/5/2017						0.06 (J)	<0.1
9/7/2017	0.37	<0.1	0.04 (J)	0.06 (J)	0.05 (J)		
2/5/2018	0.37			0.08 (J)	0.04 (J)		
2/6/2018		<0.1	<0.1			0.06 (J)	
2/7/2018							<0.1
6/12/2018	0.32	<0.1	<0.1	0.06 (J)	0.04 (J)	0.05 (J)	<0.1
10/23/2018	0.39			<0.1 (J)	<0.1 (J)	<0.1 (J)	<0.1
10/24/2018		<0.1	<0.1				
5/21/2019	0.264	<0.1	<0.1	0.0649 (J)	0.0595 (J)		
5/22/2019						0.0601 (J)	<0.1

Time Series

Constituent: Fluoride (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2 (bg)	GN-GSA-MW-3 (bg)	GN-GSA-MW-5	GN-GSA-MW-6	GN-GSA-MW-7	GN-GSA-MW-8	GN-GSA-MW-9
3/23/2016	0.022 (J)	0.06 (J)	0.028 (J)	<0.3	0.063 (J)		0.035 (J)
3/24/2016						0.132 (J)	
5/10/2016	0.068 (J)	0.111 (J)					
5/11/2016			0.074 (J)	0.055 (J)	0.105 (J)	0.176 (J)	0.08 (J)
7/5/2016	0.052 (J)						
7/6/2016		0.089 (J)	0.065 (J)	0.047 (J)	0.094 (J)	0.167 (J)	0.072 (J)
9/6/2016	0.038 (J)		0.052 (J)	0.036 (J)	0.08 (J)	0.153 (J)	
9/7/2016		0.073 (J)					0.057 (J)
11/8/2016	<0.3 (o)	<0.3 (o)	<0.3	<0.3	<0.3 (o)	0.043 (J)	<0.3
2/20/2017		0.05 (J)	0.1	0.1	0.09 (J)	0.15	
2/21/2017	0.1						0.1
5/30/2017			0.04 (J)	0.1		0.14	0.04 (J)
5/31/2017	0.1	0.06 (J)			0.08 (J)		
7/5/2017	<0.1	0.05 (J)	<0.1	<0.1	0.08 (J)	0.13	<0.1
9/5/2017	<0.1	0.06 (J)					
9/7/2017			<0.1	<0.1	0.09 (J)	0.13	0.04 (J)
2/5/2018	0.04 (J)						
2/6/2018		0.06 (J)	<0.1	<0.1	0.08 (J)	0.15	0.04 (J)
6/11/2018			0.04 (J)	<0.1	0.09 (J)		
6/12/2018	<0.1	0.05 (J)				0.13	0.04 (J)
10/22/2018	<0.1		<0.1 (J)	<0.1	0.1	0.15	<0.1 (J)
10/23/2018		<0.1 (J)					
5/20/2019	<0.1		0.0842 (J)	<0.1	0.0919 (J)		
5/21/2019						0.109	0.0526 (J)
5/22/2019		0.0515 (J)					

Time Series

Constituent: pH (pH) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1	GN-GSA-MW-10	GN-GSA-MW-11	GN-GSA-MW-12	GN-GSA-MW-13	GN-GSA-MW-14S...	GN-GSA-MW-15 ...
3/23/2016			6.26	7.28			
3/24/2016	7.7	6.95			7.14		
5/10/2016	7.67			7.19	7.17		
5/11/2016		7.07	6.04				
7/5/2016	7.68					7.44	
7/6/2016		7.13	6	7.29	7.19		6.1
8/23/2016						7.47	5.87
9/6/2016	7.8	7.1		7.29	7.18		
9/7/2016			6.1			7.51	5.92
11/8/2016	7.74				7.18	7.37	5.91
11/9/2016		7.1	5.85	7.29			
1/3/2017						7.37	5.93
2/20/2017							5.91
2/21/2017		7	5.99	7.1		7.41	
2/22/2017	7.61				7.02		
5/31/2017	7.7	7.01	6.03	7.16	7.07	7.47	6
7/5/2017	7.66	7.07	6.13	7.08	7	7.5	6
9/5/2017						7.39	5.9
9/7/2017	7.7	7.01	6.17	7.17	7.02		
2/5/2018	7.78			7.22	7.12		
2/6/2018		7.09	6.17			7.47	
2/7/2018							5.86
6/12/2018	7.62	7.07	6.13	7.19	7.09	7.53	6.05
10/23/2018	7.65			7.22	7.09	7.4	5.84
10/24/2018		7.14	6.09				
5/21/2019	7.5	6.98	5.97	7.1	7.05		
5/22/2019						7.43	5.81

Time Series

Constituent: pH (pH) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2 (bg)	GN-GSA-MW-3 (bg)	GN-GSA-MW-5	GN-GSA-MW-6	GN-GSA-MW-7	GN-GSA-MW-8	GN-GSA-MW-9
3/23/2016	7.18	6.83	6.41	4.91	6.5		6.88
3/24/2016						7.45	
5/10/2016	7.2	6.84					
5/11/2016			6.5	4.79	6.54	7.48	6.84
7/5/2016	7.15						
7/6/2016		6.94	6.47	4.66	6.58	7.46	7.01
9/6/2016	7.17		6.51	4.8	6.64	7.44	
9/7/2016		6.84					7.03
11/8/2016	7.12	6.84	6.48	4.81	6.61	7.37	7.15
2/20/2017		7.04	6.39	4.51	6.63	7.36	
2/21/2017	7.12						6.67
5/30/2017			6.38	4.61		7.38	6.91
5/31/2017	7.17	6.91			6.54		
7/5/2017	7.18	7.02	6.44	4.64	6.67	7.44	6.51
9/5/2017	7.17	6.78					
9/7/2017			6.44	4.67	6.69	7.41	6.96
2/5/2018	7.12						
2/6/2018		6.96	6.36	4.61	6.71	7.41	6.8
6/11/2018			6.43	4.68	6.7		
6/12/2018	7.19	6.76				7.4	6.77
10/22/2018	7.06		6.48	4.68	6.71	7.33	6.86
10/23/2018		6.59					
5/20/2019	7.13		6.59	4.59	6.81		
5/21/2019						7.31	6.79
5/22/2019		6.38					

Time Series

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1	GN-GSA-MW-10	GN-GSA-MW-11	GN-GSA-MW-12	GN-GSA-MW-13	GN-GSA-MW-14S	GN-GSA-MW-15 ...
3/23/2016			7.59	16.2			
3/24/2016	6.06	1.62			7.64		
5/10/2016	5.47			12.1	6.79		
5/11/2016		2.15	6.6				
7/5/2016	4.8					11.7	
7/6/2016		1.89	11.8	7.7	7.59		5.38
8/23/2016						13.7	4.23
9/6/2016	3.91	1.53		6.97	9.56		
9/7/2016			14.9			12.4	3.84
11/8/2016	2.95				8.87	12.9	3.23
11/9/2016		1.69	4.5	5.77			
1/3/2017						14.1	3
2/20/2017							3.1 (J)
2/21/2017		2.2 (J)	5.7	12		6.1	
2/22/2017	3.3 (J)				10		
5/31/2017	3.4 (J)	1.7 (J)	5.6	8.7	8	8	2.1 (J)
7/5/2017	3.4 (J)	<5	4.6 (J)	7.7	8.2	3.8 (J)	2 (J)
9/5/2017						6.8	2.2 (J)
9/7/2017	3.6 (J)	1.7 (J)	6.2	7	8.3		
6/12/2018	4.2 (J)	1.8 (J)	3.5 (J)	8.7	8.3	5	2.3 (J)
10/23/2018	<5 (J)			<5 (J)	6.7	5.4	<5
10/24/2018		<5	<5 (J)				
5/21/2019	4.58	1.7	3.55	7.81	8.29		
5/22/2019						5.57	2.82

Time Series

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2 (bg)	GN-GSA-MW-3 (bg)	GN-GSA-MW-5	GN-GSA-MW-6	GN-GSA-MW-7	GN-GSA-MW-8	GN-GSA-MW-9
3/23/2016	6.48	32.6	14.1	1.89	13.8		5.54
3/24/2016						2.42	
5/10/2016	11.1	27.6					
5/11/2016			13.5	1.79	11.9	2.16	5.66
7/5/2016	6.7						
7/6/2016		23.6	17.1	1.3	11.1	1.7	5.62
9/6/2016	6.85		11.2	1.14	10.6	1.31	
9/7/2016		22.2					5.31
11/8/2016	7.3	20.4	10.9	0.622 (J)	12.1	1.4	4.42
2/20/2017		14	8.8	5 (o)	9.7	2 (J)	
2/21/2017	7.7						5.3
5/30/2017			12	5 (o)		1.6 (J)	5.2
5/31/2017	5.3	15			11		
7/5/2017	6.4	11	19	<5	8.3	1.9 (J)	4.4 (J)
9/5/2017	6.1	17					
9/7/2017			33	<5	8.6	2.1 (J)	5.9
6/11/2018			47	<5	7.5		
6/12/2018	7.2	14				2.7 (J)	5.7
10/22/2018	8.3		40	<5	8.8	<5 (J)	5.1
10/23/2018		12					
5/20/2019	7.52		75.6	<1	6.85		
5/21/2019						3.39	6.07
5/22/2019		11					

Time Series

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1	GN-GSA-MW-10	GN-GSA-MW-11	GN-GSA-MW-12	GN-GSA-MW-13	GN-GSA-MW-14S	GN-GSA-MW-15 ...
3/23/2016			56.7	237			
3/24/2016	203	239			244		
5/10/2016	204			226	247		
5/11/2016		257	54.7				
7/5/2016	188					194	
7/6/2016		256	76	191	247		55.3
8/23/2016						208	45.3
9/6/2016	188	245		200	264		
9/7/2016			96			198	37.3
11/8/2016	197				173	205	40.7
11/9/2016		258	57.3	190			
1/3/2017						221	47.3
2/20/2017							55.3
2/21/2017		243	76.7	264		195	
2/22/2017	165				260		
5/31/2017	244	252	75.3	242	277	220	46.7
7/5/2017	201	257	80	231	296	185	41.3
9/5/2017						202	34.7
9/7/2017	196	259	105	225	294		
6/12/2018	221	266	72	230	282	205	38
10/23/2018	195			201	279	204	27.3
10/24/2018		265	68				
5/21/2019	244	276	66	231	286		
5/22/2019						202	35.3

Time Series

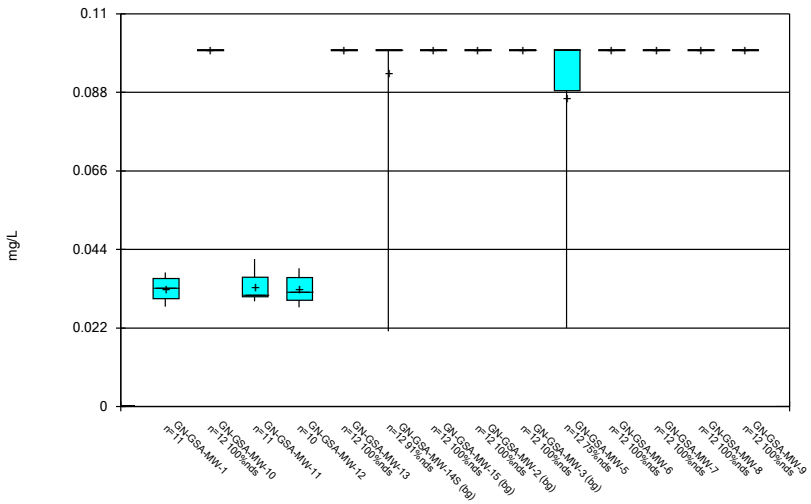
Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2 (bg)	GN-GSA-MW-3 (bg)	GN-GSA-MW-5	GN-GSA-MW-6	GN-GSA-MW-7	GN-GSA-MW-8	GN-GSA-MW-9
3/23/2016	272	334	185	27.3	202		149
3/24/2016						179	
5/10/2016	283	349					
5/11/2016			176	<25	207	195	179
7/5/2016	294						
7/6/2016		316	203	<25	202	192	183
9/6/2016	295		180	<25	204	193	
9/7/2016		309					173
11/8/2016	310	302	187	<25	212	198	207
2/20/2017		297	205	30	251	195	
2/21/2017	280						153
5/30/2017			187	<25		184	158
5/31/2017	287	287			234		
7/5/2017	287	283	238	26	229	194	138
9/5/2017	280	284					
9/7/2017			269	<25	225	193	171
6/11/2018			312	<25	210		
6/12/2018	284	248				186	167
10/22/2018	278		292	<25	209	184	177
10/23/2018		215					
5/20/2019	286		398	30.7	218		
5/21/2019						185	176
5/22/2019		184					

FIGURE B.

Box & Whiskers Plot



Constituent: Boron Analysis Run 9/25/2019 4:02 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

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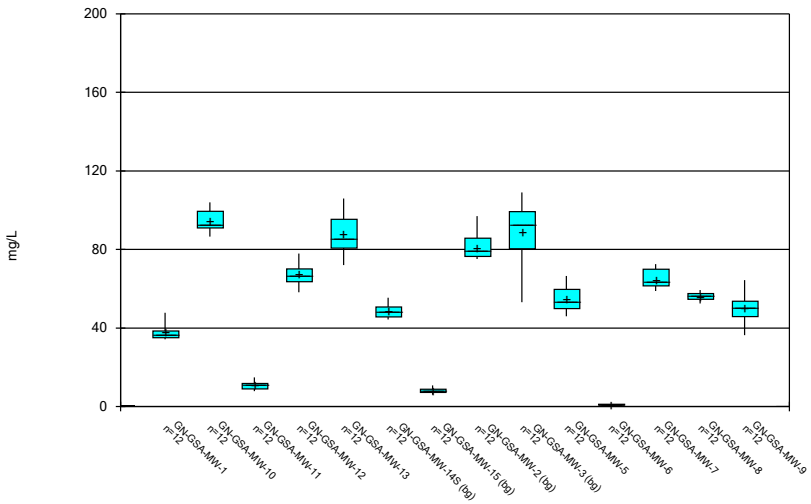
Box & Whiskers Plot

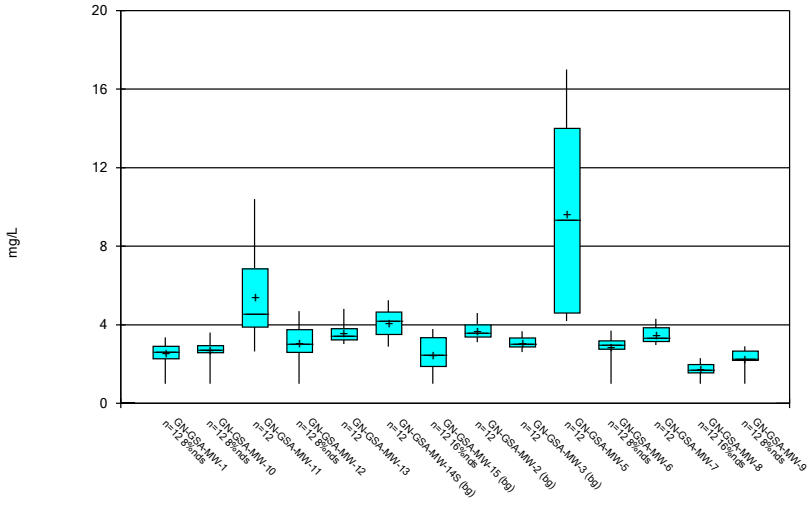


Constituent: Calcium Analysis Run 9/25/2019 4:02 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Box & Whiskers Plot

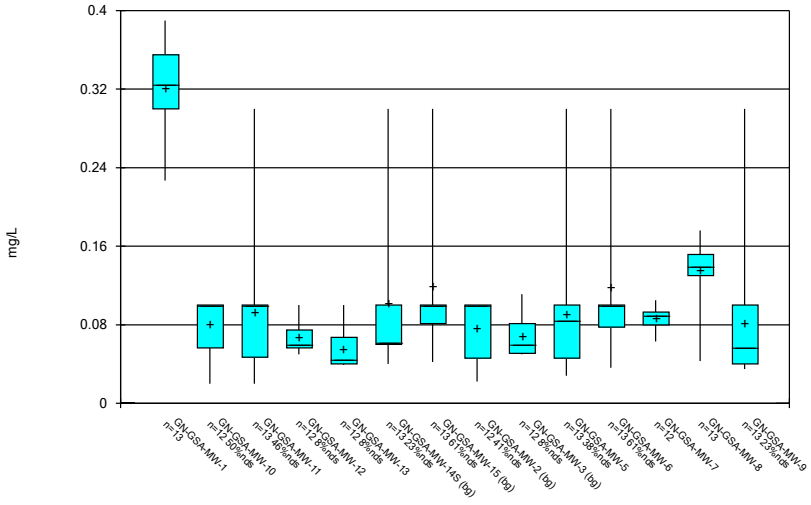


Constituent: Chloride Analysis Run 9/25/2019 4:02 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

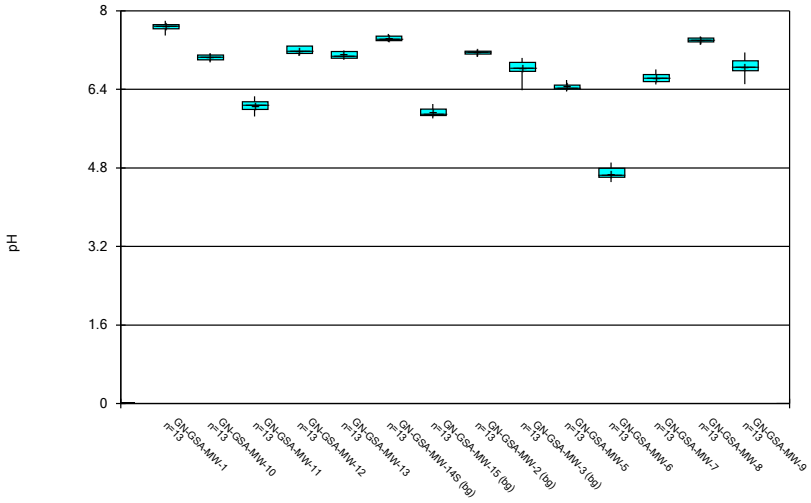
Box & Whiskers Plot



Constituent: Fluoride Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Box & Whiskers Plot

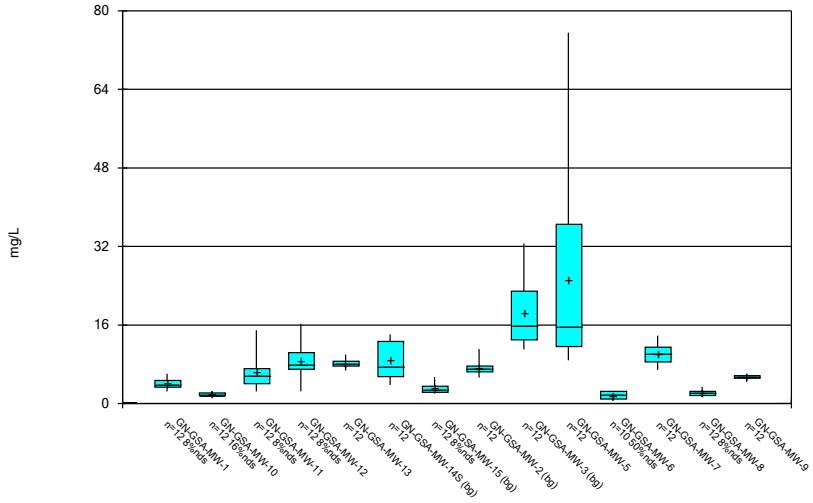


Constituent: pH Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Box & Whiskers Plot

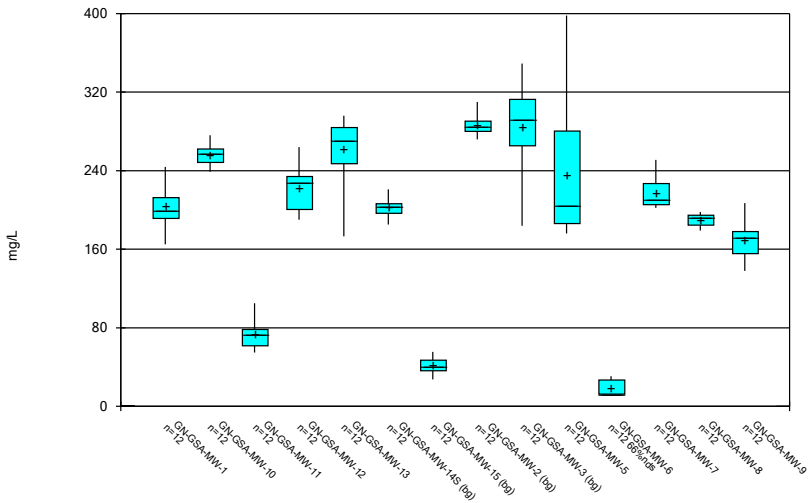


Constituent: Sulfate Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: TDS Analysis Run 9/25/2019 4:03 PM

Plant Gaston Client: Southern Company Data: Gaston GSA

FIGURE C.

Outlier Summary

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 4:02 PM

	GN-GSA-MW-2 Fluoride (mg/L)	GN-GSA-MW-3 Fluoride (mg/L)	GN-GSA-MW-6 Sulfate (mg/L)
11/8/2016	<0.3 (o)	<0.3 (o)	
2/20/2017			5 (o)
5/30/2017			5 (o)

Outlier Analysis - All Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 3:55 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Calcium (mg/L)	GN-GSA-MW-1	No	n/a	n/a	NP	NaN	12	37.54	3.936	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-10	No	n/a	n/a	NP	NaN	12	94.56	5.244	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-11	No	n/a	n/a	NP	NaN	12	10.69	2.14	x^(1/3)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-12	No	n/a	n/a	NP	NaN	12	67.28	5.286	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-13	No	n/a	n/a	NP	NaN	12	87.73	10.09	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-14S (bg)	No	n/a	n/a	NP	NaN	12	48.44	3.238	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-15 (bg)	No	n/a	n/a	NP	NaN	12	7.898	1.312	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-2 (bg)	No	n/a	n/a	NP	NaN	12	81.19	6.554	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-3 (bg)	No	n/a	n/a	NP	NaN	12	88.88	16.26	x^4	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-5	No	n/a	n/a	NP	NaN	12	54.73	6.323	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-6	No	n/a	n/a	NP	NaN	12	0.9412	0.2491	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-7	No	n/a	n/a	NP	NaN	12	64.91	4.678	ln(x)	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-8	No	n/a	n/a	NP	NaN	12	56.16	2.214	x^6	ShapiroWilk
Calcium (mg/L)	GN-GSA-MW-9	No	n/a	n/a	NP	NaN	12	50.19	6.875	normal	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-1	No	n/a	n/a	NP	NaN	12	2.508	0.5987	x^3	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-10	No	n/a	n/a	NP	NaN	12	2.707	0.6318	x^3	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-11	No	n/a	n/a	NP	NaN	12	5.402	2.376	ln(x)	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-12	No	n/a	n/a	NP	NaN	12	3.071	1.025	normal	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-13	No	n/a	n/a	NP	NaN	12	3.593	0.561	ln(x)	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-14S (bg)	No	n/a	n/a	NP	NaN	12	4.114	0.6886	x^2	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-15 (bg)	No	n/a	n/a	NP	NaN	12	2.483	0.9546	x^2	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-2 (bg)	No	n/a	n/a	NP	NaN	12	3.681	0.4747	ln(x)	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-3 (bg)	No	n/a	n/a	NP	NaN	12	3.066	0.3353	ln(x)	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-5	No	n/a	n/a	NP	NaN	12	9.678	5.36	x^2	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-6	No	n/a	n/a	NP	NaN	12	2.863	0.6589	x^3	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-7	No	n/a	n/a	NP	NaN	12	3.48	0.4404	ln(x)	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-8	No	n/a	n/a	NP	NaN	12	1.694	0.403	x^2	ShapiroWilk
Chloride (mg/L)	GN-GSA-MW-9	No	n/a	n/a	NP	NaN	12	2.3	0.5034	x^3	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-1	No	n/a	n/a	NP	NaN	12	4.014	1.051	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-10	No	n/a	n/a	NP	NaN	12	1.915	0.3384	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-11	No	n/a	n/a	NP	NaN	12	6.42	3.601	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-12	No	n/a	n/a	NP	NaN	12	8.596	3.494	sqrt(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-13	No	n/a	n/a	NP	NaN	12	8.187	0.9783	x^(1/3)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-14S (bg)	No	n/a	n/a	NP	NaN	12	8.789	3.857	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-15 (bg)	No	n/a	n/a	NP	NaN	12	3.058	1.006	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-2 (bg)	No	n/a	n/a	NP	NaN	12	7.246	1.449	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-3 (bg)	No	n/a	n/a	NP	NaN	12	18.37	6.971	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-5	No	n/a	n/a	NP	NaN	12	25.18	20.23	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-6	No	n/a	n/a	NP	NaN	12	2.27	1.463	x^(1/3)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-7	No	n/a	n/a	NP	NaN	12	10.02	2.08	sqrt(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-8	No	n/a	n/a	NP	NaN	12	2.098	0.5927	ln(x)	ShapiroWilk
Sulfate (mg/L)	GN-GSA-MW-9	No	n/a	n/a	NP	NaN	12	5.352	0.5227	x^6	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-1	No	n/a	n/a	NP	NaN	12	203.8	22.81	ln(x)	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-10	No	n/a	n/a	NP	NaN	12	256.1	10.41	sqrt(x)	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-11	No	n/a	n/a	NP	NaN	12	73.64	15.22	ln(x)	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-12	No	n/a	n/a	NP	NaN	12	222.3	22.46	x^2	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-13	No	n/a	n/a	NP	NaN	12	262.4	33.54	x^6	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-14S (bg)	No	n/a	n/a	NP	NaN	12	203.3	10.19	ln(x)	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-15 (bg)	No	n/a	n/a	NP	NaN	12	42.04	8.363	sqrt(x)	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-2 (bg)	No	n/a	n/a	NP	NaN	12	286.3	9.847	ln(x)	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-3 (bg)	No	n/a	n/a	NP	NaN	12	284	47.61	x^4	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-5	No	n/a	n/a	NP	NaN	12	236	69.04	ln(x)	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-6	No	n/a	n/a	NP	NaN	12	17.83	7.963	x^4	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-7	No	n/a	n/a	NP	NaN	12	216.9	15.11	ln(x)	ShapiroWilk
TDS (mg/L)	GN-GSA-MW-8	No	n/a	n/a	NP	NaN	12	189.8	5.921	x^6	ShapiroWilk

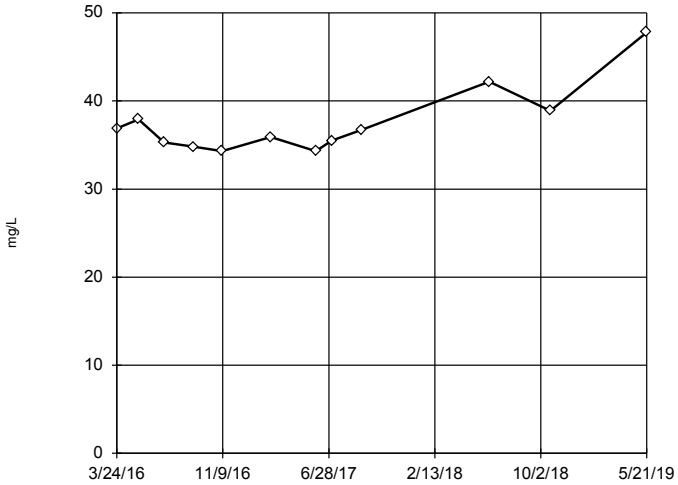
Outlier Analysis - All Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 3:55 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
TDS (mg/L)	GN-GSA-MW-9	No	n/a	n/a	NP	NaN	12	169.3	18.13	ln(x)	ShapiroWilk

Tukey's Outlier Screening

GN-GSA-MW-1



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 50.48, low cutoff = 26.66, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 9/25/2019 3:53 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

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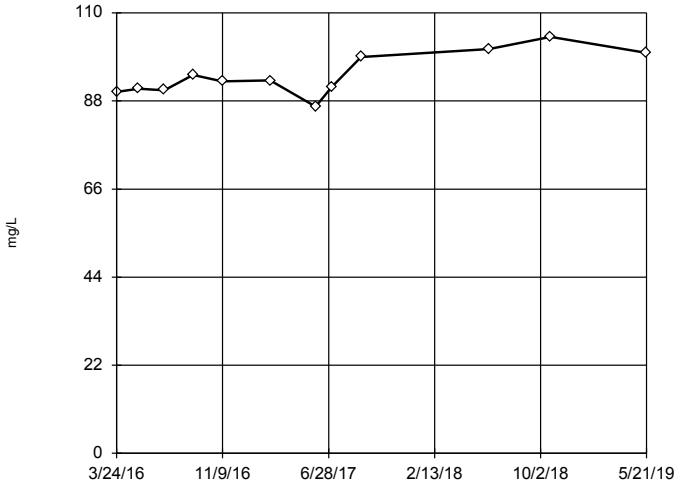
Tukey's Outlier Screening

GN-GSA-MW-10



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 130.5, low cutoff = 69.31, based on IQR multiplier of 3.

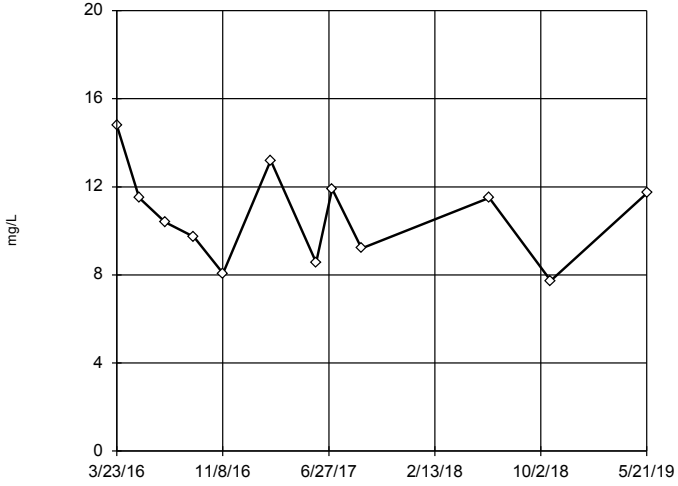
Constituent: Calcium Analysis Run 9/25/2019 3:53 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-11



n = 12

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 24.26, low cutoff = 3.062, based on IQR multiplier of 3.

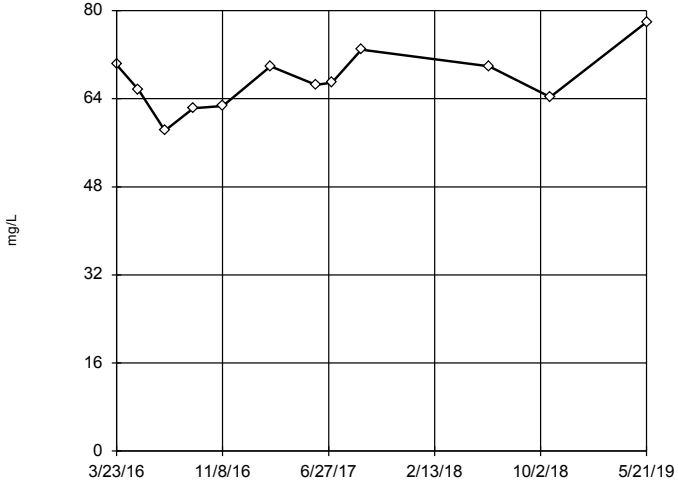
Constituent: Calcium Analysis Run 9/25/2019 3:53 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-12



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

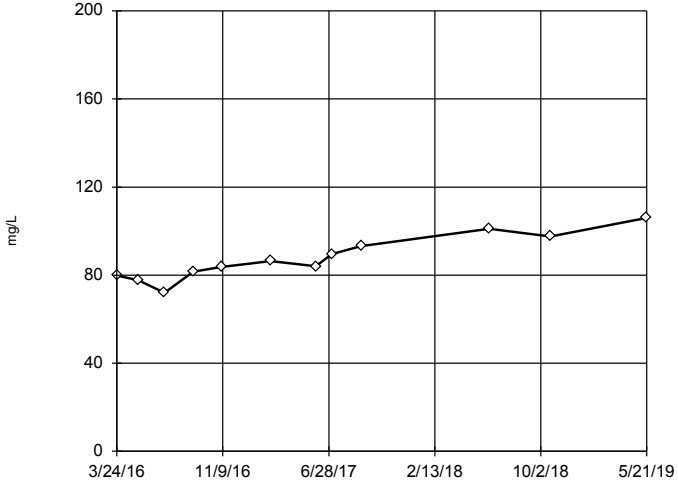
High cutoff = 94.06, low cutoff = 47.29, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 9/25/2019 3:53 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-13



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 157.2, low cutoff = 49, based on IQR multiplier of 3.

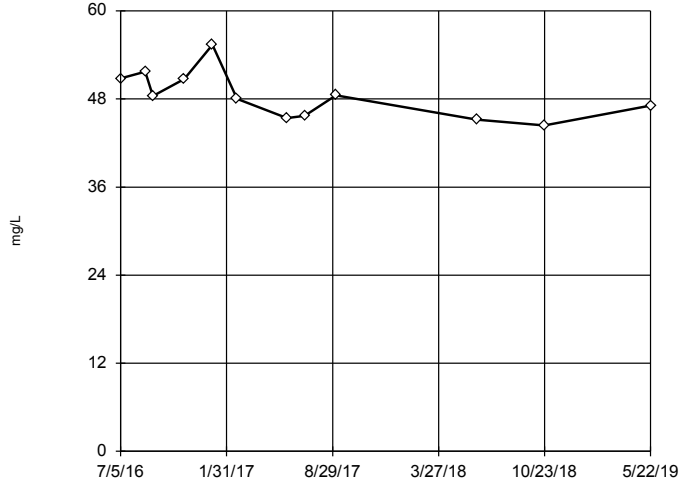
Constituent: Calcium Analysis Run 9/25/2019 3:53 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-14S (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 70.19, low cutoff = 32.93, based on IQR multiplier of 3.

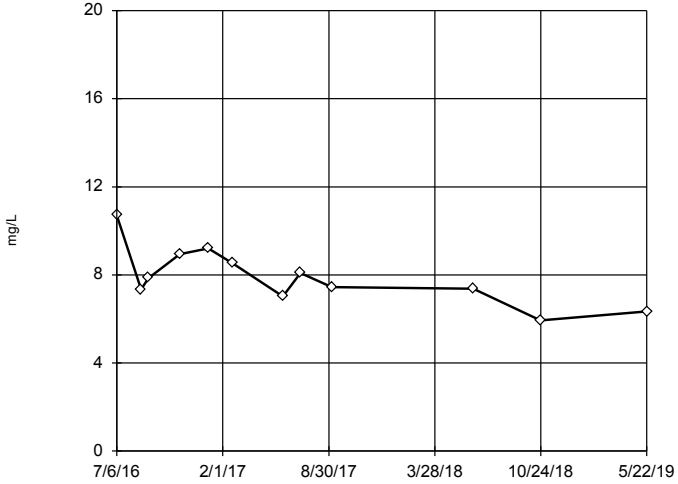
Constituent: Calcium Analysis Run 9/25/2019 3:53 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-15 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 15.72, low cutoff = 3.987, based on IQR multiplier of 3.

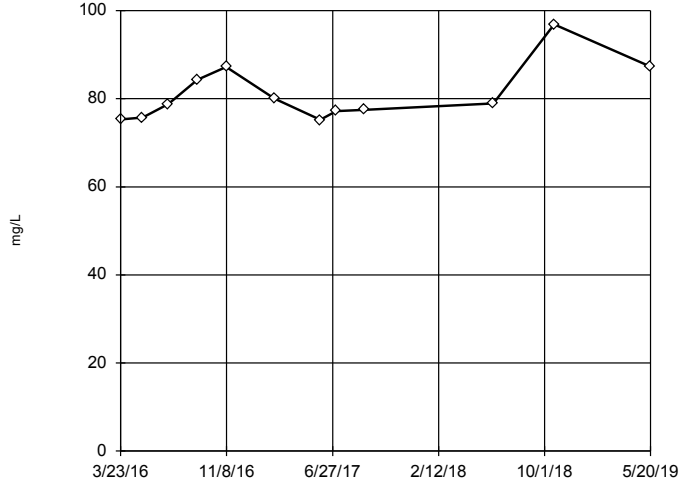
Constituent: Calcium Analysis Run 9/25/2019 3:53 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-2 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

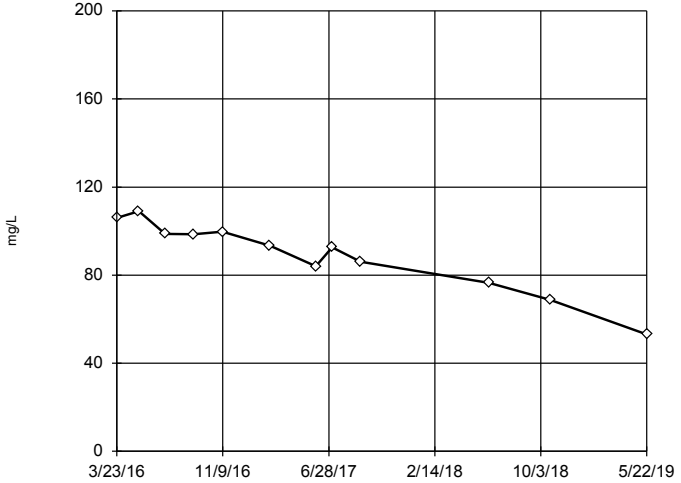
High cutoff = 121, low cutoff = 54.19, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-3 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 127.1, low cutoff = -105.1, based on IQR multiplier of 3.

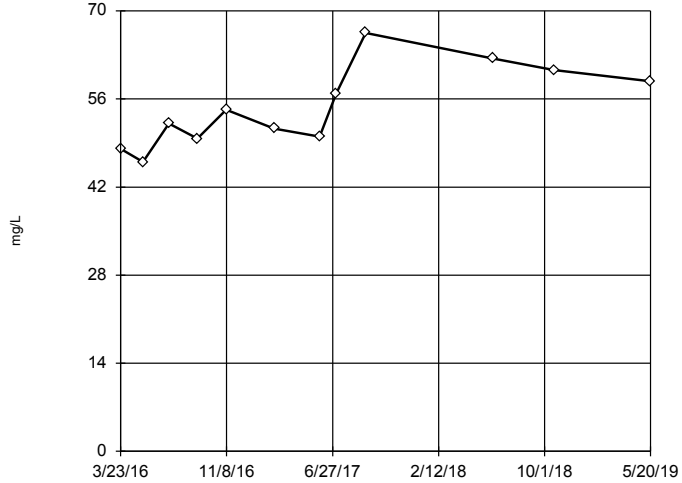
Constituent: Calcium Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-5



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 102.5, low cutoff = 29.03, based on IQR multiplier of 3.

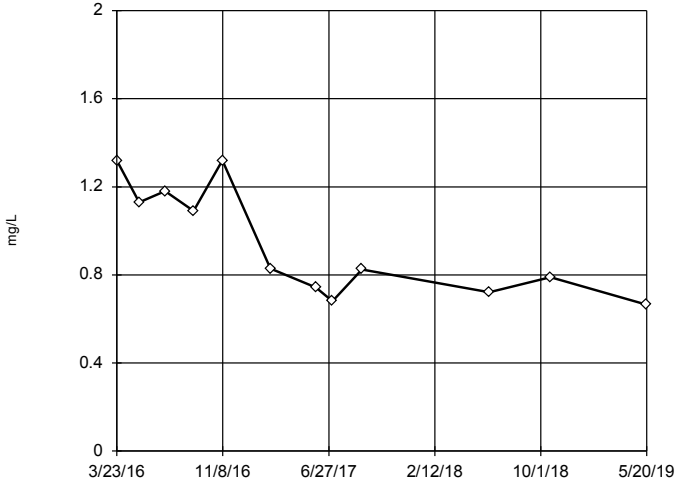
Constituent: Calcium Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-6



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 4.525, low cutoff = 0.1869, based on IQR multiplier of 3.

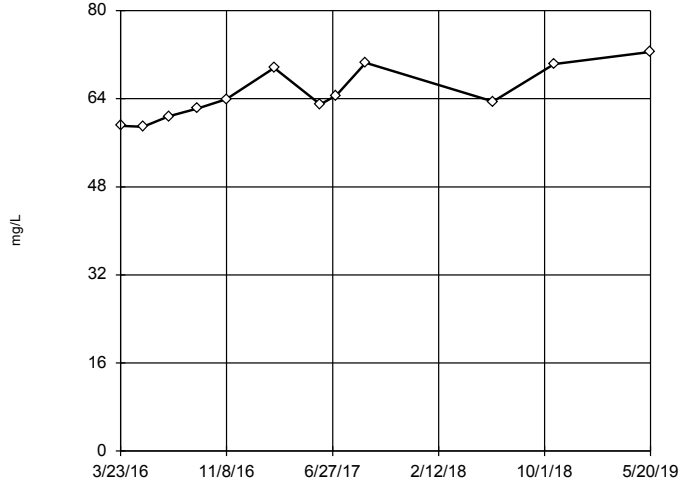
Constituent: Calcium Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-7



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

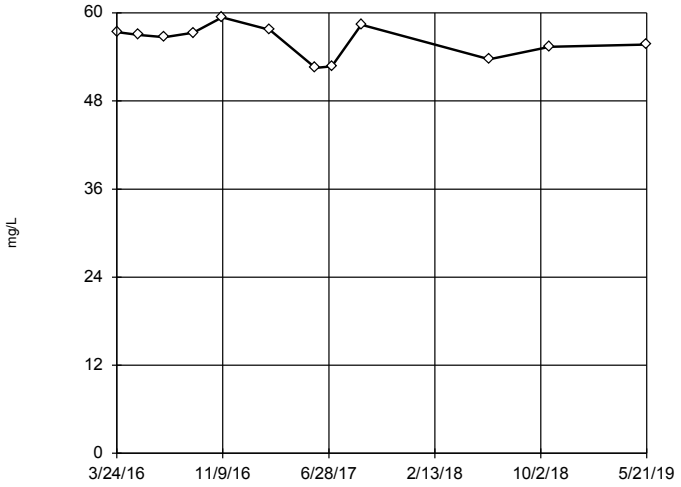
High cutoff = 102.9, low cutoff = 41.79, based on IQR multiplier of 3.

Constituent: Calcium Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-8



n = 12

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 63.57, low cutoff = -38.43, based on IQR multiplier of 3.

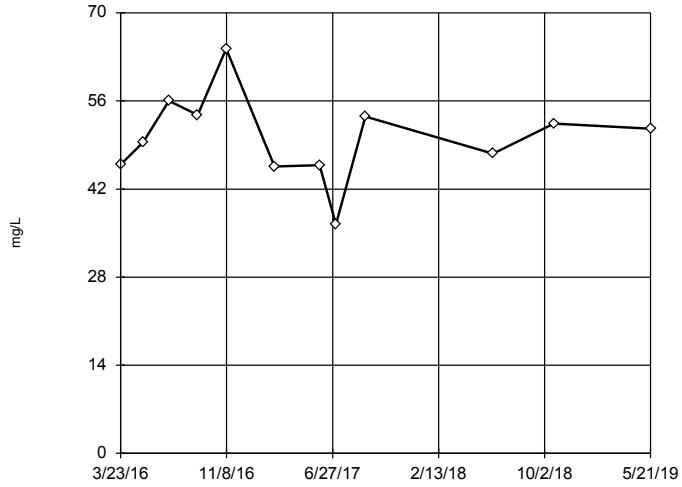
Constituent: Calcium Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-9



n = 12

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 77.05, low cutoff = 22.45, based on IQR multiplier of 3.

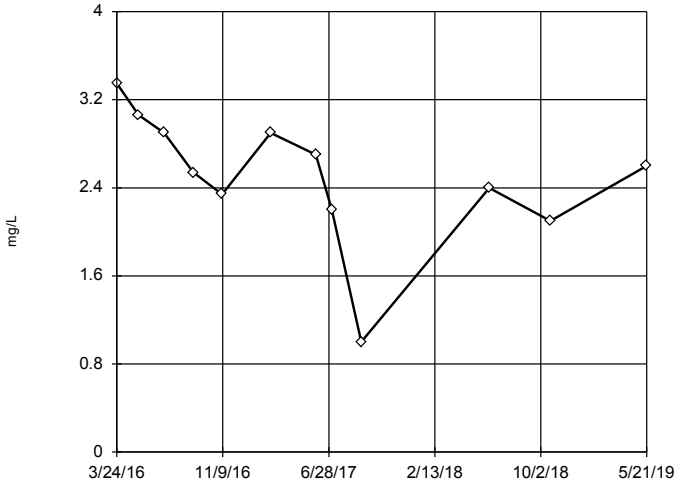
Constituent: Calcium Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-1



n = 12

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 3.966, low cutoff = -2.972, based on IQR multiplier of 3.

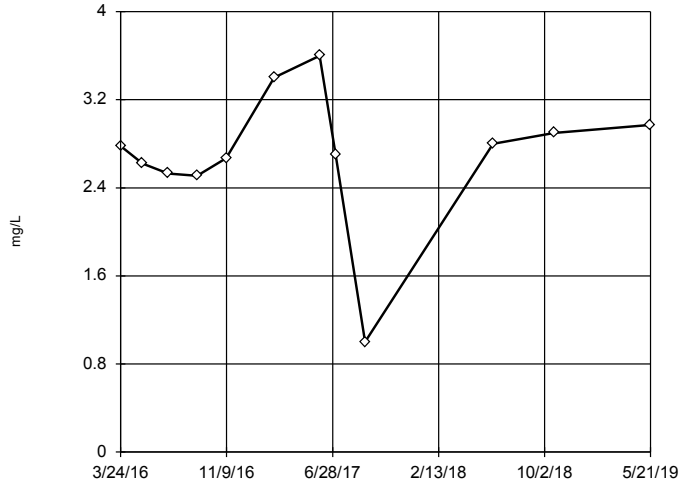
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-10



n = 12

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

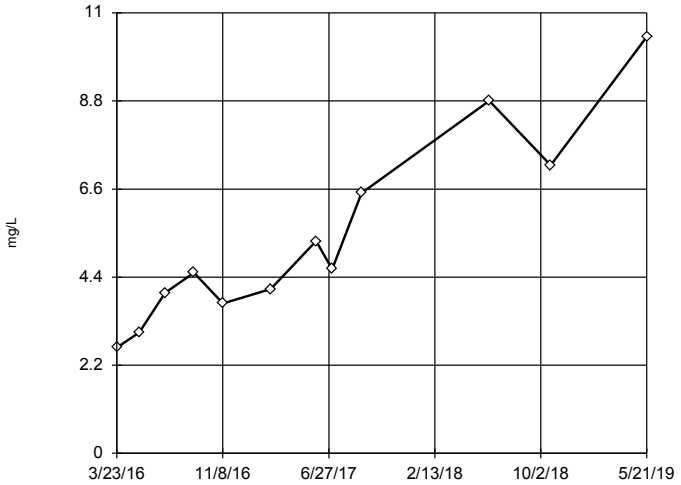
High cutoff = 3.682, low cutoff = -1.959, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-11



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 37.71, low cutoff = 0.7025, based on IQR multiplier of 3.

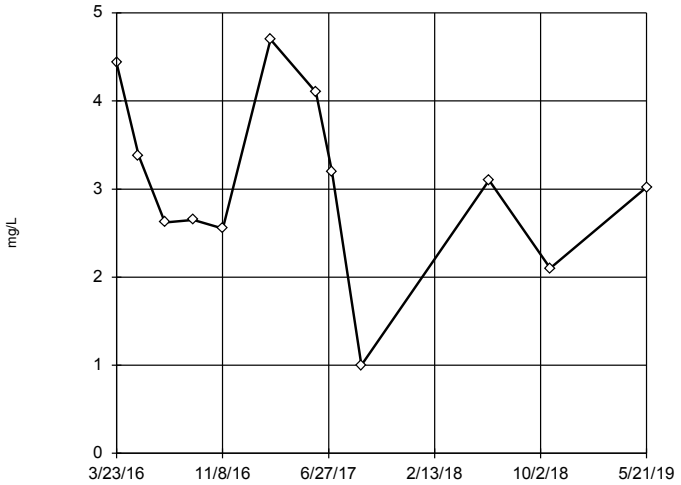
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-12



n = 12

No outliers found. Tukey's method selected by user.

Ladder of Powers transformations did not improve normality; analysis run on raw data.

High cutoff = 7.205, low cutoff = -0.88, based on IQR multiplier of 3.

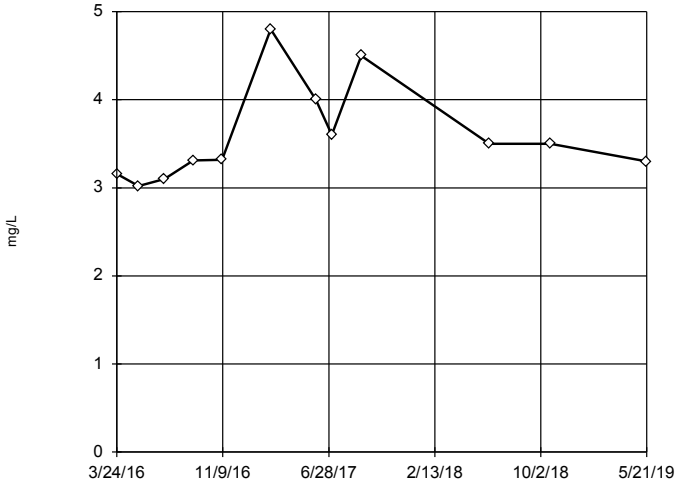
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-13



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.158, low cutoff = 1.99, based on IQR multiplier of 3.

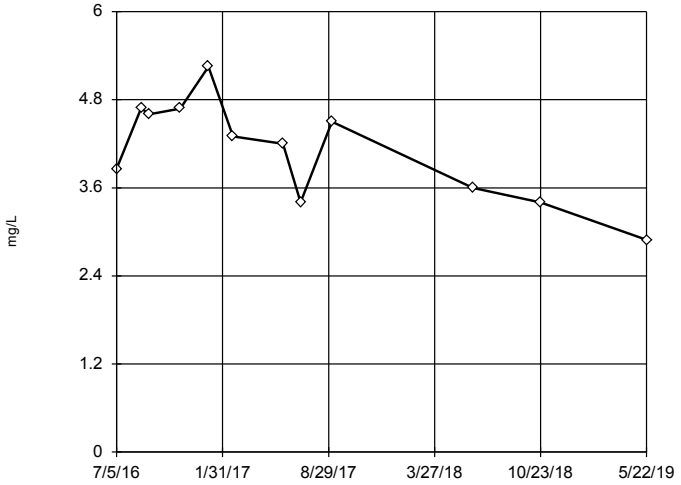
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-14S (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 7.025, low cutoff = -3.944, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-15 (bg)

n = 12

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 5.846, low cutoff = -4.41, based on IQR multiplier of 3.

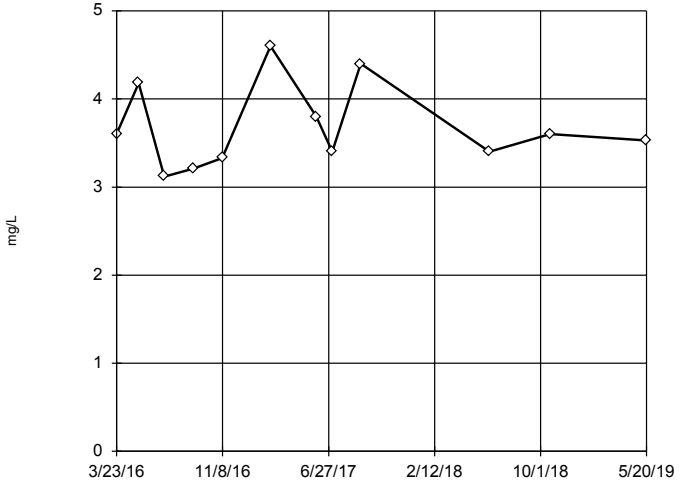
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-2 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.623, low cutoff = 2.025, based on IQR multiplier of 3.

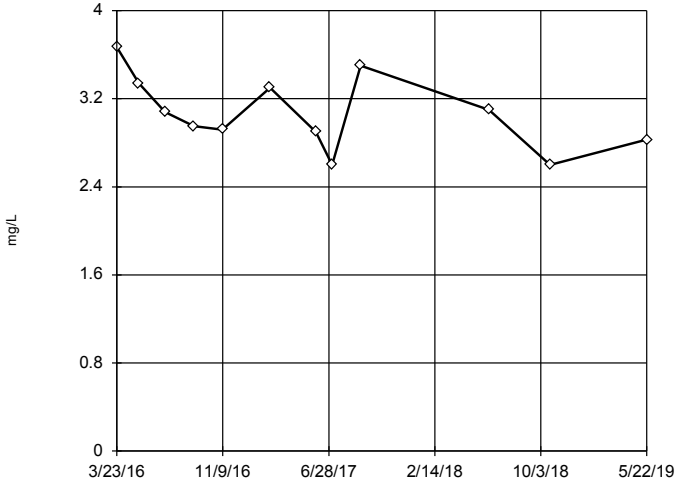
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-3 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 5.167, low cutoff = 1.841, based on IQR multiplier of 3.

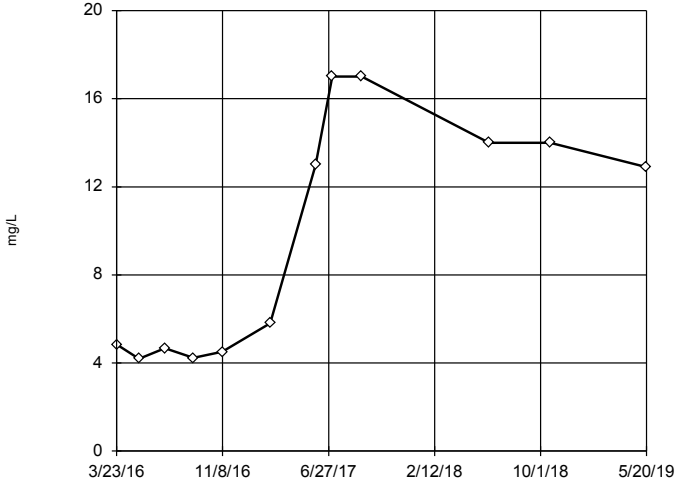
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-5



n = 12

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

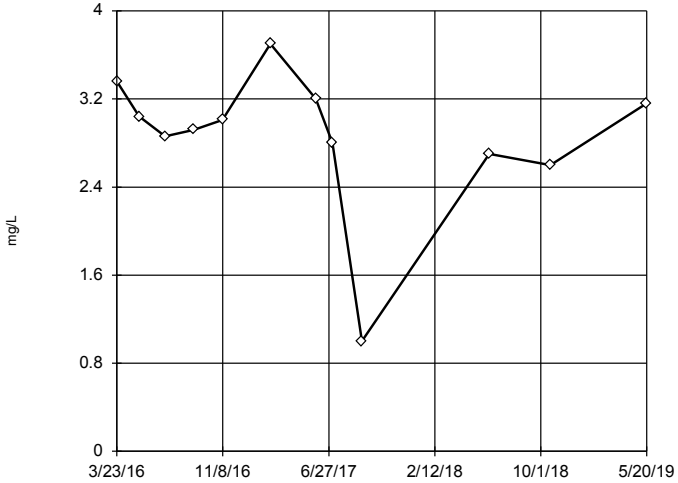
High cutoff = 26.85, low cutoff = -22.44, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-6



n = 12

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

High cutoff = 4.045, low cutoff = -2.364, based on IQR multiplier of 3.

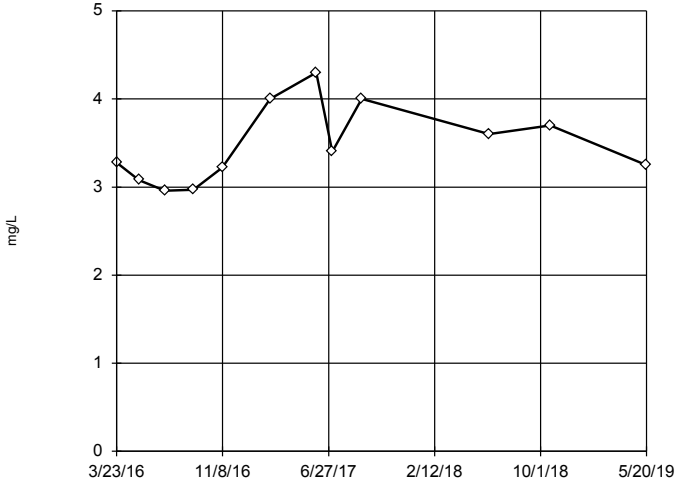
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-7



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 7.013, low cutoff = 1.728, based on IQR multiplier of 3.

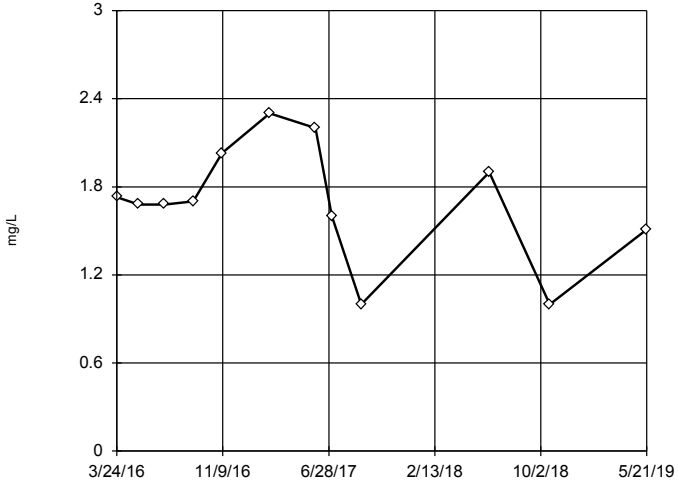
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-8



n = 12

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 2.864, low cutoff = -1.384, based on IQR multiplier of 3.

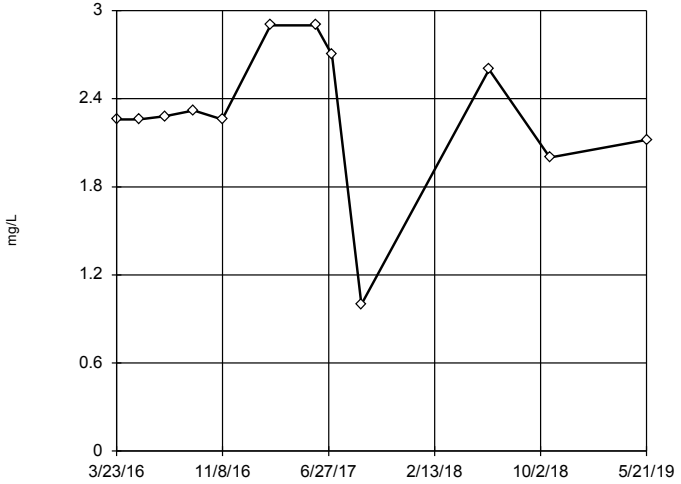
Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-9



n = 12

No outliers found. Tukey's method selected by user.

Data were cube transformed to achieve best W statistic (graph shown in original units).

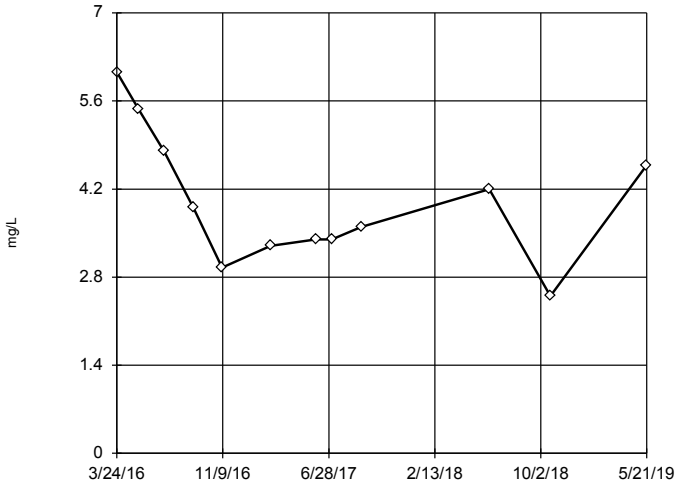
High cutoff = 3.501, low cutoff = -2.395, based on IQR multiplier of 3.

Constituent: Chloride Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-1



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 12.86, low cutoff = 1.221, based on IQR multiplier of 3.

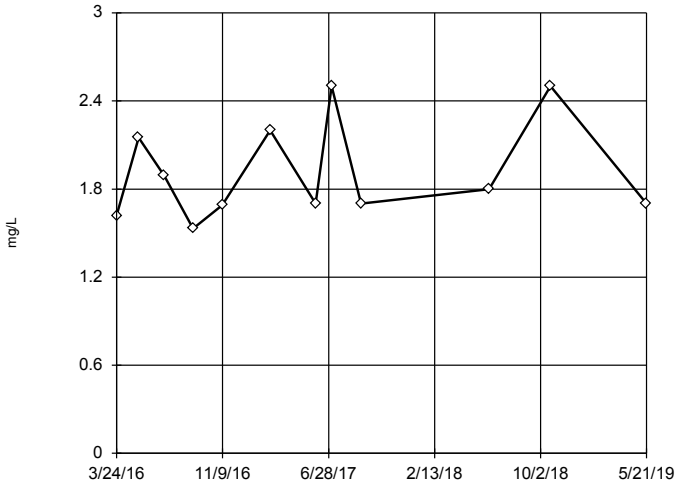
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-10



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 4.594, low cutoff = 0.8024, based on IQR multiplier of 3.

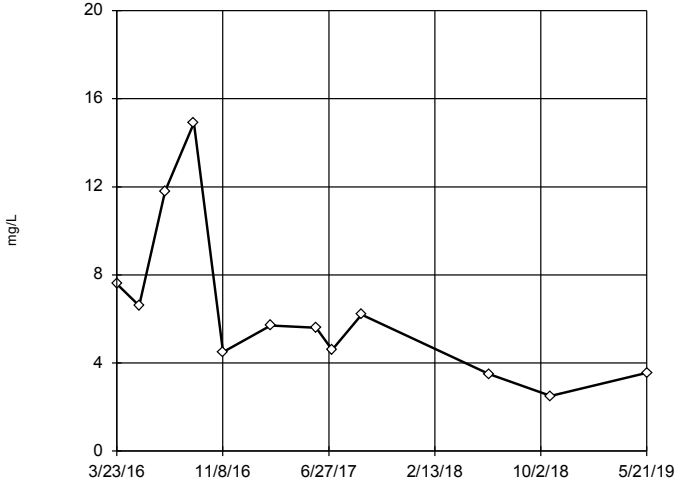
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-11



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 39.3, low cutoff = 0.7198, based on IQR multiplier of 3.

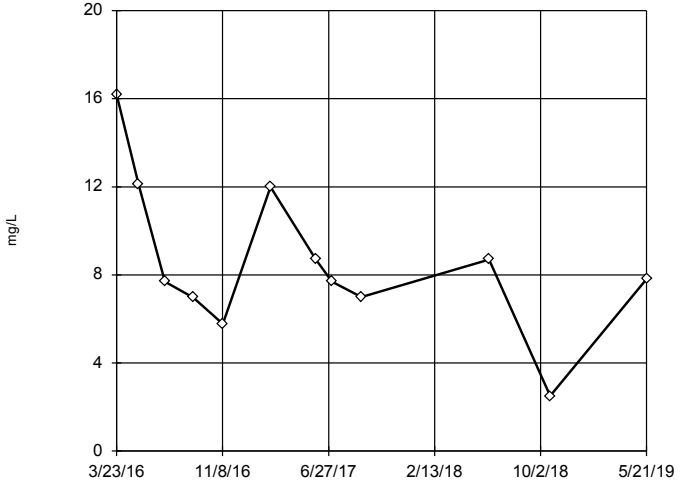
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-12



n = 12

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

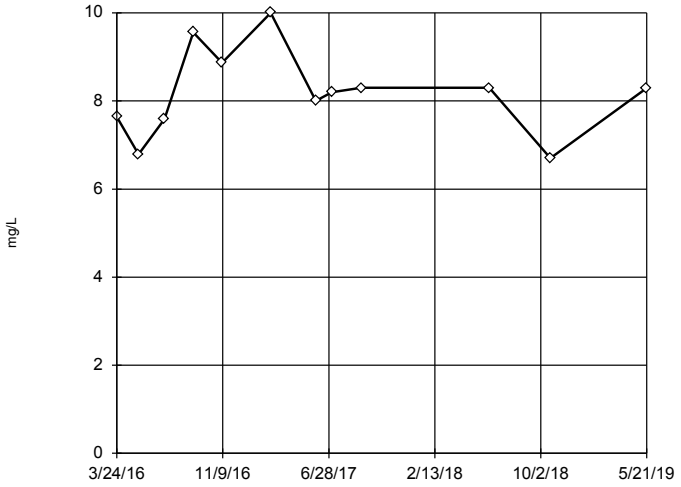
High cutoff = 24, low cutoff = 0.9047, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-13



n = 12

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 11.97, low cutoff = 5.155, based on IQR multiplier of 3.

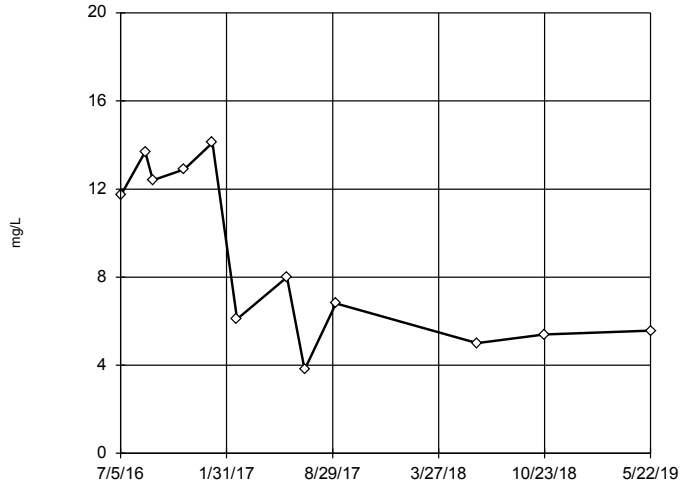
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-14S (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 155.1, low cutoff = 0.4472, based on IQR multiplier of 3.

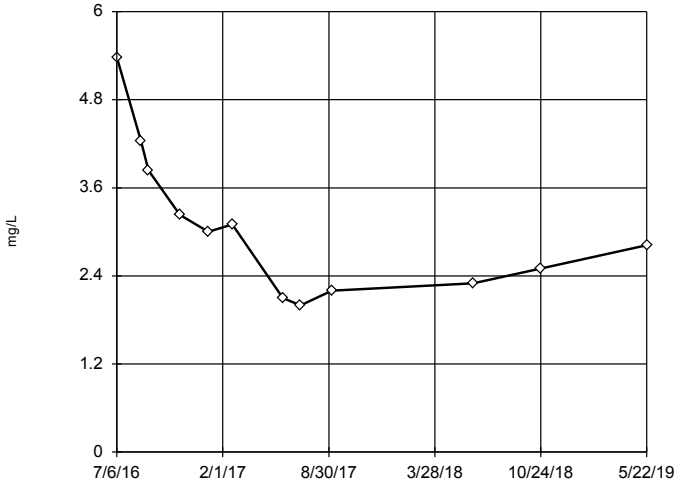
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-15 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 13.52, low cutoff = 0.5861, based on IQR multiplier of 3.

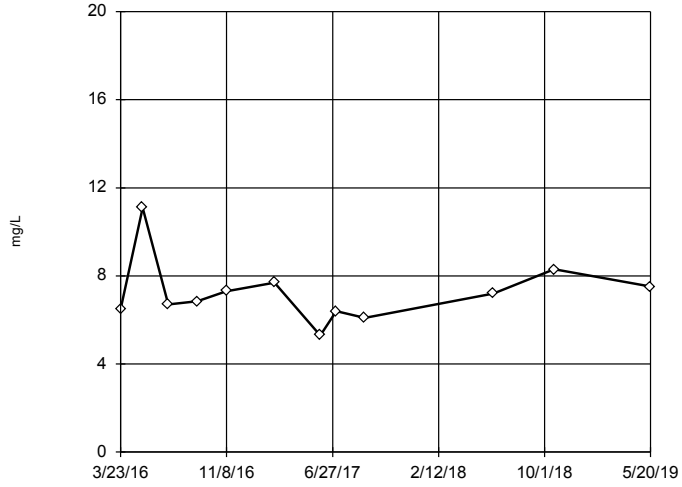
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-2 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 12.55, low cutoff = 3.903, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-3 (bg)

n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 126.1, low cutoff = 2.354, based on IQR multiplier of 3.

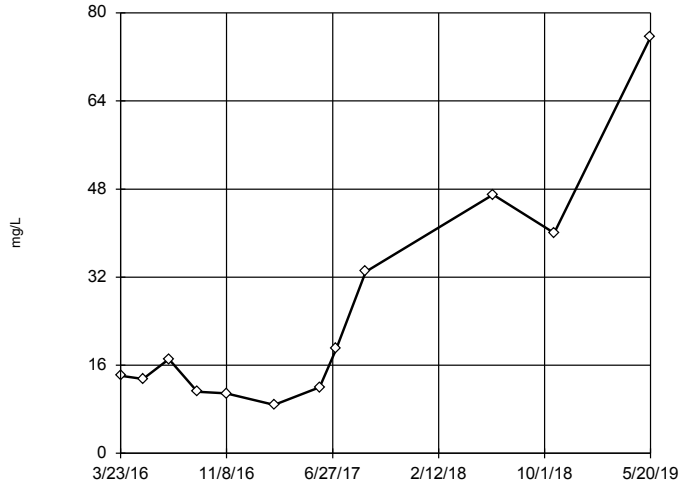
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-5



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 1118, low cutoff = 0.3766, based on IQR multiplier of 3.

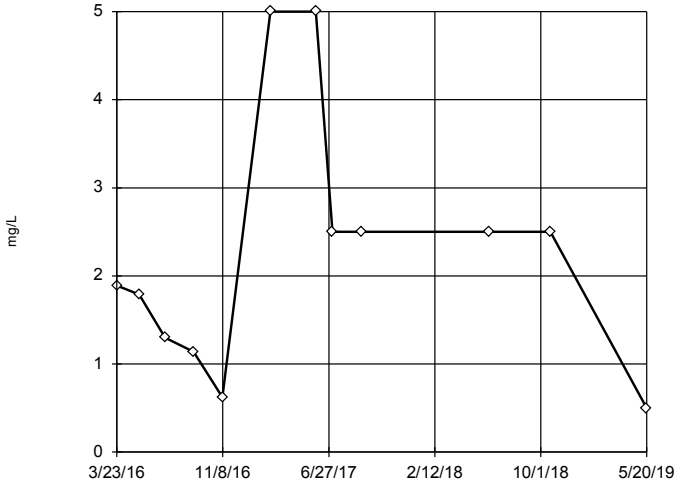
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-6



n = 12

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 11.01, low cutoff = 0.008054, based on IQR multiplier of 3.

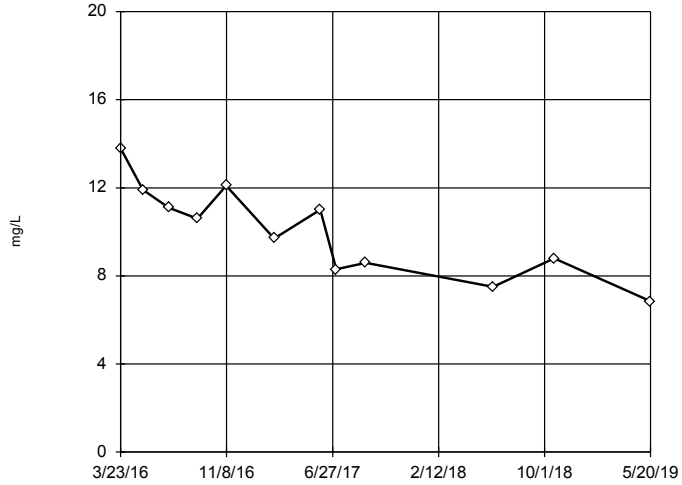
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-7



n = 12

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

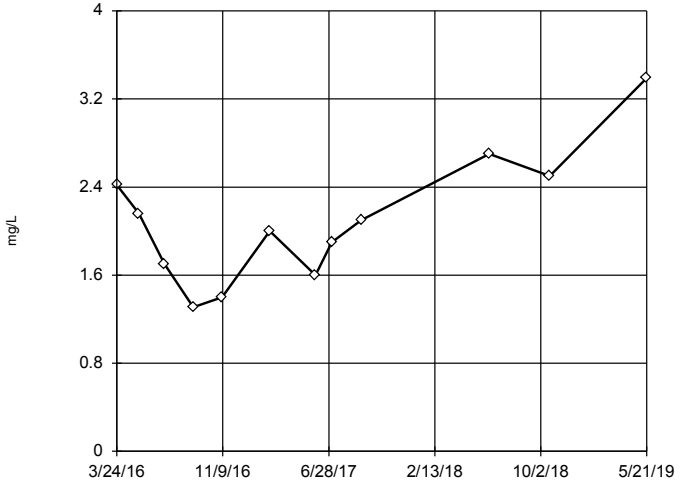
High cutoff = 23.45, low cutoff = 2.117, based on IQR multiplier of 3.

Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-8



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.159, low cutoff = 0.4972, based on IQR multiplier of 3.

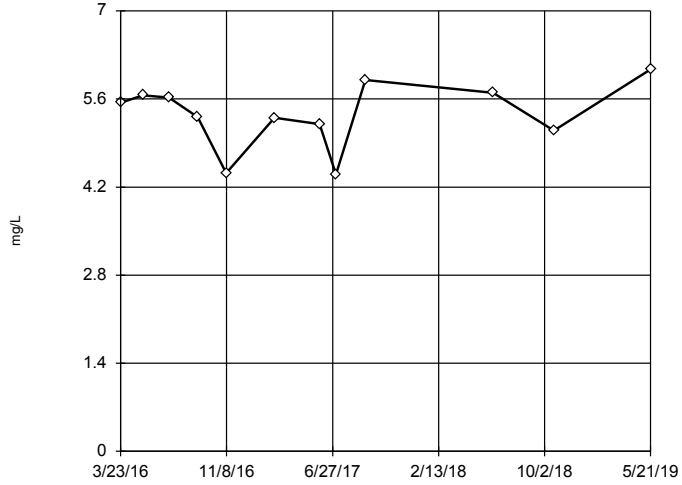
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-9



n = 12

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 6.541, low cutoff = -5.444, based on IQR multiplier of 3.

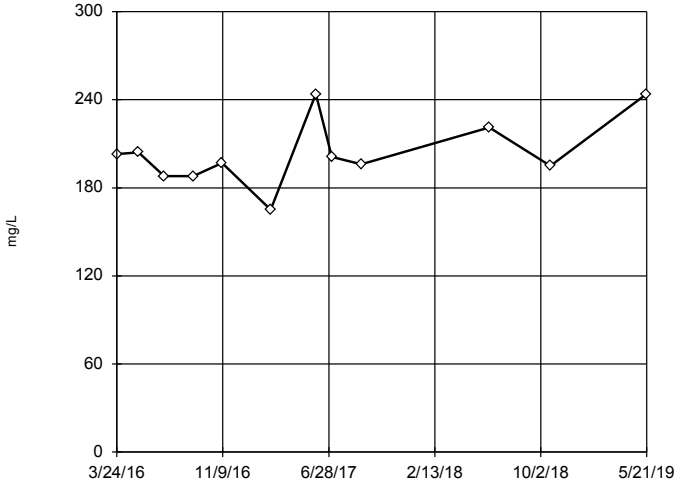
Constituent: Sulfate Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-1



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 289.6, low cutoff = 140.4, based on IQR multiplier of 3.

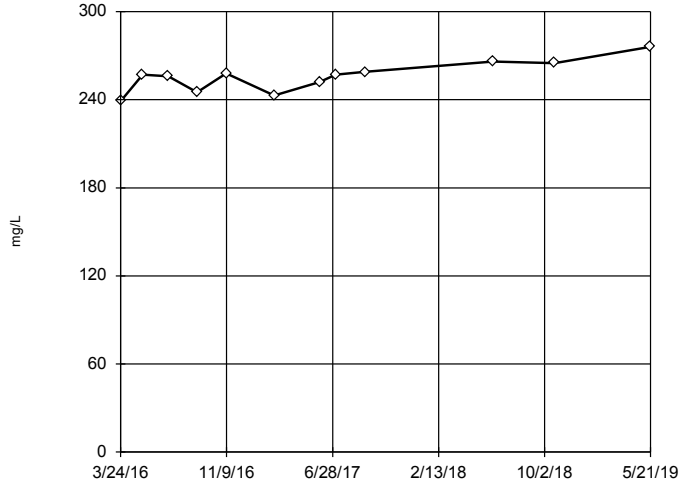
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-10



n = 12

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

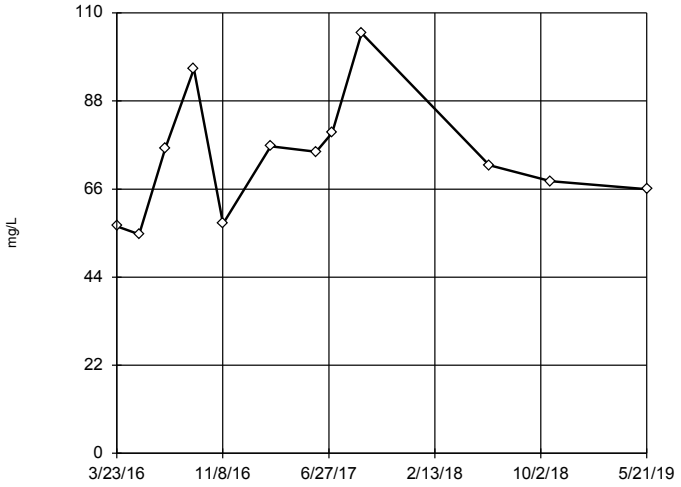
High cutoff = 304.6, low cutoff = 210.1, based on IQR multiplier of 3.

Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-11



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 161.9, low cutoff = 29.76, based on IQR multiplier of 3.

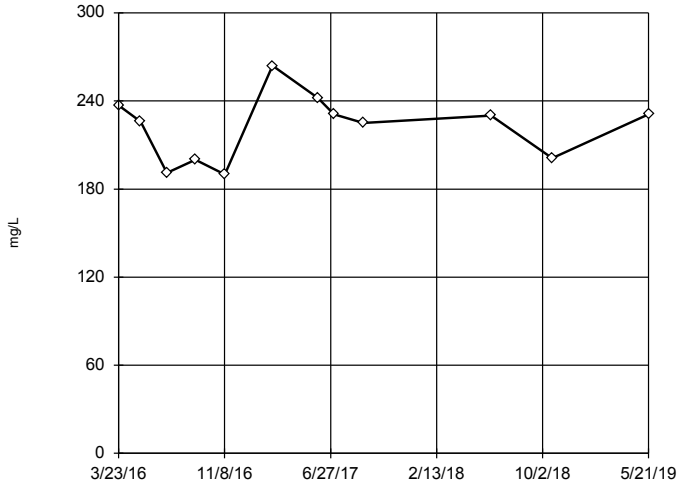
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-12



n = 12

No outliers found. Tukey's method selected by user.

Data were square transformed to achieve best W statistic (graph shown in original units).

High cutoff = 313.8, low cutoff = -59.1, based on IQR multiplier of 3.

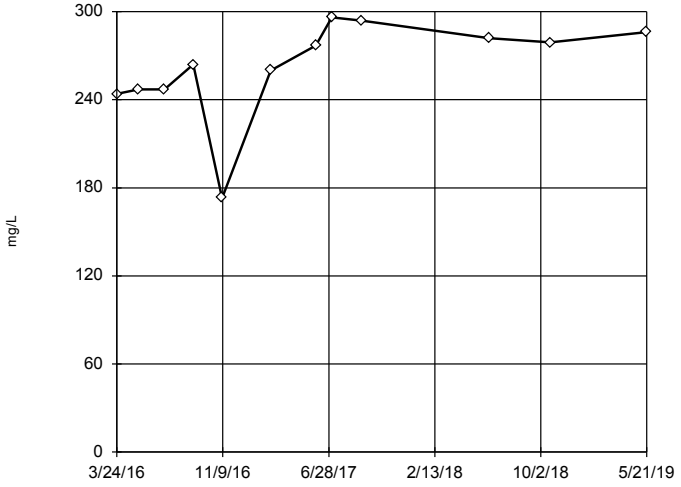
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-13



n = 12

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 335.2, low cutoff = -295.6, based on IQR multiplier of 3.

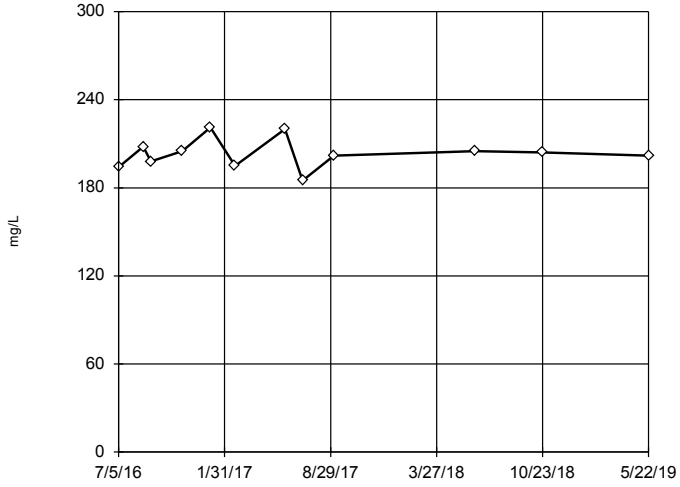
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-14S (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

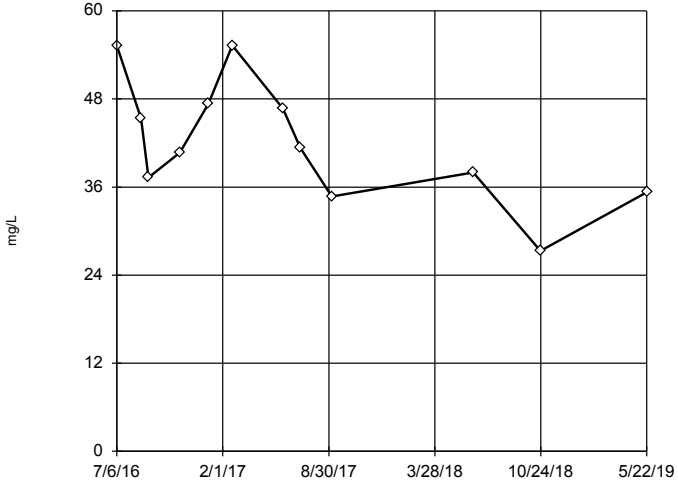
High cutoff = 239.7, low cutoff = 169.3, based on IQR multiplier of 3.

Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-15 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 87.41, low cutoff = 12.47, based on IQR multiplier of 3.

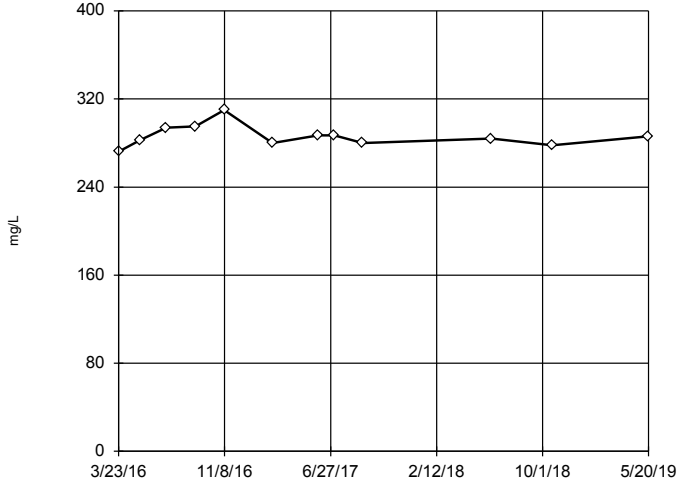
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-2 (bg)



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 324.3, low cutoff = 250.8, based on IQR multiplier of 3.

Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-3 (bg)

n = 12

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 388.9, low cutoff = -301.3, based on IQR multiplier of 3.

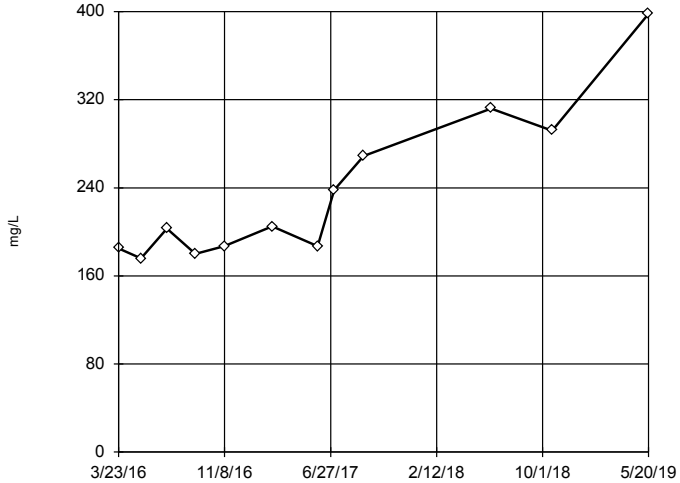
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-5



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

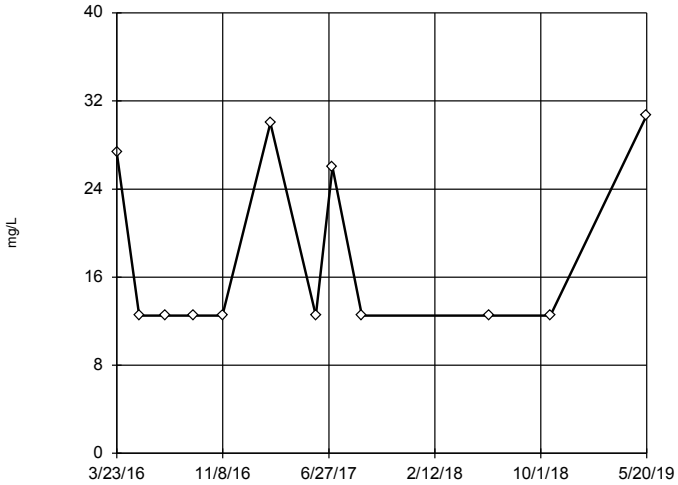
High cutoff = 958.8, low cutoff = 54.37, based on IQR multiplier of 3.

Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Tukey's Outlier Screening

GN-GSA-MW-6



n = 12

No outliers found. Tukey's method selected by user.

Data were x^4 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 37.38, low cutoff = -34.53, based on IQR multiplier of 3.

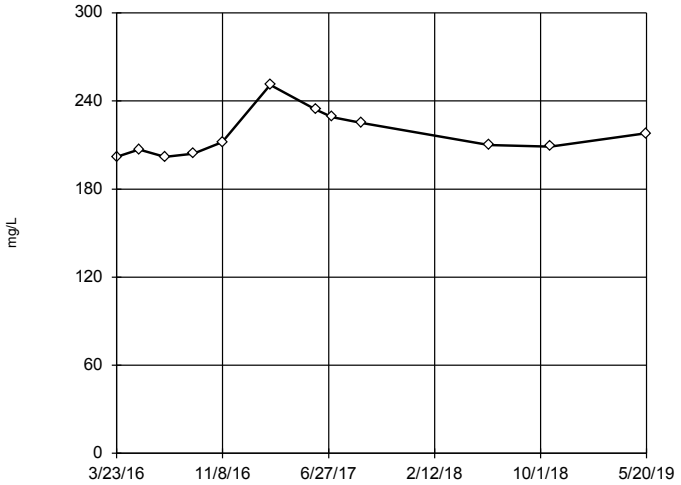
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-7



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 305.9, low cutoff = 152.5, based on IQR multiplier of 3.

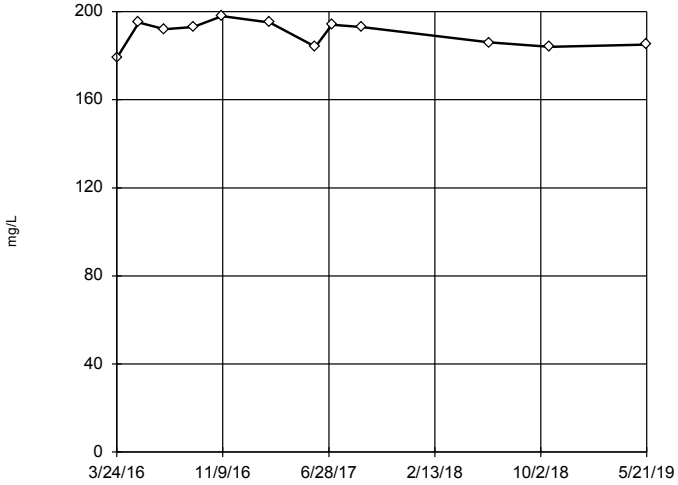
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-8



n = 12

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 214.8, low cutoff = -129.2, based on IQR multiplier of 3.

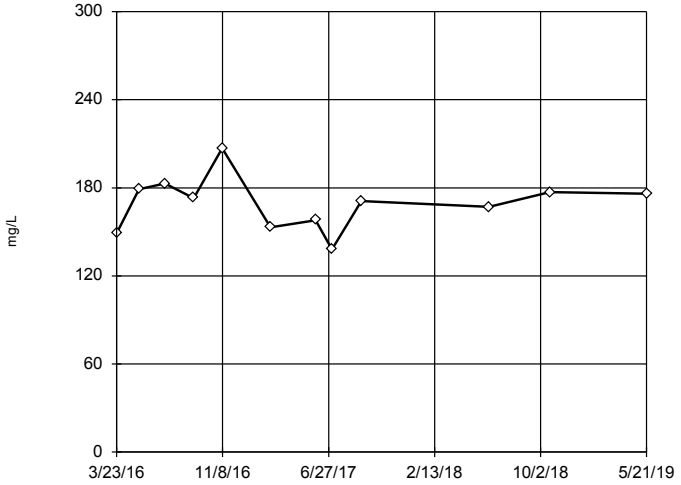
Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening

GN-GSA-MW-9



n = 12

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 267.1, low cutoff = 103.6, based on IQR multiplier of 3.

Constituent: TDS Analysis Run 9/25/2019 3:54 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

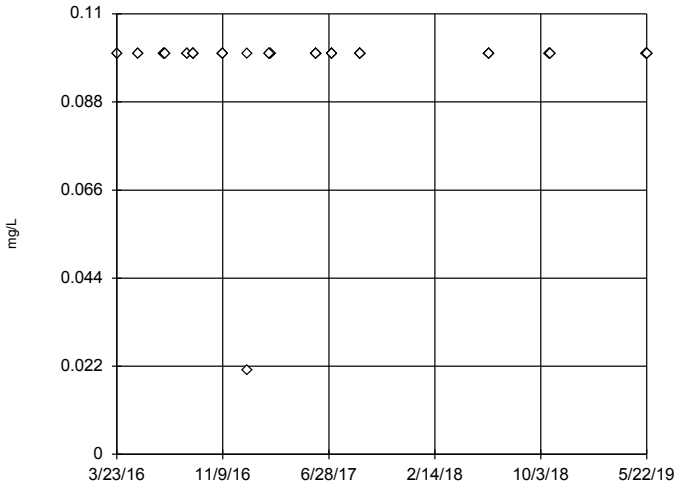
Upgradient Outlier Analysis - All Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 3:46 PM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Boron (mg/L)	GN-GSA-MW-14S,GN-...	n/a	n/a	n/a w/combined bg	NP	NaN	48	0.09836	0.01139	unknown	ShapiroWilk
Fluoride (mg/L)	GN-GSA-MW-14S,GN-...	No	n/a	n/a w/combined bg	NP	NaN	52	0.1003	0.07641	ln(x)	ShapiroFrancia
pH (pH)	GN-GSA-MW-14S,GN-...	No	n/a	n/a w/combined bg	NP	NaN	52	6.838	0.5817	x^6	ShapiroFrancia

Tukey's Outlier Screening, Pooled Background

GN-GSA-MW-14S,GN-GSA-MW-15,GN-GSA-MW-...



n = 48

No outliers found. Tukey's method selected by user.

Data were cube root transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.

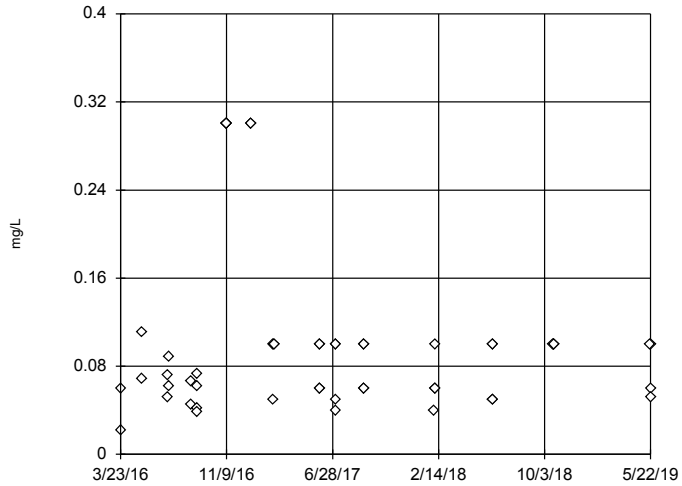
Constituent: Boron Analysis Run 9/25/2019 3:46 PM View: Interwell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

GN-GSA-MW-14S,GN-GSA-MW-15,GN-GSA-MW-...



n = 52

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.463, low cutoff = 0.01296, based on IQR multiplier of 3.

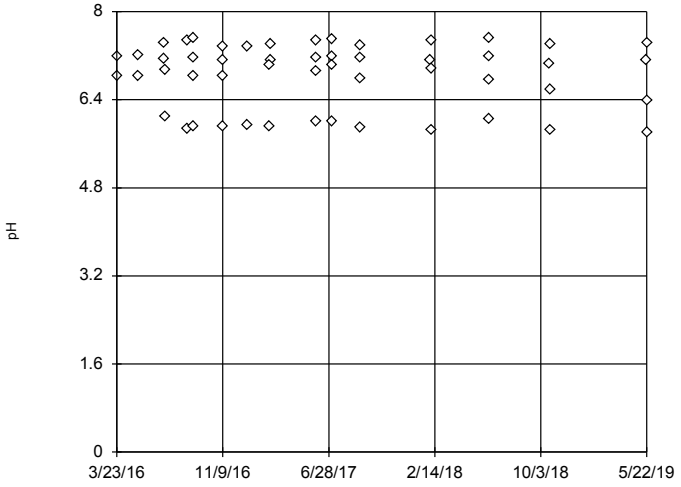
Constituent: Fluoride Analysis Run 9/25/2019 3:46 PM View: Interwell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background

GN-GSA-MW-14S,GN-GSA-MW-15,GN-GSA-MW-...



n = 52

No outliers found. Tukey's method selected by user.

Data were x^6 transformed to achieve best W statistic (graph shown in original units).

High cutoff = 8.656, low cutoff = -7.718, based on IQR multiplier of 3.

Constituent: pH Analysis Run 9/25/2019 3:46 PM View: Interwell

Plant Gaston Client: Southern Company Data: Gaston GSA

FIGURE D.

Welch's t-test/Mann-Whitney - Significant Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 4:11 PM

Constituent	Well	Calc.	0.01	Method
Calcium (mg/L)	**GN-GSA-MW-1**	**2.408**	**Yes**	**Mann-W**
Calcium (mg/L)	**GN-GSA-MW-10**	**2.404**	**Yes**	**Mann-W**
Calcium (mg/L)	**GN-GSA-MW-13**	**2.404**	**Yes**	**Mann-W**
Chloride (mg/L)	**GN-GSA-MW-11**	**2.404**	**Yes**	**Mann-W**
Sulfate (mg/L)	**GN-GSA-MW-5**	**2.404**	**Yes**	**Mann-W**
Sulfate (mg/L)	**GN-GSA-MW-8**	**2.404**	**Yes**	**Mann-W**
TDS (mg/L)	**GN-GSA-MW-10**	**2.408**	**Yes**	**Mann-W**
TDS (mg/L)	**GN-GSA-MW-5**	**2.408**	**Yes**	**Mann-W**

Welch's t-test/Mann-Whitney - All Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 4:11 PM

Constituent	Well	Calc.	0.01	Method
Calcium (mg/L)	**GN-GSA-MW-1**	**2.408**	**Yes**	**Mann-W**
Calcium (mg/L)	**GN-GSA-MW-10**	**2.404**	**Yes**	**Mann-W**
Calcium (mg/L)	GN-GSA-MW-11	-0.4631	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-12	0.8335	No	Mann-W
Calcium (mg/L)	**GN-GSA-MW-13**	**2.404**	**Yes**	**Mann-W**
Calcium (mg/L)	GN-GSA-MW-14S (bg)	-2.219	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-15 (bg)	-2.219	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-2 (bg)	1.849	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-3 (bg)	-2.589	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-5	1.849	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-6	-2.037	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-7	1.479	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-8	-1.479	No	Mann-W
Calcium (mg/L)	GN-GSA-MW-9	0	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-1	-1.111	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-10	1.294	No	Mann-W
Chloride (mg/L)	**GN-GSA-MW-11**	**2.404**	**Yes**	**Mann-W**
Chloride (mg/L)	GN-GSA-MW-12	-0.9245	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-13	-0.1852	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-14S (bg)	-2.315	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-15 (bg)	-2.041	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-2 (bg)	-0.3711	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-3 (bg)	-1.389	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-5	1.113	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-6	-1.109	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-7	0.3704	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-8	-1.206	No	Mann-W
Chloride (mg/L)	GN-GSA-MW-9	-1.119	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-1	-0.3704	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-10	0.6529	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-11	-2.589	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-12	-0.6494	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-13	-0.6483	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-14S (bg)	-2.034	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-15 (bg)	-0.9245	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-2 (bg)	1.294	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-3 (bg)	-2.041	No	Mann-W
Sulfate (mg/L)	**GN-GSA-MW-5**	**2.404**	**Yes**	**Mann-W**
Sulfate (mg/L)	GN-GSA-MW-6	0.2352	No	Mann-W
Sulfate (mg/L)	GN-GSA-MW-7	-2.219	No	Mann-W
Sulfate (mg/L)	**GN-GSA-MW-8**	**2.404**	**Yes**	**Mann-W**
Sulfate (mg/L)	GN-GSA-MW-9	0.9245	No	Mann-W
TDS (mg/L)	GN-GSA-MW-1	1.021	No	Mann-W
TDS (mg/L)	**GN-GSA-MW-10**	**2.408**	**Yes**	**Mann-W**
TDS (mg/L)	GN-GSA-MW-11	-0.9245	No	Mann-W
TDS (mg/L)	GN-GSA-MW-12	-0.09261	No	Mann-W
TDS (mg/L)	GN-GSA-MW-13	1.297	No	Mann-W
TDS (mg/L)	GN-GSA-MW-14S (bg)	0.1855	No	Mann-W
TDS (mg/L)	GN-GSA-MW-15 (bg)	-2.037	No	Mann-W
TDS (mg/L)	GN-GSA-MW-2 (bg)	-0.9277	No	Mann-W
TDS (mg/L)	GN-GSA-MW-3 (bg)	-2.589	No	Mann-W
TDS (mg/L)	**GN-GSA-MW-5**	**2.408**	**Yes**	**Mann-W**
TDS (mg/L)	GN-GSA-MW-6	0.22	No	Mann-W
TDS (mg/L)	GN-GSA-MW-7	-0.1852	No	Mann-W
TDS (mg/L)	GN-GSA-MW-8	-1.58	No	Mann-W

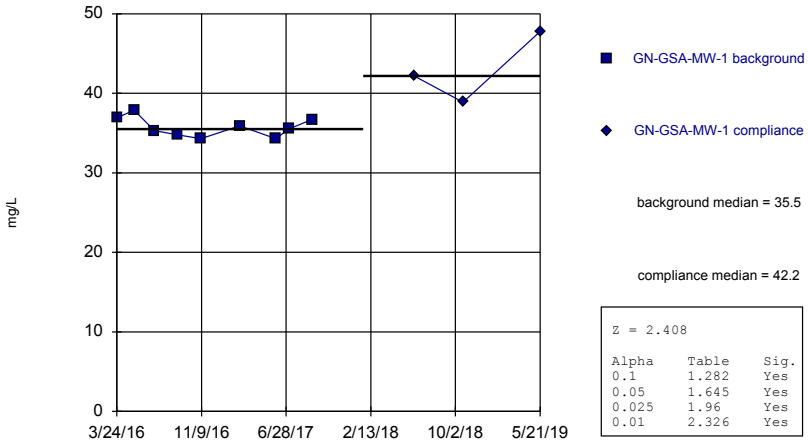
Welch's t-test/Mann-Whitney - All Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 4:11 PM

Constituent	Well	Calc.	0.01	Method
TDS (mg/L)	GN-GSA-MW-9	0.3698	No	Mann-W

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-1



Z = 2.408

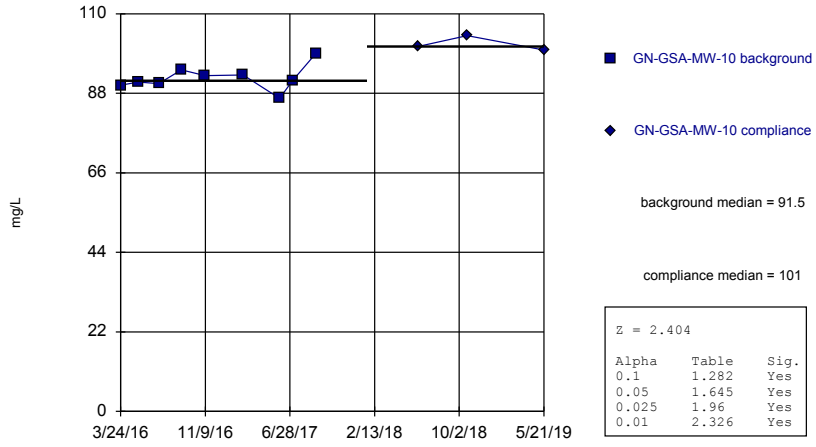
Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	Yes
0.025	1.96	Yes
0.01	2.326	Yes

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-10



Z = 2.404

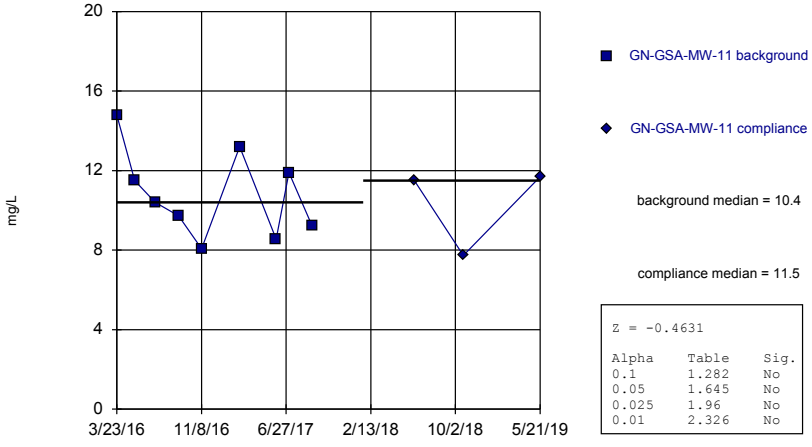
Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	Yes
0.025	1.96	Yes
0.01	2.326	Yes

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-11



Z = -0.4631

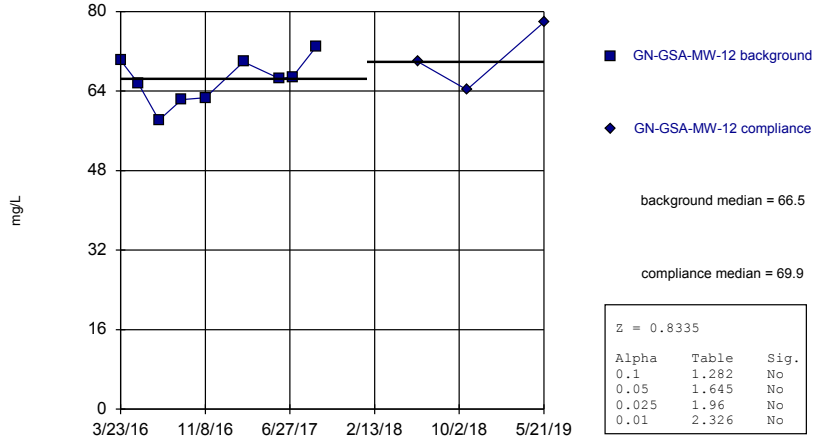
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-12



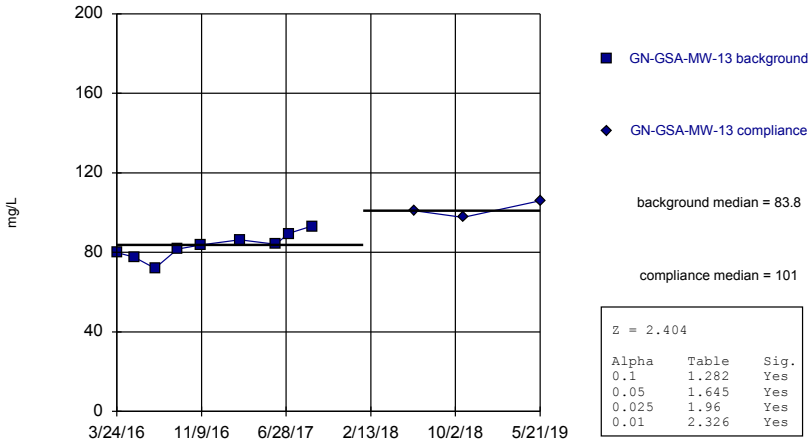
Z = 0.8335

Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-13

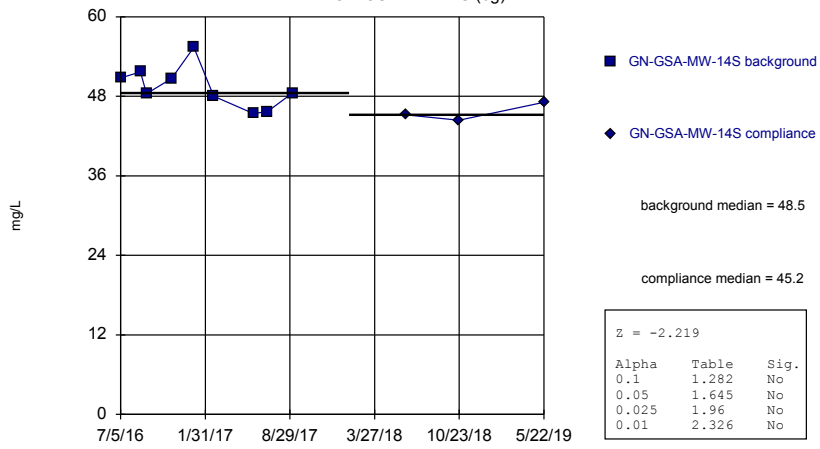


Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-14S (bg)

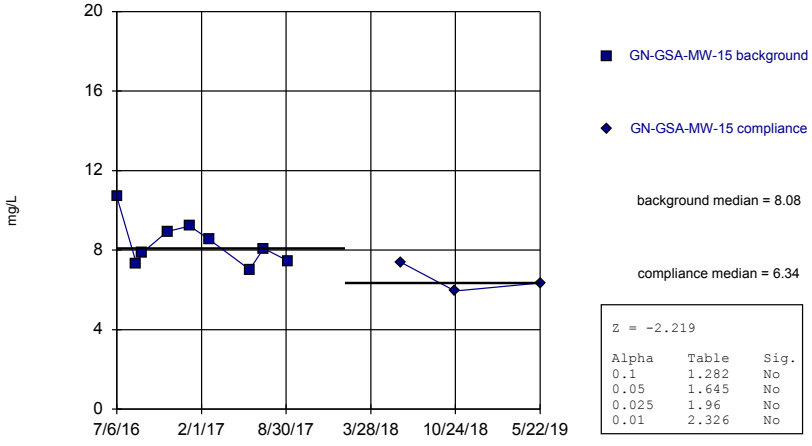


Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-15 (bg)

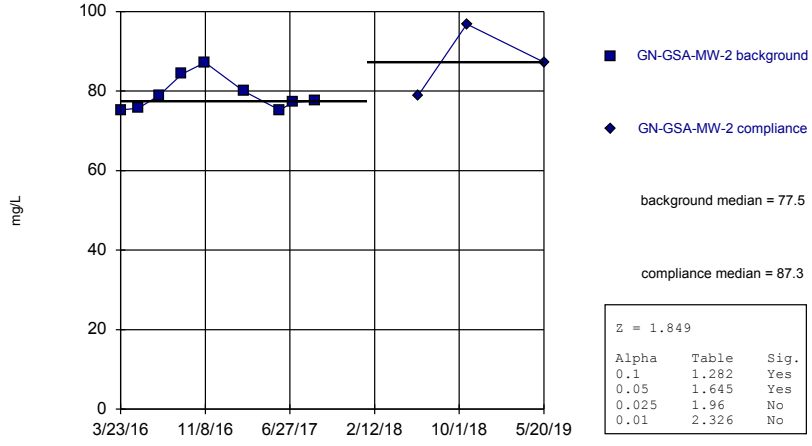


Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

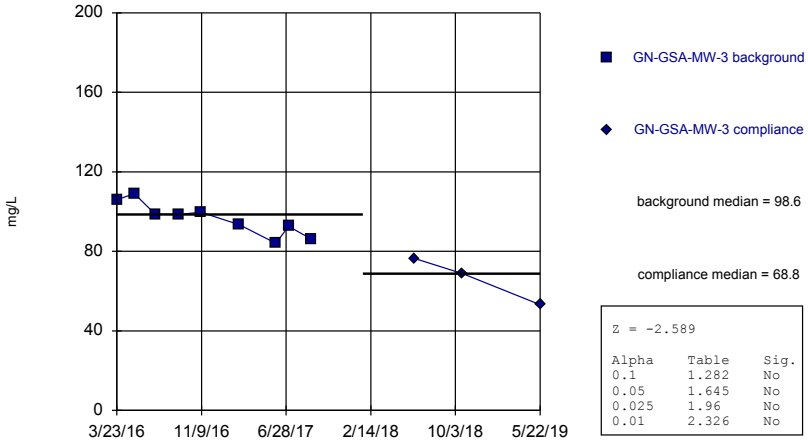
GN-GSA-MW-2 (bg)



Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-3 (bg)



Z = -2.589

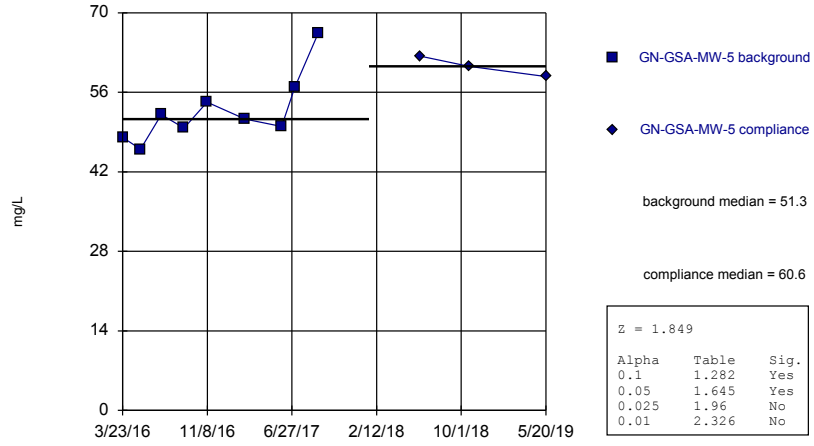
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-5



Z = 1.849

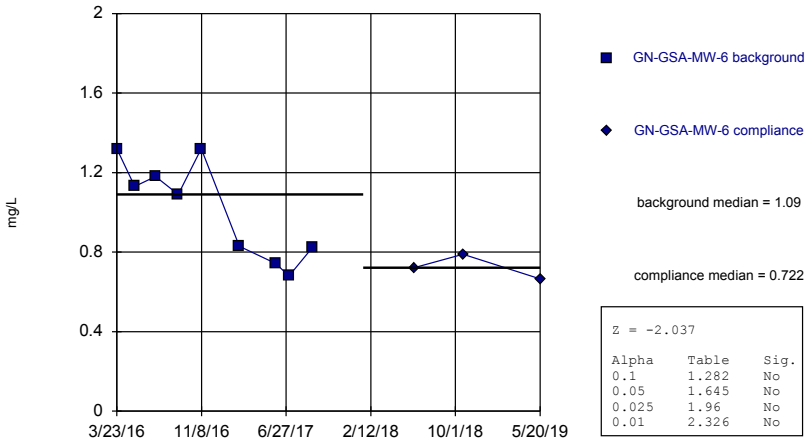
Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	Yes
0.025	1.96	No
0.01	2.326	No

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-6



Z = -2.037

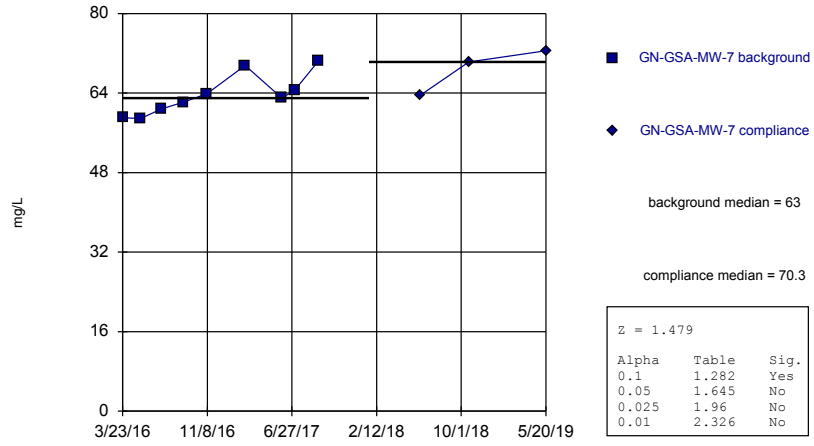
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-7



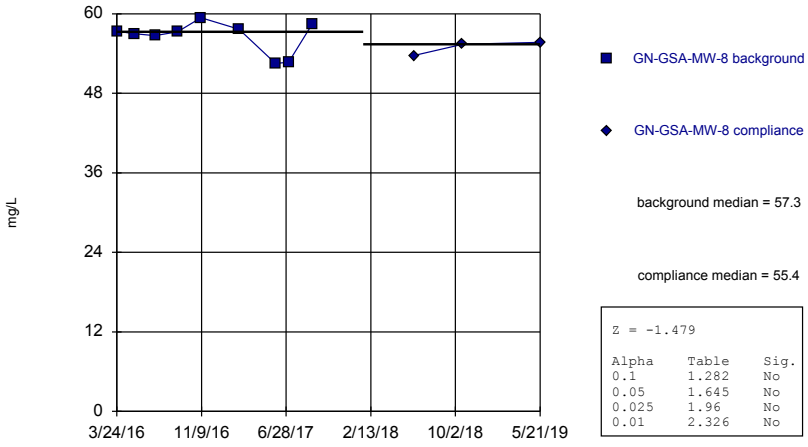
Z = 1.479

Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-8



Z = -1.479

Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

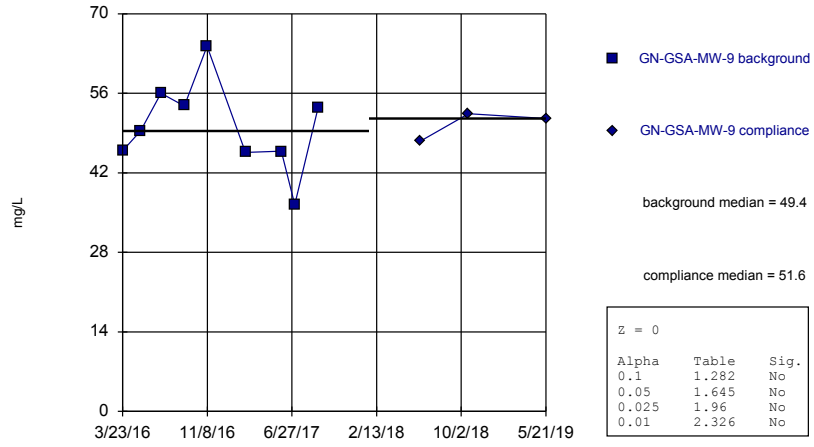
Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-9



Z = 0

Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Calcium Analysis Run 9/25/2019 4:09 PM View: Intrawell

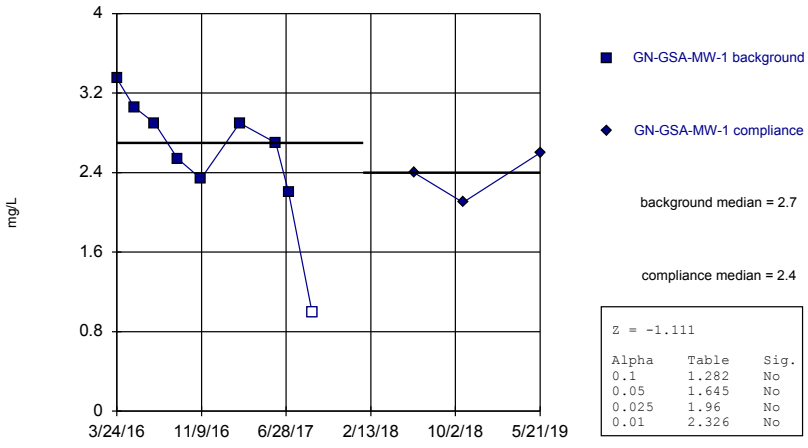
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-1



Z = -1.111

Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell

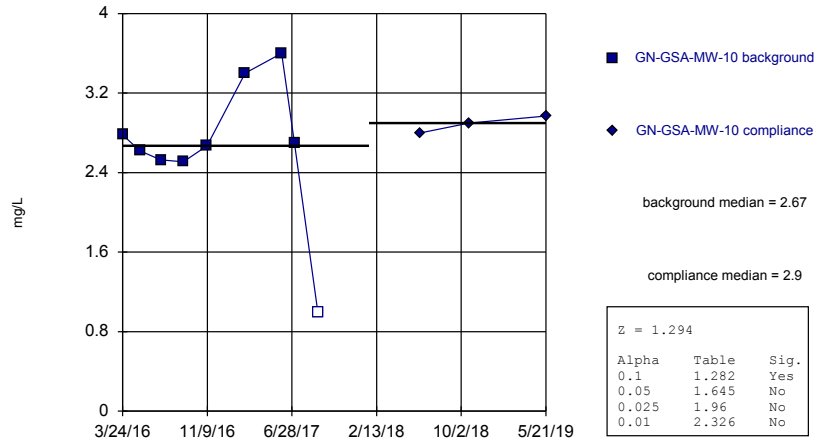
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-10



Z = 1.294

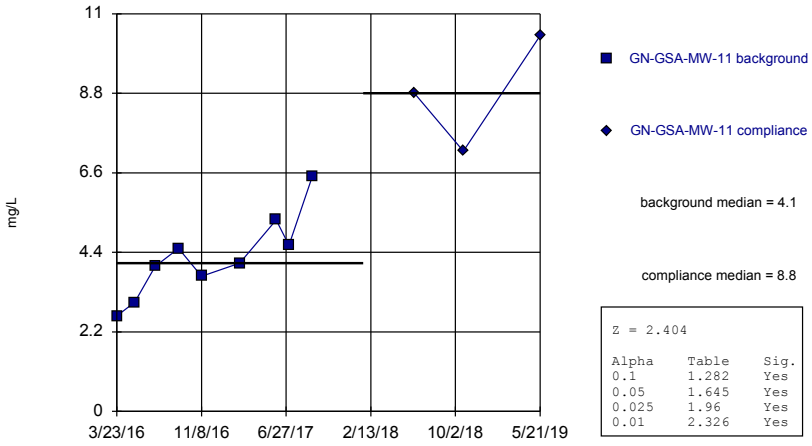
Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-11

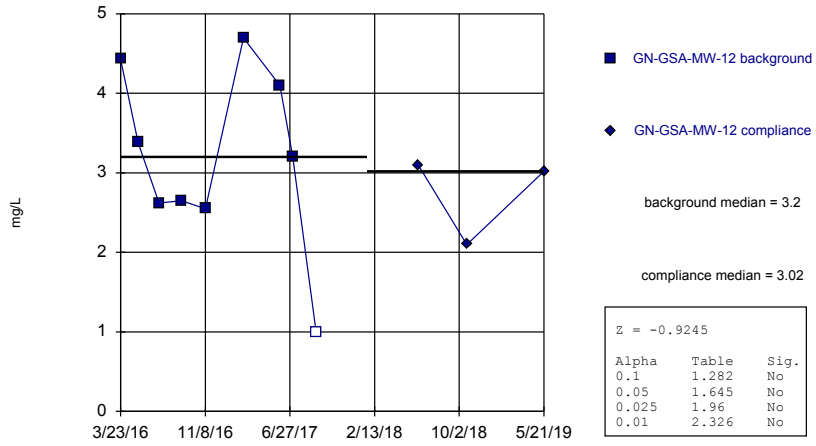


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-12

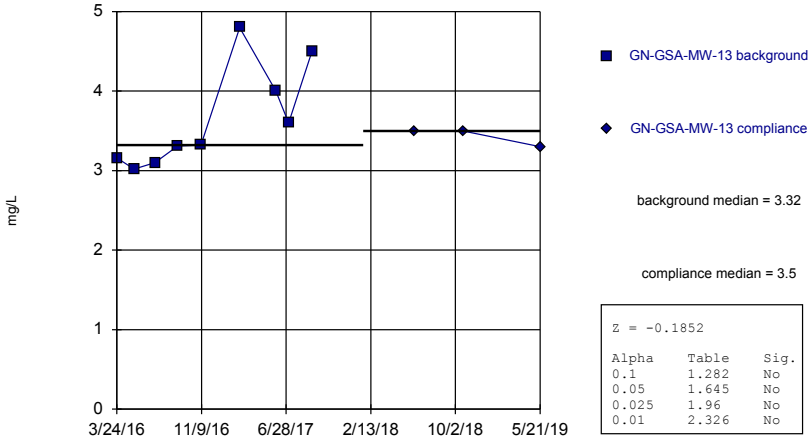


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-13

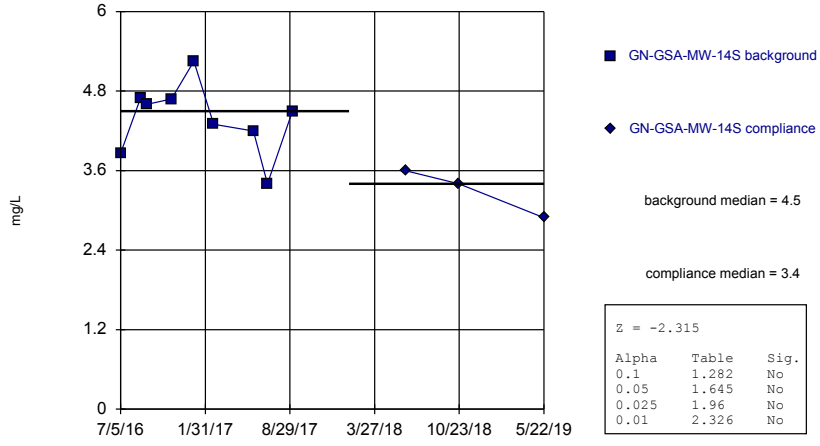


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-14S (bg)



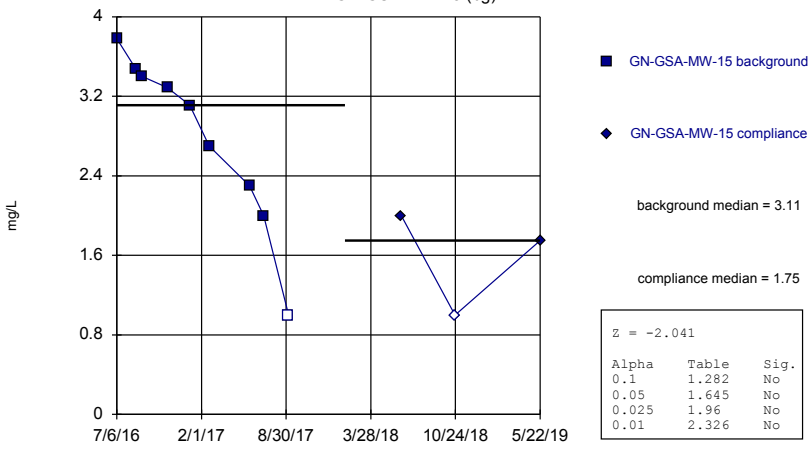
Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-15 (bg)

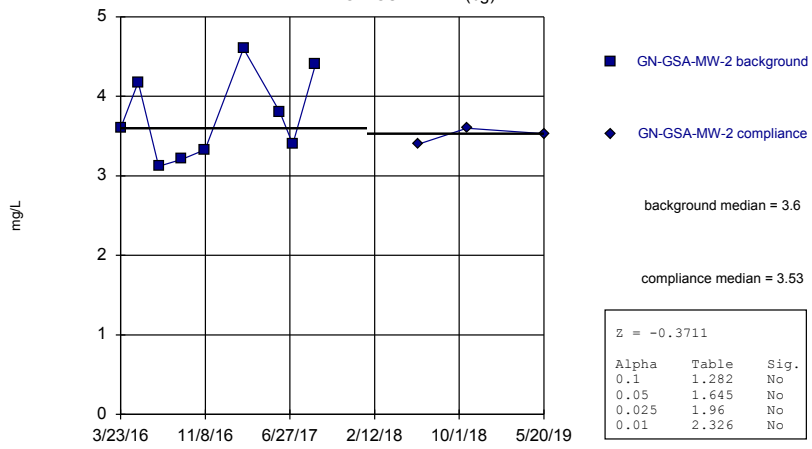


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-2 (bg)

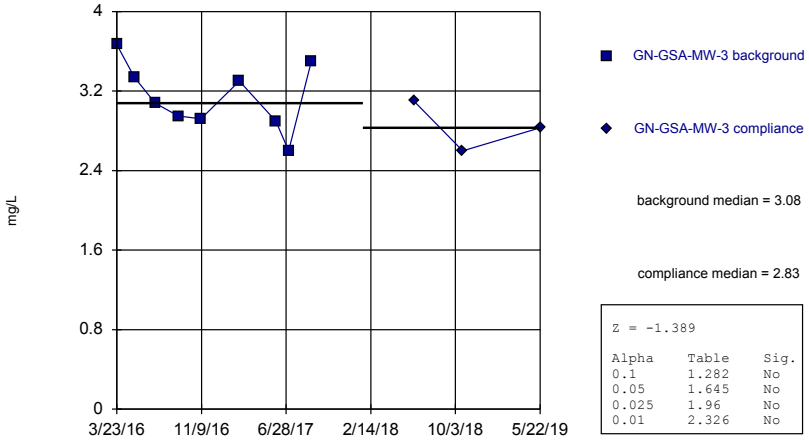


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-3 (bg)

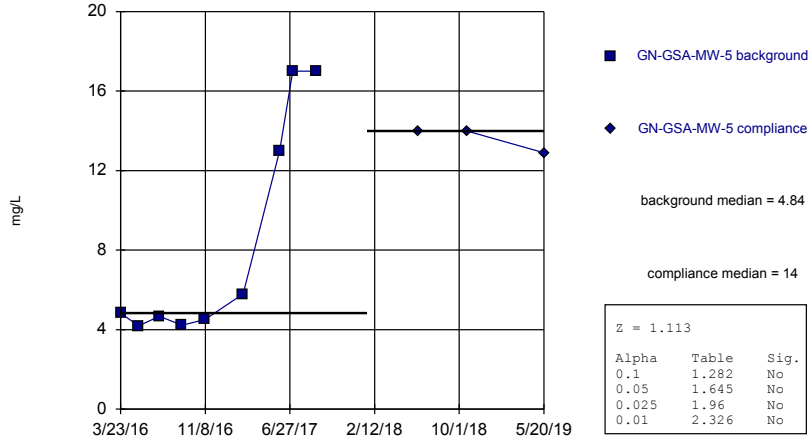


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-5

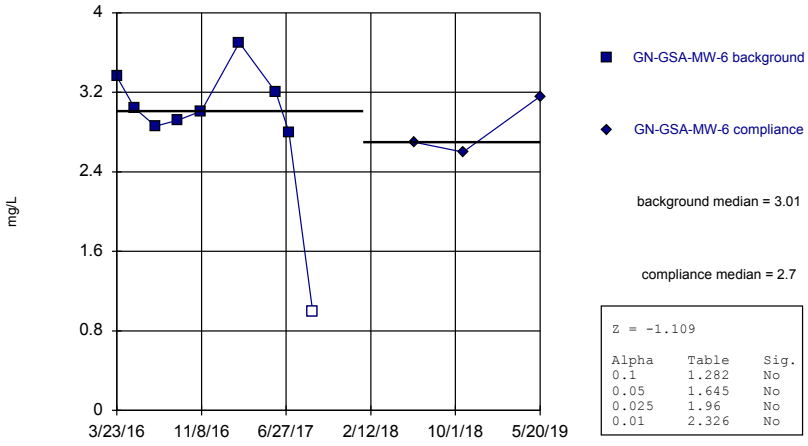


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-6

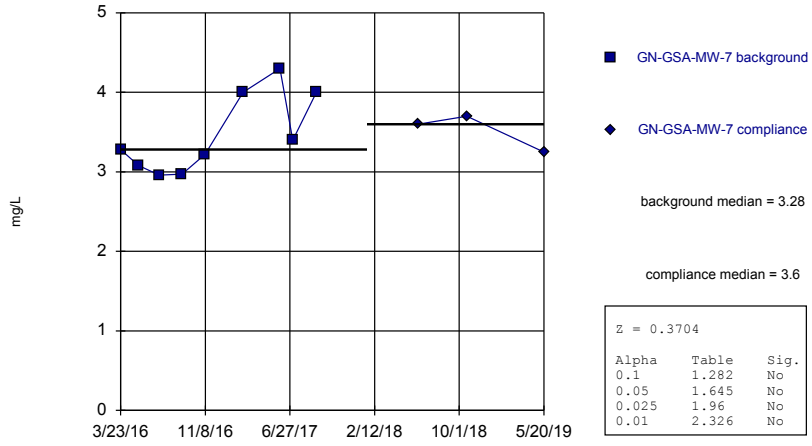


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-7

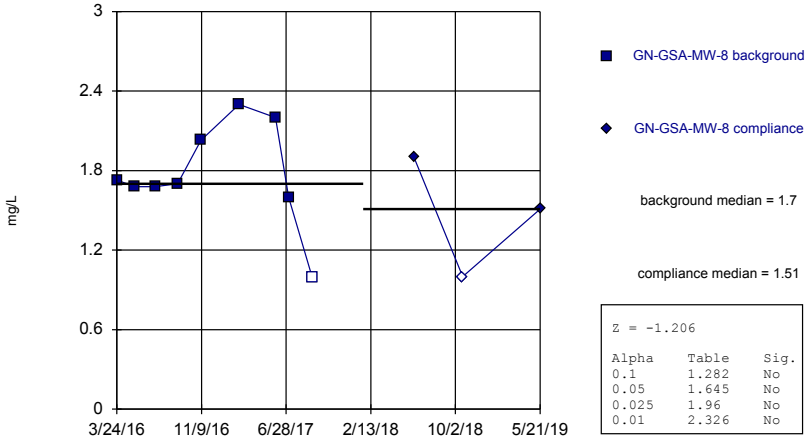


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-8

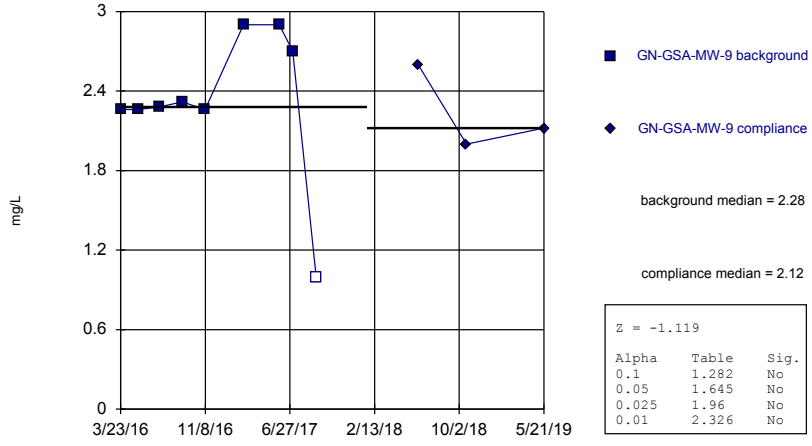


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-9

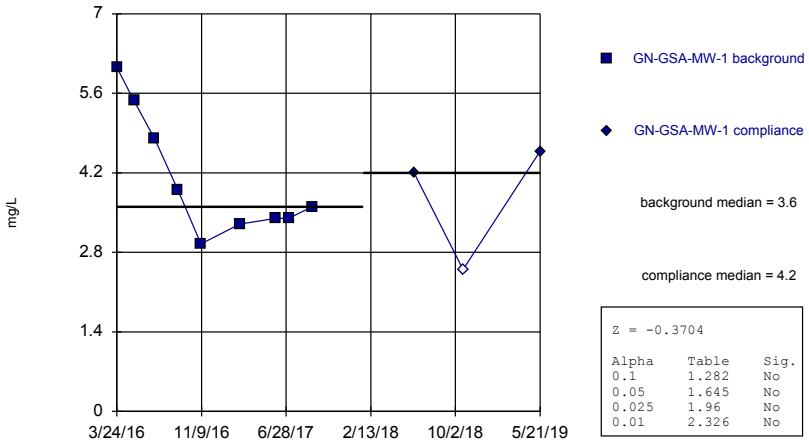


Constituent: Chloride Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-1



Z = -0.3704

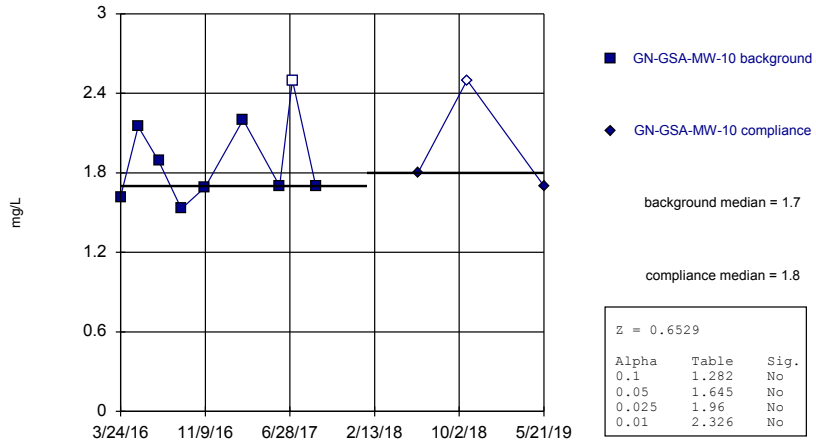
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-10



Z = 0.6529

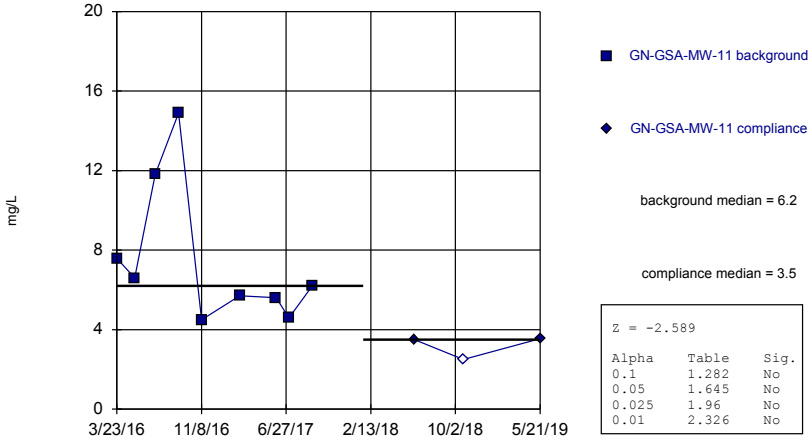
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-11



Z = -2.589

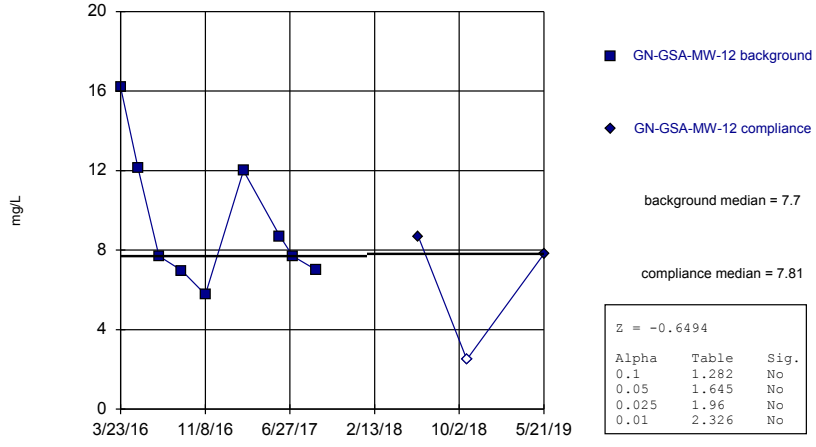
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-12



Z = -0.6494

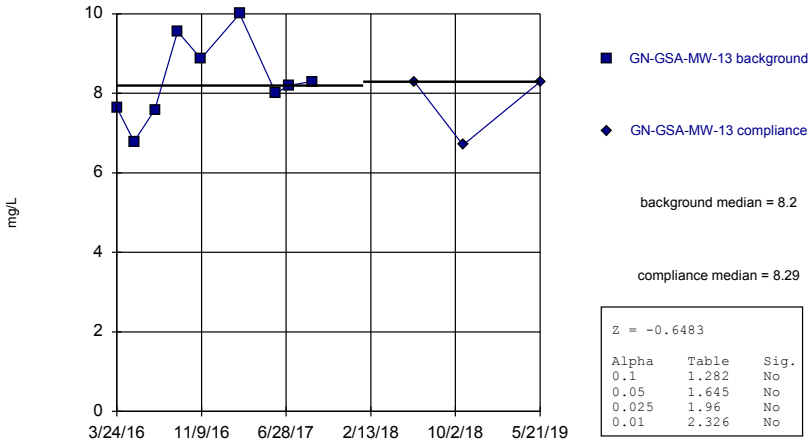
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-13



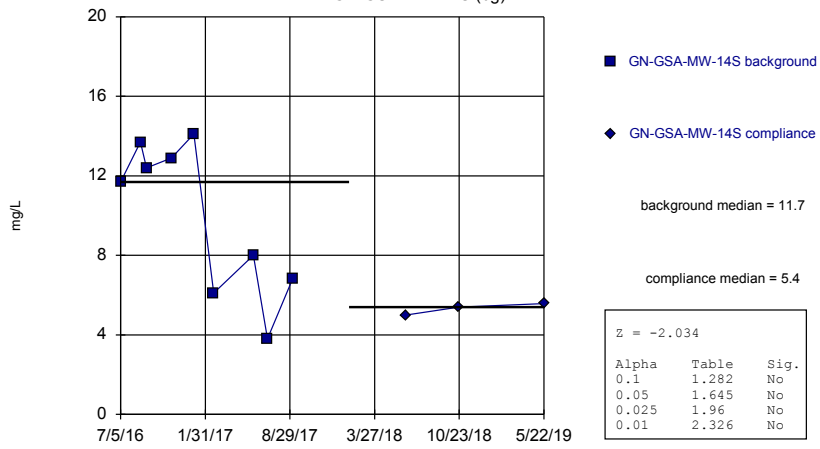
Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-14S (bg)



Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell

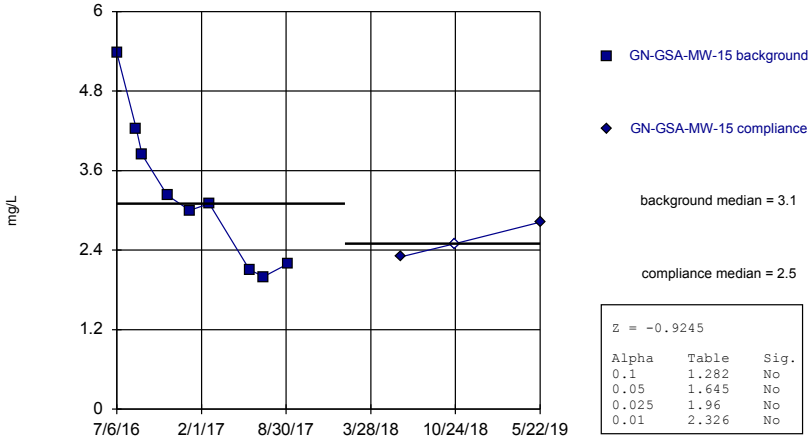
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-15 (bg)



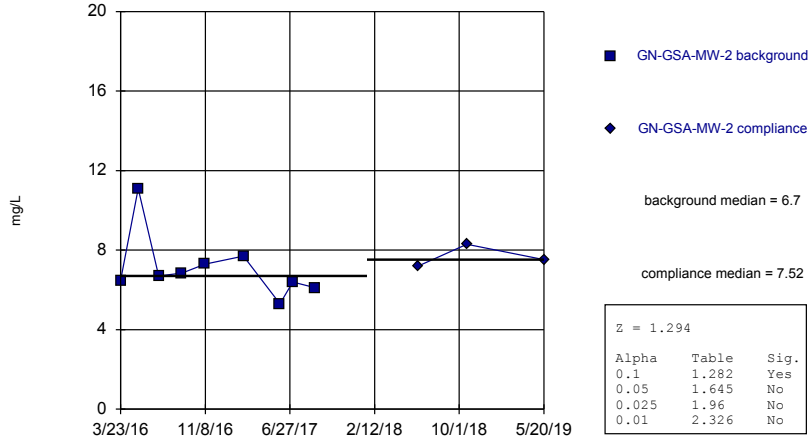
Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-2 (bg)

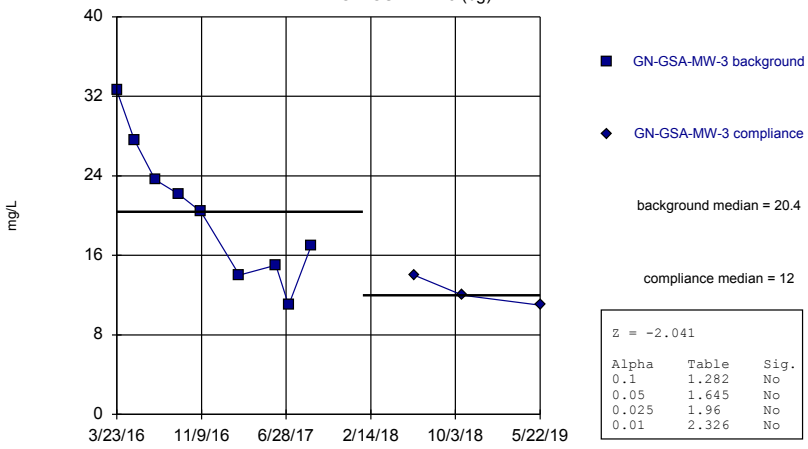


Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-3 (bg)



Z = -2.041

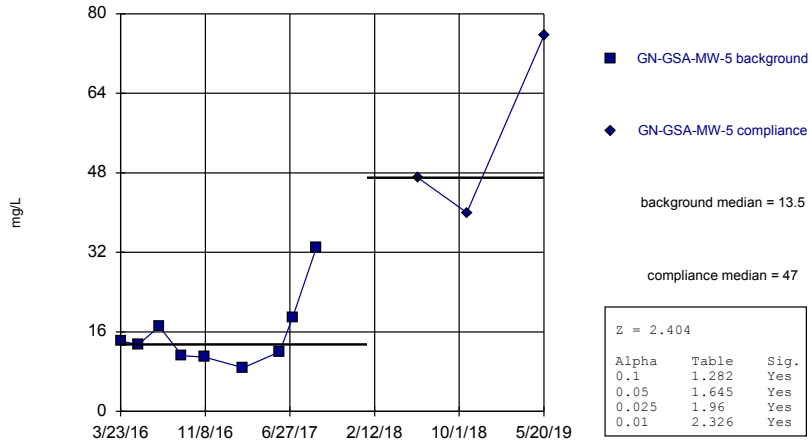
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-5



Z = 2.404

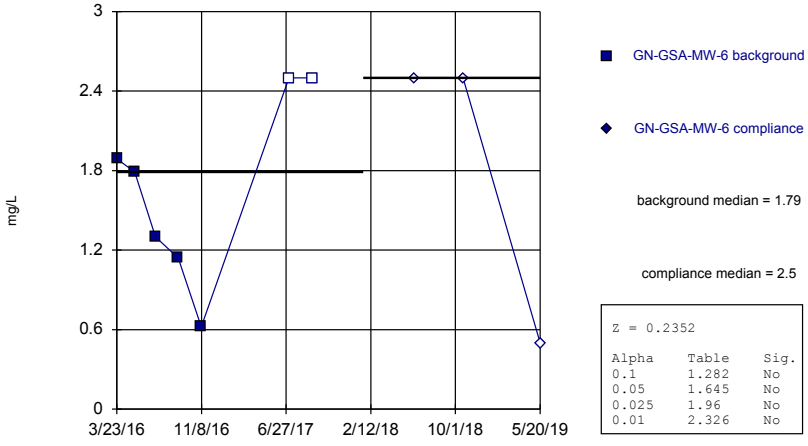
Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	Yes
0.025	1.96	Yes
0.01	2.326	Yes

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-6



Z = 0.2352

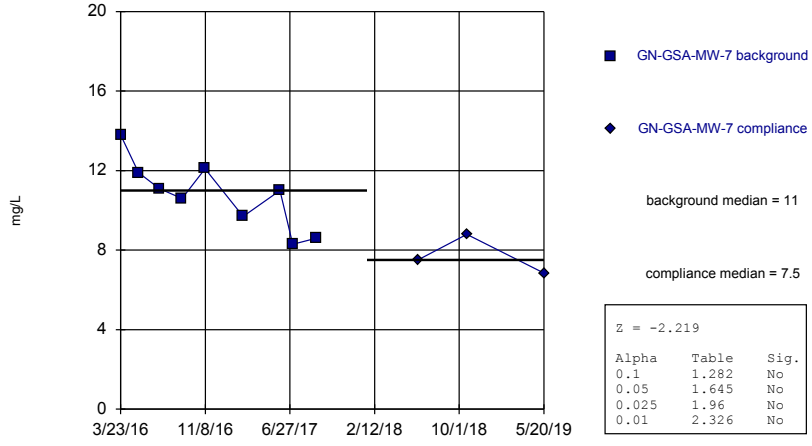
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-7



Z = -2.219

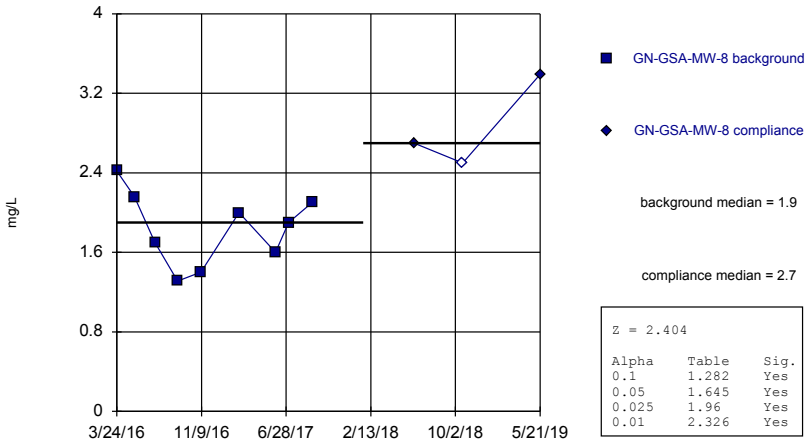
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-8



Z = 2.404

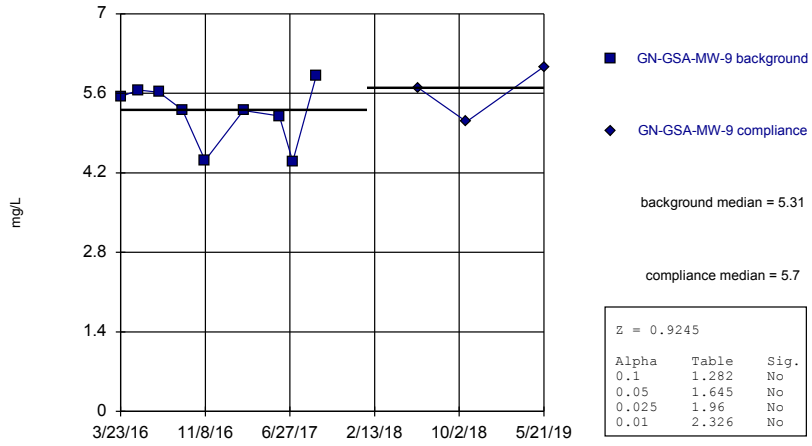
Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	Yes
0.025	1.96	Yes
0.01	2.326	Yes

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-9



Z = 0.9245

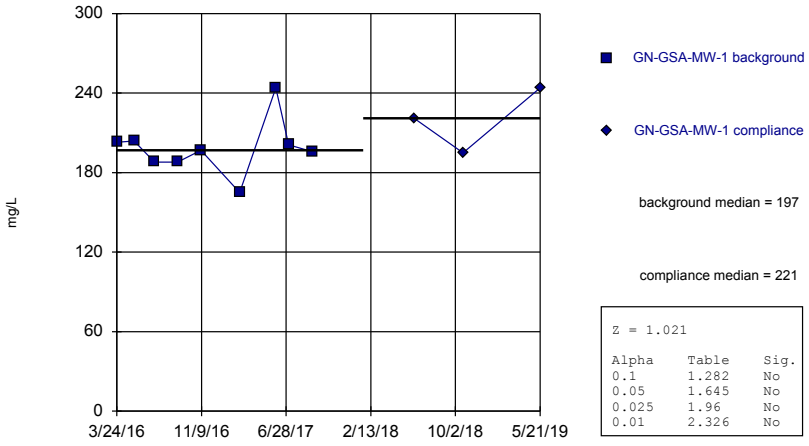
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: Sulfate Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-1



Z = 1.021

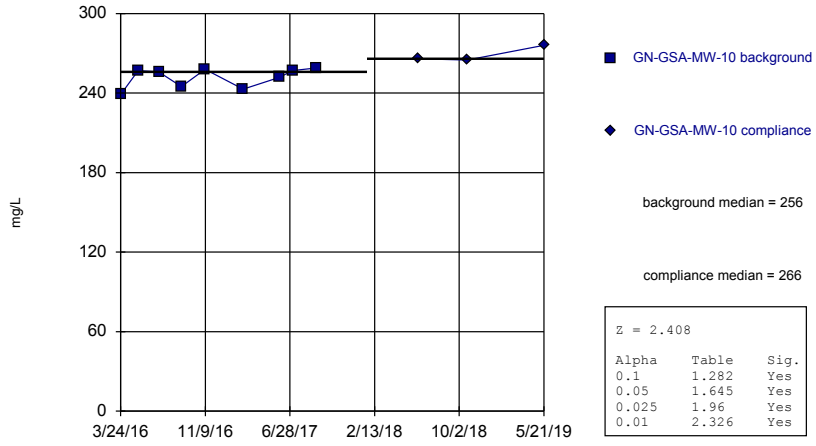
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-10



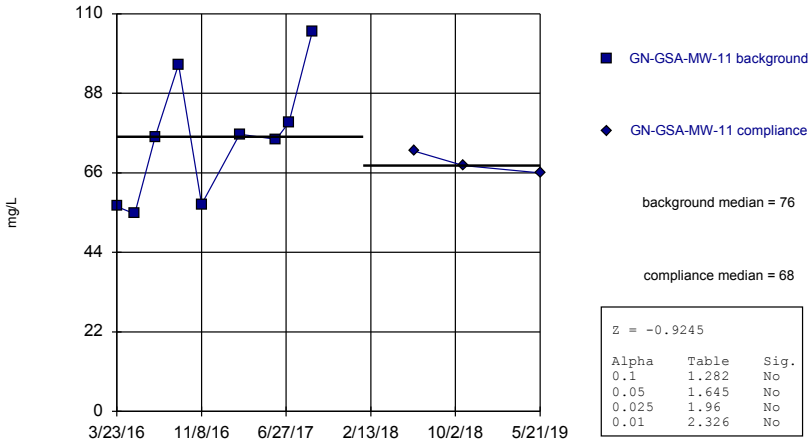
Z = 2.408

Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	Yes
0.025	1.96	Yes
0.01	2.326	Yes

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-11



Z = -0.9245

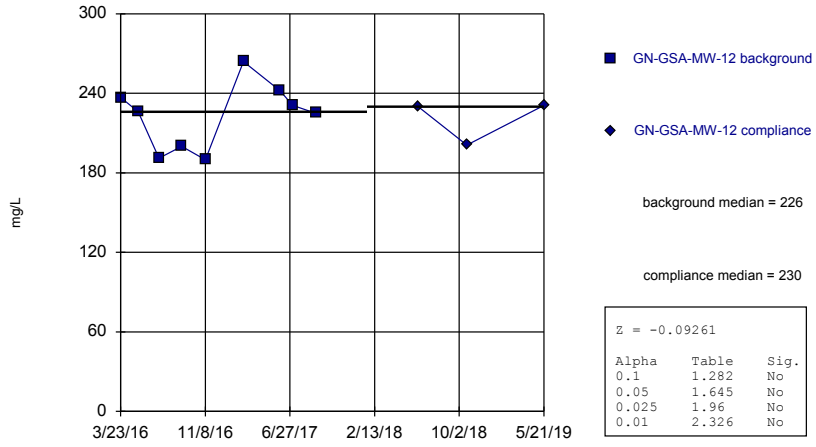
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-12



Z = -0.09261

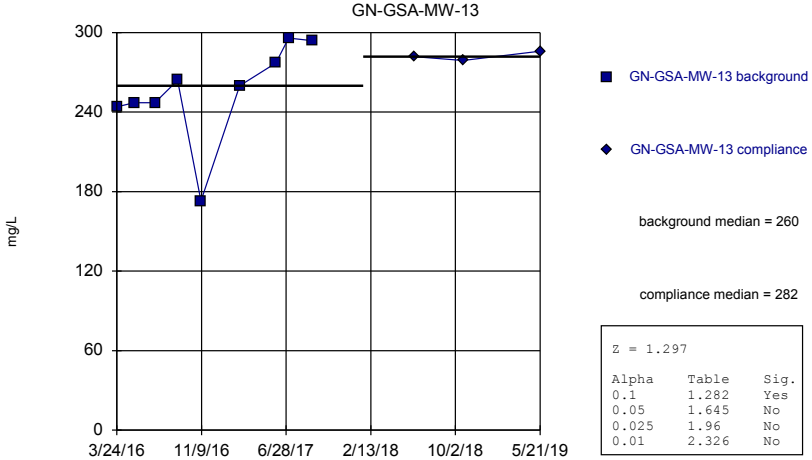
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-13



Z = 1.297

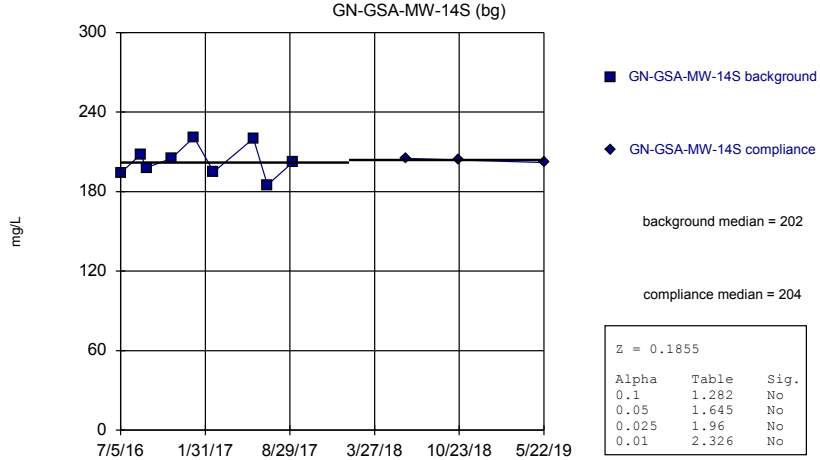
Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-14S (bg)



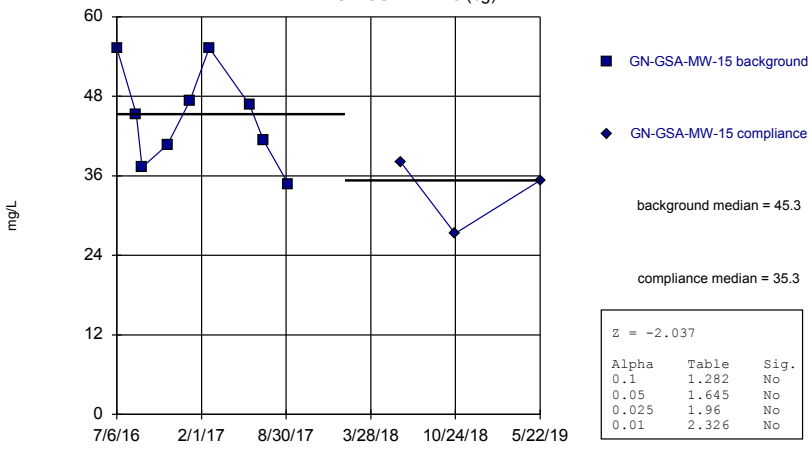
Z = 0.1855

Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-15 (bg)



Z = -2.037

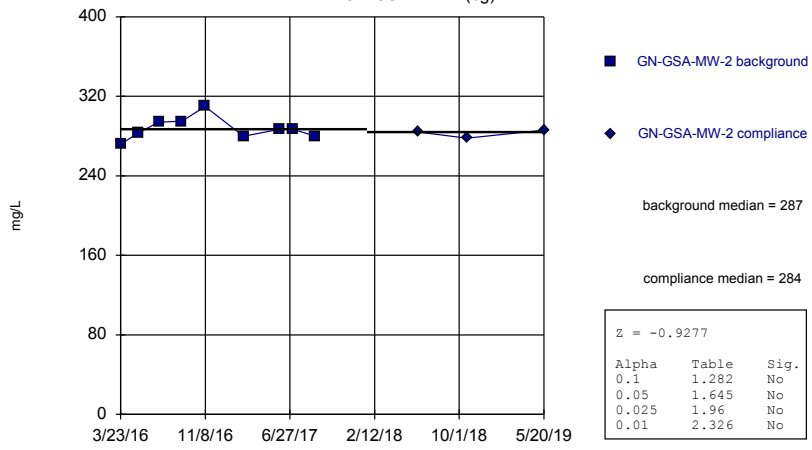
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-2 (bg)



Z = -0.9277

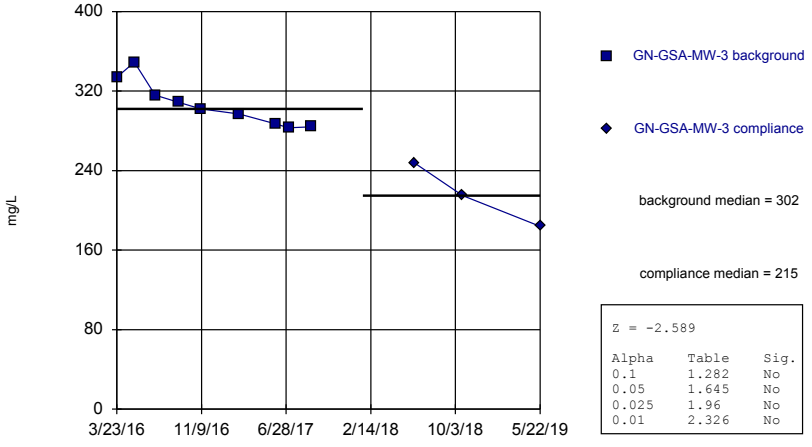
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-3 (bg)



Z = -2.589

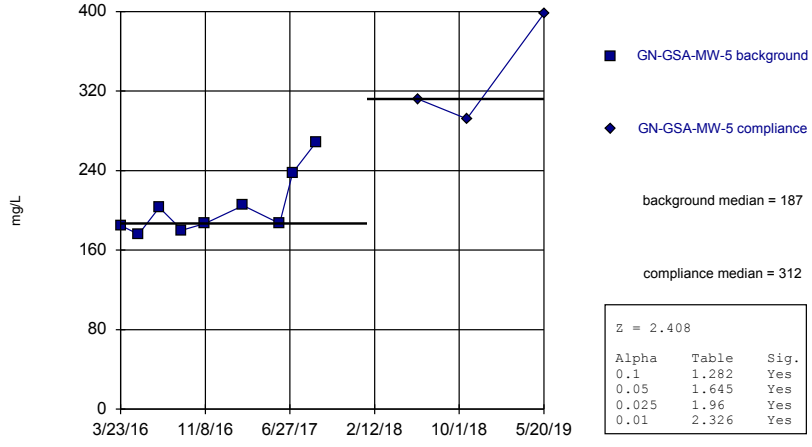
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-5



Z = 2.408

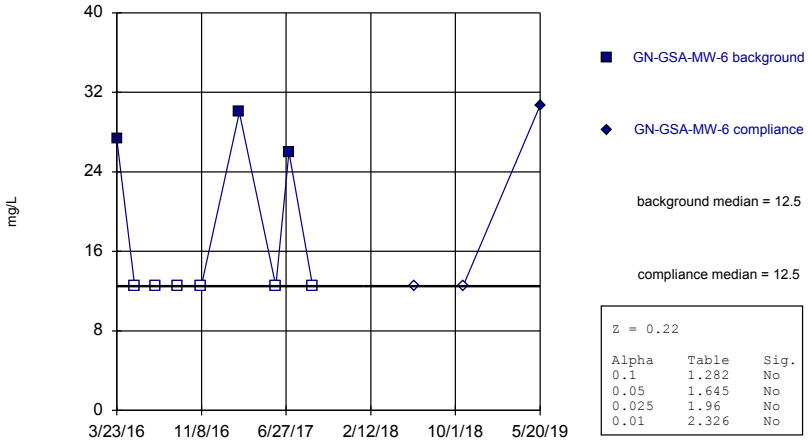
Alpha	Table	Sig.
0.1	1.282	Yes
0.05	1.645	Yes
0.025	1.96	Yes
0.01	2.326	Yes

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-6



Z = 0.22

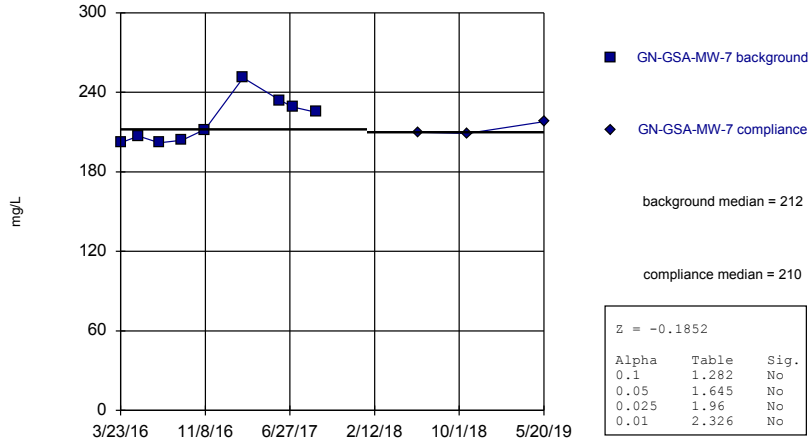
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-7



Z = -0.1852

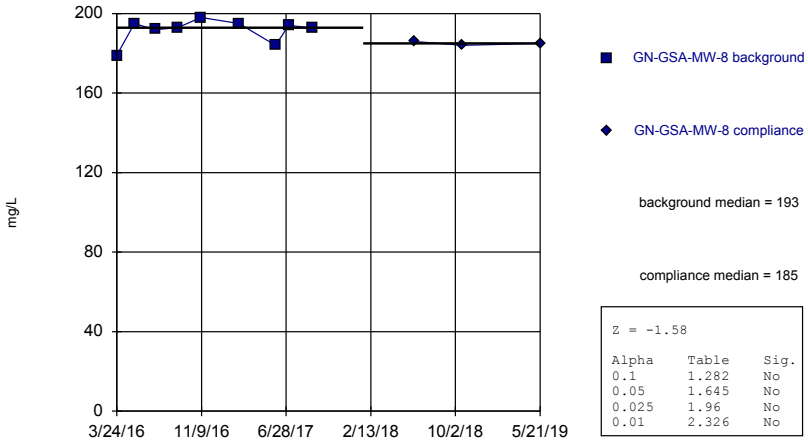
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-8



Z = -1.58

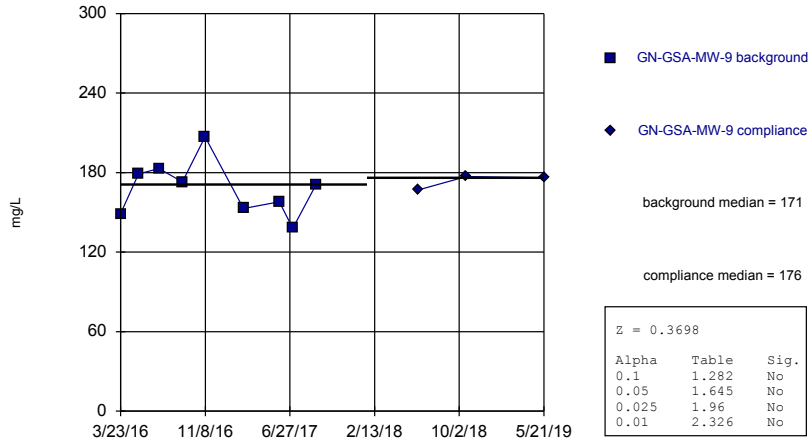
Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Mann-Whitney (Wilcoxon Rank Sum)

GN-GSA-MW-9



Z = 0.3698

Alpha	Table	Sig.
0.1	1.282	No
0.05	1.645	No
0.025	1.96	No
0.01	2.326	No

Constituent: TDS Analysis Run 9/25/2019 4:09 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

FIGURE E.

Trend Tests Summary Table - All Results

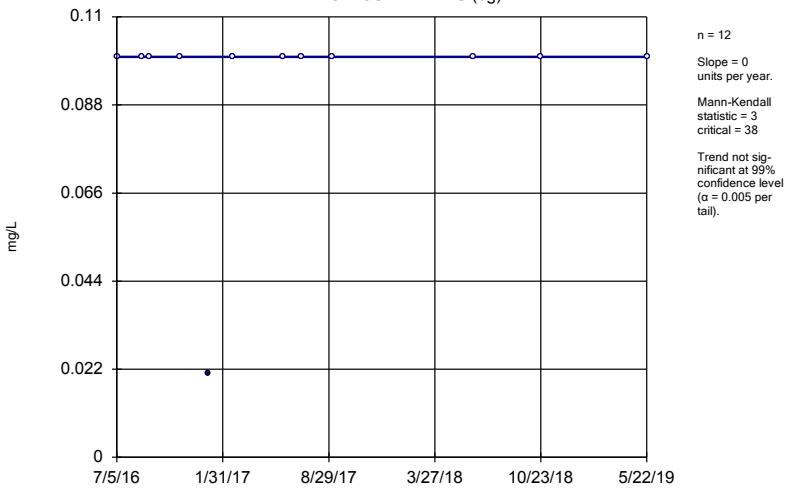
Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 4:05 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Boron (mg/L)	GN-GSA-MW-14S (bg)	0	3	38	No	12	91.67	n/a	n/a	0.01	NP
Boron (mg/L)	GN-GSA-MW-15 (bg)	0	0	38	No	12	100	n/a	n/a	0.01	NP
Boron (mg/L)	GN-GSA-MW-2 (bg)	0	0	38	No	12	100	n/a	n/a	0.01	NP
Boron (mg/L)	GN-GSA-MW-3 (bg)	0	0	38	No	12	100	n/a	n/a	0.01	NP
Fluoride (mg/L)	GN-GSA-MW-14S (bg)	-0.007175	-23	-43	No	13	23.08	n/a	n/a	0.01	NP
Fluoride (mg/L)	GN-GSA-MW-15 (bg)	9.8e-10	11	43	No	13	61.54	n/a	n/a	0.01	NP
Fluoride (mg/L)	GN-GSA-MW-2 (bg)	0.01181	27	38	No	12	41.67	n/a	n/a	0.01	NP
Fluoride (mg/L)	GN-GSA-MW-3 (bg)	-0.004736	-17	-38	No	12	8.333	n/a	n/a	0.01	NP
pH (pH)	GN-GSA-MW-14S (bg)	0.00887	6	43	No	13	0	n/a	n/a	0.01	NP
pH (pH)	GN-GSA-MW-15 (bg)	-0.03827	-24	-43	No	13	0	n/a	n/a	0.01	NP
pH (pH)	GN-GSA-MW-2 (bg)	-0.01658	-19	-43	No	13	0	n/a	n/a	0.01	NP
pH (pH)	GN-GSA-MW-3 (bg)	-0.0572	-21	-43	No	13	0	n/a	n/a	0.01	NP

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

GN-GSA-MW-14S (bg)



n = 12

Slope = 0 units per year.

Mann-Kendall statistic = 3 critical = 38

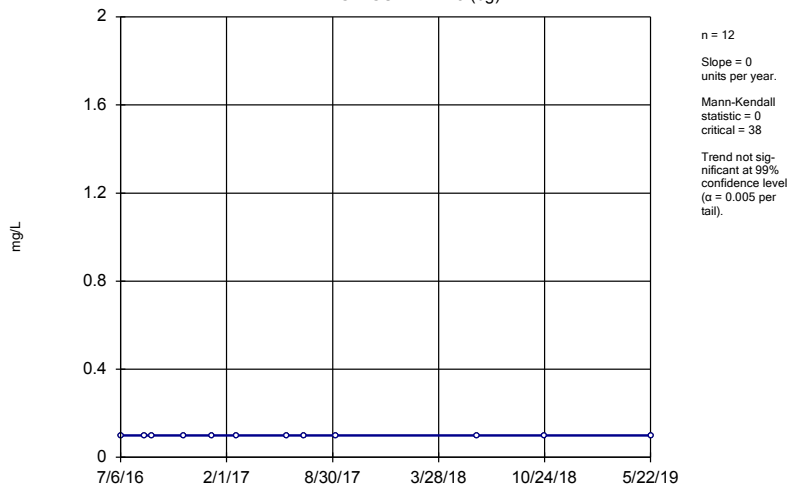
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

GN-GSA-MW-15 (bg)



n = 12

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 38

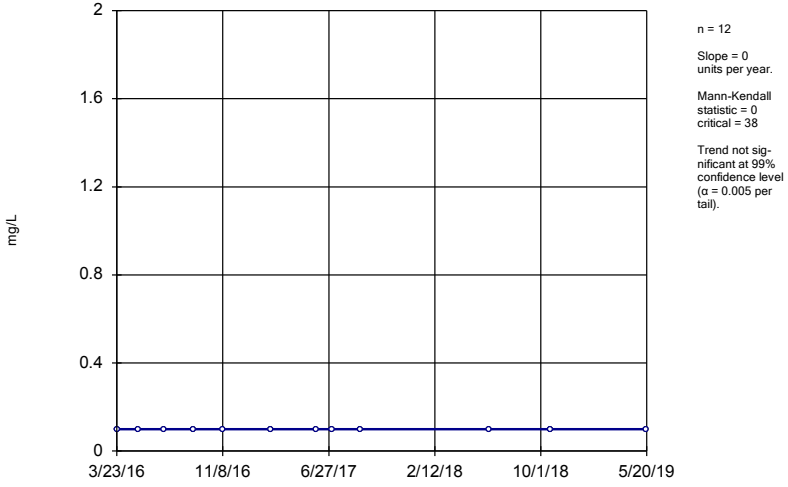
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

GN-GSA-MW-2 (bg)



n = 12

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 38

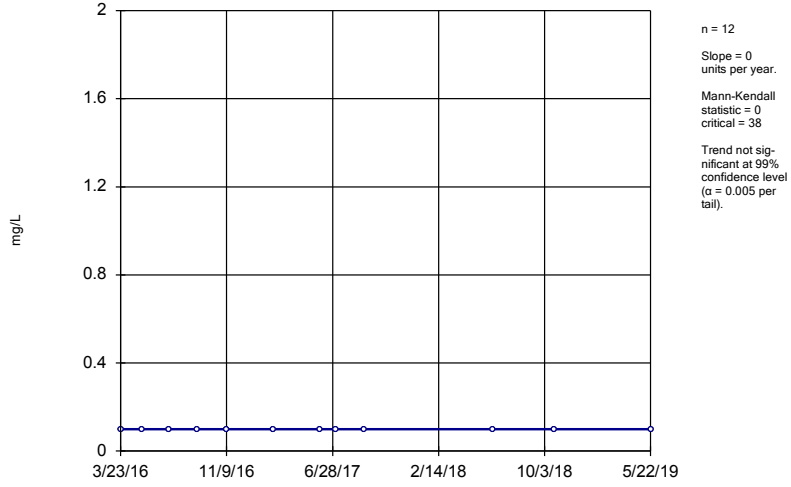
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

GN-GSA-MW-3 (bg)



n = 12

Slope = 0 units per year.

Mann-Kendall statistic = 0 critical = 38

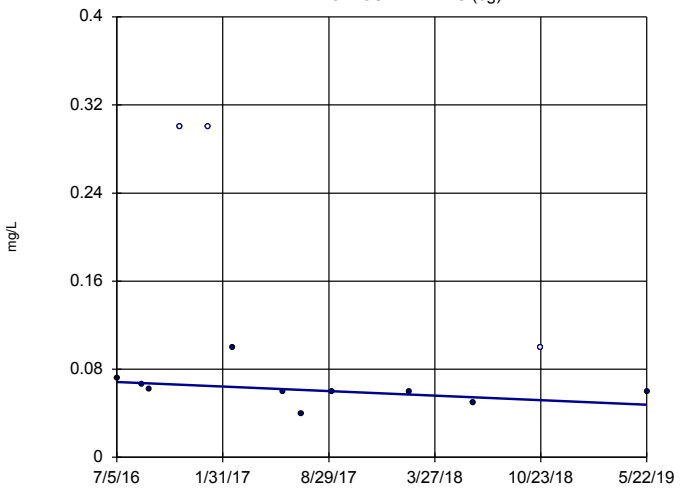
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Boron Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

GN-GSA-MW-14S (bg)



n = 13

Slope = -0.007175 units per year.

Mann-Kendall statistic = -23
critical = -43

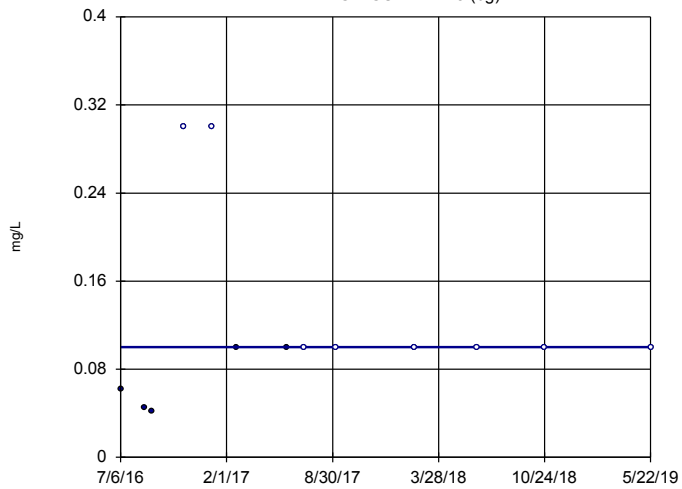
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

GN-GSA-MW-15 (bg)



n = 13

Slope = 9.8e-10 units per year.

Mann-Kendall statistic = 11
critical = 43

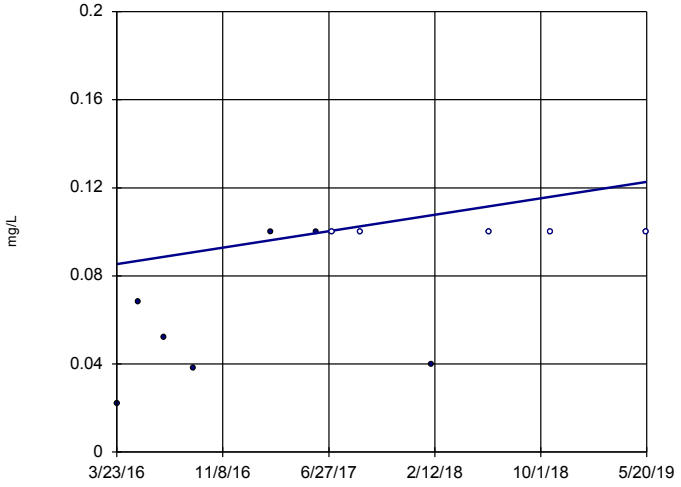
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

GN-GSA-MW-2 (bg)



n = 12

Slope = 0.01181 units per year.

Mann-Kendall statistic = 27
critical = 38

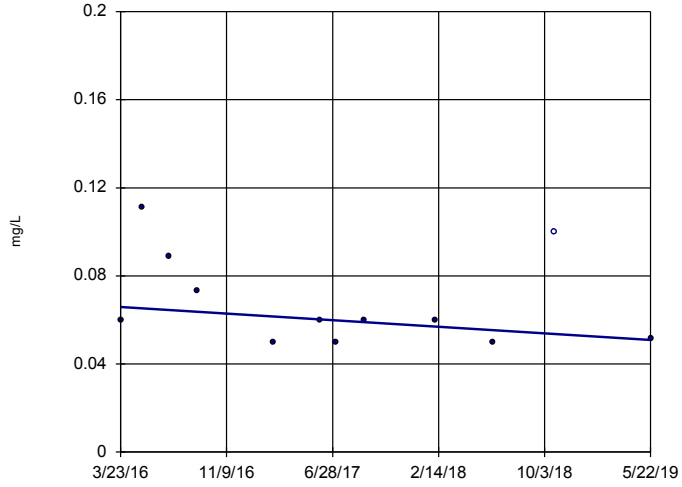
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Sen's Slope Estimator

GN-GSA-MW-3 (bg)



n = 12

Slope = -0.004736 units per year.

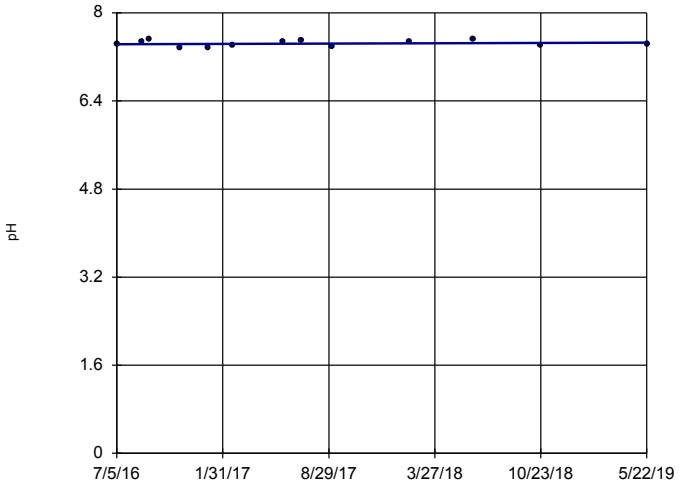
Mann-Kendall statistic = -17
critical = -38

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: Fluoride Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sen's Slope Estimator

GN-GSA-MW-14S (bg)



n = 13

Slope = 0.00887 units per year.

Mann-Kendall statistic = 6
critical = 43

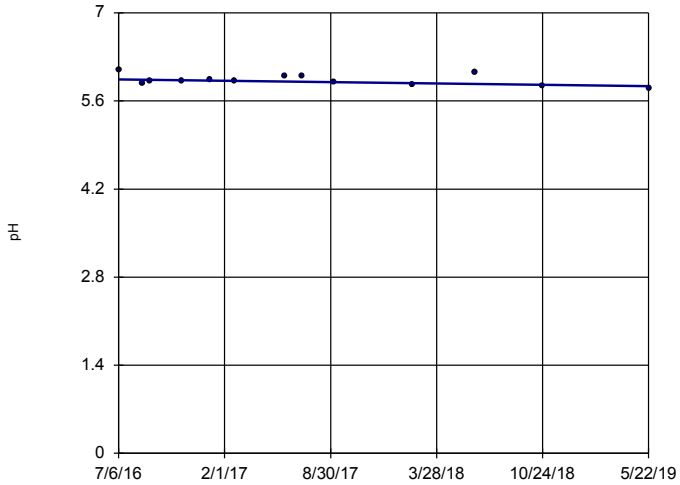
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Sen's Slope Estimator

GN-GSA-MW-15 (bg)



n = 13

Slope = -0.03827 units per year.

Mann-Kendall statistic = -24
critical = -43

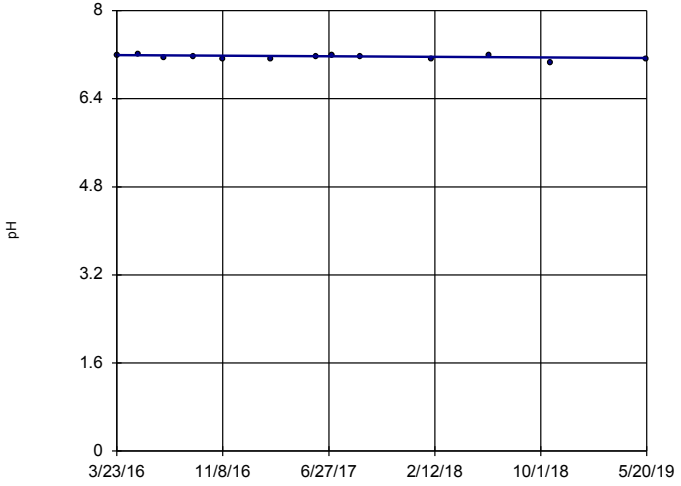
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Sen's Slope Estimator

GN-GSA-MW-2 (bg)



n = 13

Slope = -0.01658 units per year.

Mann-Kendall statistic = -19
critical = -43

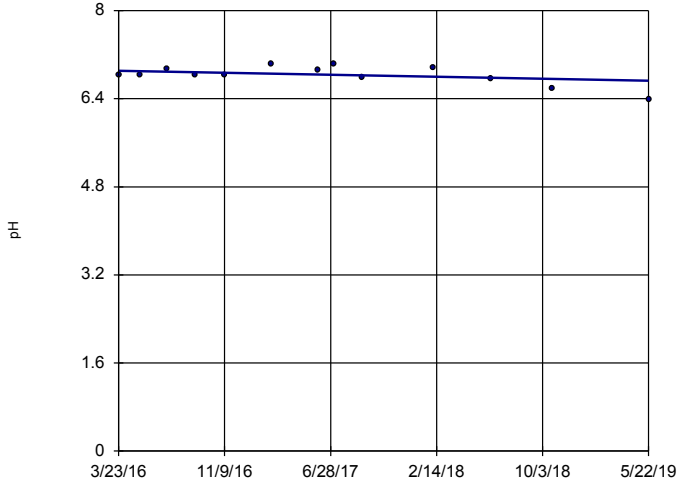
Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Sen's Slope Estimator

GN-GSA-MW-3 (bg)



n = 13

Slope = -0.0572 units per year.

Mann-Kendall statistic = -21
critical = -43

Trend not significant at 99% confidence level (α = 0.005 per tail).

Constituent: pH Analysis Run 9/25/2019 4:04 PM View: Interwell
Plant Gaston Client: Southern Company Data: Gaston GSA

FIGURE F.

Interwell Prediction Limit Summary Table - All Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 4:06 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (mg/L)	n/a	0.1	n/a	n/a	10 future	n/a	48	n/a	n/a	97.92	n/a	n/a	0.0008059	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	n/a	0.3	n/a	n/a	10 future	n/a	50	n/a	n/a	34	n/a	n/a	0.0007305	NP Inter (normality) 1 of 2
pH (pH)	n/a	7.53	5.81	n/a	10 future	n/a	52	n/a	n/a	0	n/a	n/a	0.001376	NP Inter (normality) 1 of 2

FIGURE G.

Intrawell Prediction Limit Summary Table - All Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 4:14 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Calcium (mg/L)	GN-GSA-MW-11	16.25	n/a	n/a	1 future	n/a	12	10.69	2.14	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-12	81.01	n/a	n/a	1 future	n/a	12	67.28	5.286	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-14S	56.86	n/a	n/a	1 future	n/a	12	48.44	3.238	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-15	11.31	n/a	n/a	1 future	n/a	12	7.898	1.312	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-2	98.23	n/a	n/a	1 future	n/a	12	81.19	6.554	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-3	131.1	n/a	n/a	1 future	n/a	12	88.88	16.26	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-5	71.16	n/a	n/a	1 future	n/a	12	54.73	6.323	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-6	1.589	n/a	n/a	1 future	n/a	12	0.9412	0.2491	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-7	77.07	n/a	n/a	1 future	n/a	12	64.91	4.678	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-8	61.91	n/a	n/a	1 future	n/a	12	56.16	2.214	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-9	68.06	n/a	n/a	1 future	n/a	12	50.19	6.875	0	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-1	4.063	n/a	n/a	1 future	n/a	12	2.508	0.5987	8.333	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-10	4.349	n/a	n/a	1 future	n/a	12	2.707	0.6318	8.333	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-12	5.735	n/a	n/a	1 future	n/a	12	3.071	1.025	8.333	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-13	5.051	n/a	n/a	1 future	n/a	12	3.593	0.561	0	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-14S	5.904	n/a	n/a	1 future	n/a	12	4.114	0.6886	0	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-15	4.555	n/a	n/a	1 future	n/a	12	2.588	0.7568	16.67	Kaplan-Meier	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-2	4.914	n/a	n/a	1 future	n/a	12	3.681	0.4747	0	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-3	3.937	n/a	n/a	1 future	n/a	12	3.066	0.3353	0	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-5	20.08	n/a	n/a	1 future	n/a	12	120	108.9	0	None	x^2	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-6	4.063	n/a	n/a	1 future	n/a	12	8.592	3.045	8.333	None	x^2	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-7	4.625	n/a	n/a	1 future	n/a	12	3.48	0.4404	0	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-8	2.446	n/a	n/a	1 future	n/a	12	1.795	0.2504	16.67	Kaplan-Meier	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-9	3.608	n/a	n/a	1 future	n/a	12	2.3	0.5034	8.333	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-1	6.746	n/a	n/a	1 future	n/a	12	4.014	1.051	8.333	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-10	2.357	n/a	n/a	1 future	n/a	12	1.781	0.2219	16.67	Kaplan-Meier	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-11	15.78	n/a	n/a	1 future	n/a	12	6.42	3.601	8.333	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-12	17.68	n/a	n/a	1 future	n/a	12	8.596	3.494	8.333	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-13	10.73	n/a	n/a	1 future	n/a	12	8.187	0.9783	0	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-14S	18.81	n/a	n/a	1 future	n/a	12	8.789	3.857	0	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-15	5.672	n/a	n/a	1 future	n/a	12	3.058	1.006	8.333	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-2	11.01	n/a	n/a	1 future	n/a	12	7.246	1.449	0	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-3	36.48	n/a	n/a	1 future	n/a	12	18.37	6.971	0	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-6	2.623	n/a	n/a	1 future	n/a	10	1.227	0.5002	50	Kaplan-Meier	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-7	15.43	n/a	n/a	1 future	n/a	12	10.02	2.08	0	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-9	6.71	n/a	n/a	1 future	n/a	12	5.352	0.5227	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-1	263.1	n/a	n/a	1 future	n/a	12	203.8	22.81	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-11	113.2	n/a	n/a	1 future	n/a	12	73.64	15.22	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-12	280.7	n/a	n/a	1 future	n/a	12	222.3	22.46	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-13	349.6	n/a	n/a	1 future	n/a	12	262.4	33.54	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-14S	229.7	n/a	n/a	1 future	n/a	12	203.3	10.19	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-15	63.78	n/a	n/a	1 future	n/a	12	42.04	8.363	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-2	311.9	n/a	n/a	1 future	n/a	12	286.3	9.847	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-3	407.7	n/a	n/a	1 future	n/a	12	284	47.61	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-6	30.7	n/a	n/a	1 future	n/a	12	n/a	n/a	66.67	n/a	n/a	0.01077	NP Intra (NDs) 1 of 2
TDS (mg/L)	GN-GSA-MW-7	256.2	n/a	n/a	1 future	n/a	12	216.9	15.11	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-8	205.2	n/a	n/a	1 future	n/a	12	189.8	5.921	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-9	216.4	n/a	n/a	1 future	n/a	12	169.3	18.13	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-1	39.4	n/a	n/a	1 future	n/a	9	35.73	1.237	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-10	102.2	n/a	n/a	1 future	n/a	9	92.19	3.387	0	None	No	0.0007523	Param Intra 1 of 2
Calcium (mg/L)	GN-GSA-MW-13	101.9	n/a	n/a	1 future	n/a	9	83.12	6.337	0	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/L)	GN-GSA-MW-11	7.709	n/a	n/a	1 future	n/a	9	4.269	1.162	0	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-5	37.06	n/a	n/a	1 future	n/a	9	15.51	7.278	0	None	No	0.0007523	Param Intra 1 of 2
Sulfate (mg/L)	GN-GSA-MW-8	2.935	n/a	n/a	1 future	n/a	9	1.843	0.3686	0	None	No	0.0007523	Param Intra 1 of 2
TDS (mg/L)	GN-GSA-MW-10	274	n/a	n/a	1 future	n/a	9	251.8	7.496	0	None	No	0.0007523	Param Intra 1 of 2

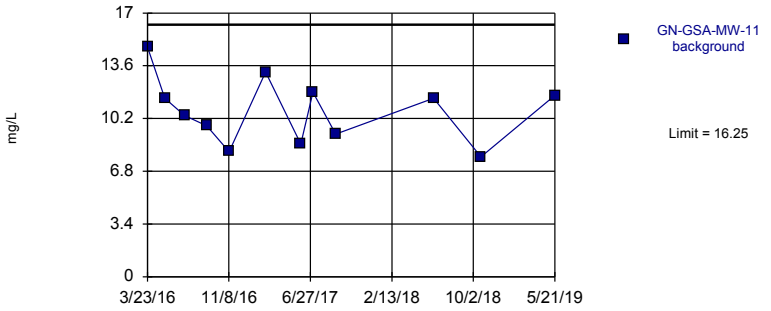
Intrawell Prediction Limit Summary Table - All Results

Plant Gaston Client: Southern Company Data: Gaston GSA Printed 9/25/2019, 4:14 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
TDS (mg/L)	GN-GSA-MW-5	295.1	n/a	n/a	1 future	n/a	9	203.3	30.98	0	None	No	0.0007523	Param Intra 1 of 2

Prediction Limit

Intrawell Parametric, GN-GSA-MW-11



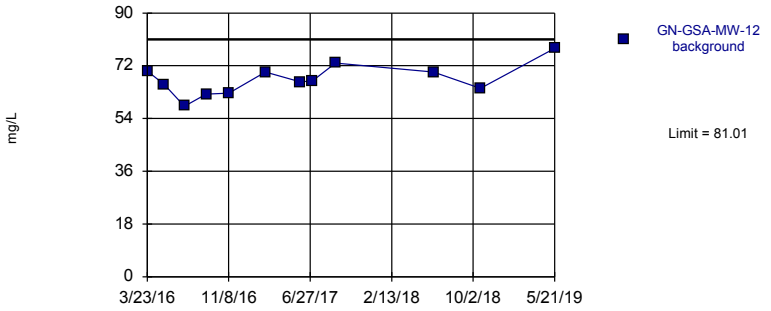
Background Data Summary: Mean=10.69, Std. Dev.=2.14, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9598, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-12



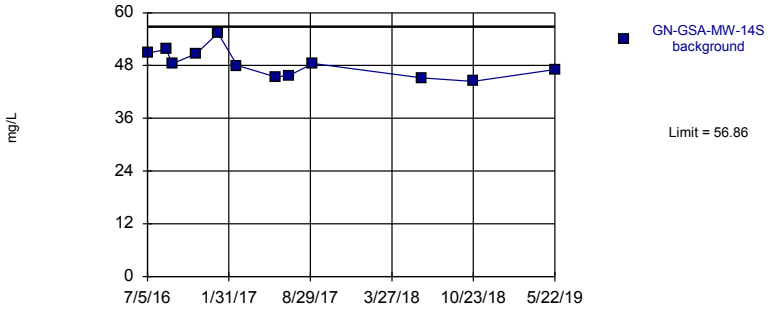
Background Data Summary: Mean=67.28, Std. Dev.=5.286, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9815, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-14S (bg)



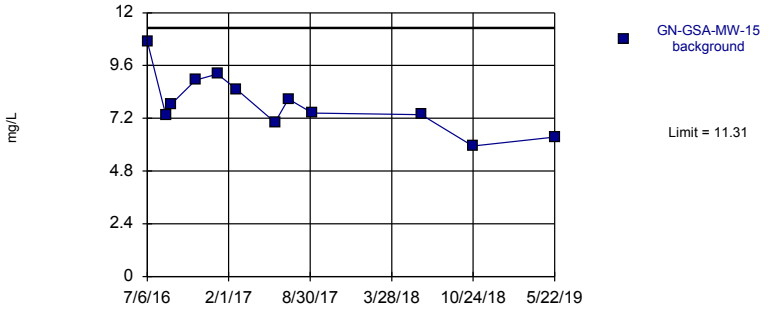
Background Data Summary: Mean=48.44, Std. Dev.=3.238, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9354, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-15 (bg)



Background Data Summary: Mean=7.898, Std. Dev.=1.312, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.967, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-11
3/23/2016	14.8
5/11/2016	11.5
7/6/2016	10.4
9/7/2016	9.73
11/9/2016	8.07
2/21/2017	13.2
5/31/2017	8.56
7/5/2017	11.9
9/7/2017	9.2
6/12/2018	11.5
10/24/2018	7.73
5/21/2019	11.7

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-12
3/23/2016	70.2
5/10/2016	65.6
7/6/2016	58.2
9/6/2016	62.3
11/9/2016	62.7
2/21/2017	69.9
5/31/2017	66.5
7/5/2017	66.9
9/7/2017	72.9
6/12/2018	69.9
10/23/2018	64.3
5/21/2019	77.9

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-14S
7/5/2016	50.8
8/23/2016	51.7
9/7/2016	48.4
11/8/2016	50.7
1/3/2017	55.4
2/21/2017	48
5/31/2017	45.4
7/5/2017	45.7
9/5/2017	48.5
6/12/2018	45.2
10/23/2018	44.4
5/22/2019	47.1

Prediction Limit

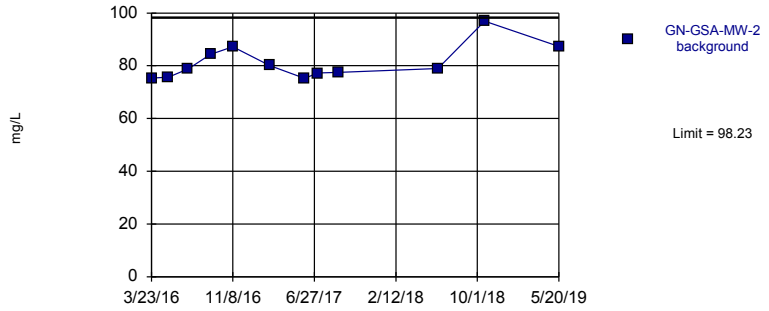
Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-15
7/6/2016	10.7
8/23/2016	7.34
9/7/2016	7.86
11/8/2016	8.94
1/3/2017	9.21
2/20/2017	8.53
5/31/2017	7.02
7/5/2017	8.08
9/5/2017	7.44
6/12/2018	7.37
10/23/2018	5.94
5/22/2019	6.34

Prediction Limit

Intrawell Parametric, GN-GSA-MW-2 (bg)

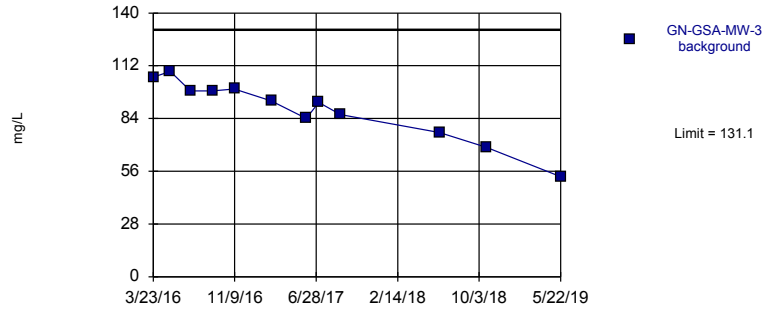


Background Data Summary: Mean=81.19, Std. Dev.=6.554, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8405, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-3 (bg)

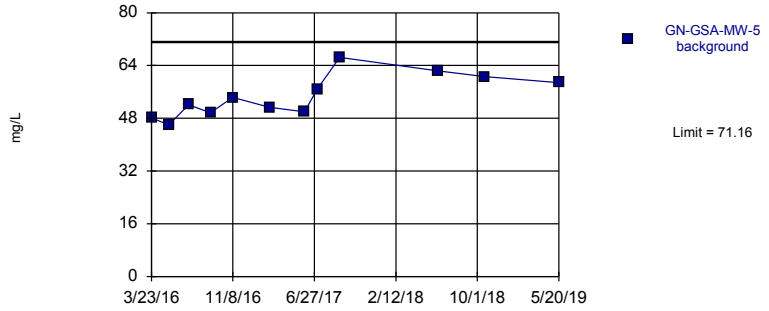


Background Data Summary: Mean=88.88, Std. Dev.=16.26, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9269, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-5

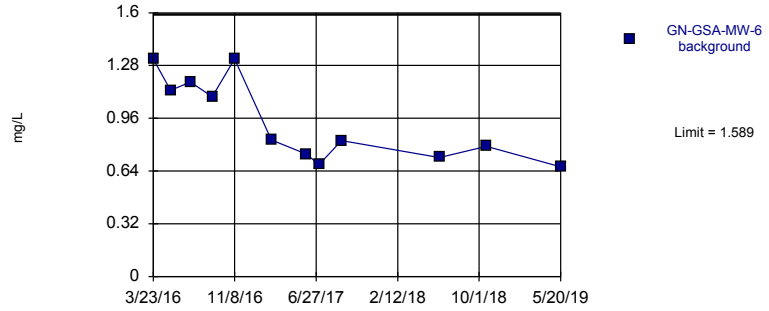


Background Data Summary: Mean=54.73, Std. Dev.=6.323, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.957, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-6



Background Data Summary: Mean=0.9412, Std. Dev.=0.2491, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8642, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2
3/23/2016	75.3
5/10/2016	75.7
7/5/2016	78.8
9/6/2016	84.3
11/8/2016	87.2
2/21/2017	80
5/31/2017	75.2
7/5/2017	77.2
9/5/2017	77.5
6/12/2018	78.9
10/22/2018	96.9
5/20/2019	87.3

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-3
3/23/2016	106
5/10/2016	109
7/6/2016	98.7
9/7/2016	98.6
11/8/2016	99.7
2/20/2017	93.4
5/31/2017	84.1
7/5/2017	92.6
9/5/2017	86.1
6/12/2018	76.5
10/23/2018	68.8
5/22/2019	53.1

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-5
3/23/2016	48.1
5/11/2016	46
7/6/2016	52.1
9/6/2016	49.7
11/8/2016	54.3
2/20/2017	51.3
5/30/2017	50
7/5/2017	56.9
9/7/2017	66.5
6/11/2018	62.4
10/22/2018	60.6
5/20/2019	58.8

Prediction Limit

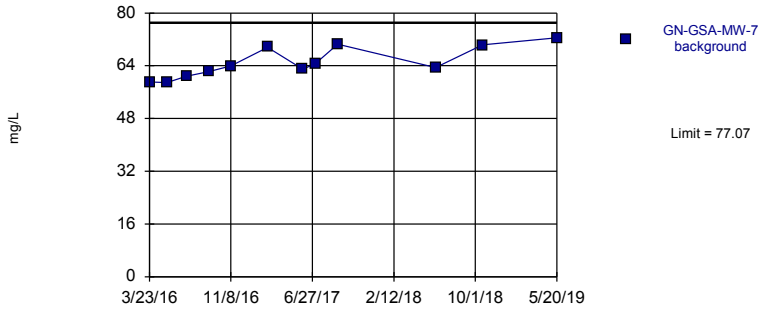
Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-6
3/23/2016	1.32
5/11/2016	1.13
7/6/2016	1.18
9/6/2016	1.09
11/8/2016	1.32
2/20/2017	0.829
5/30/2017	0.743
7/5/2017	0.68
9/7/2017	0.825
6/11/2018	0.722
10/22/2018	0.79
5/20/2019	0.665

Prediction Limit

Intrawell Parametric, GN-GSA-MW-7

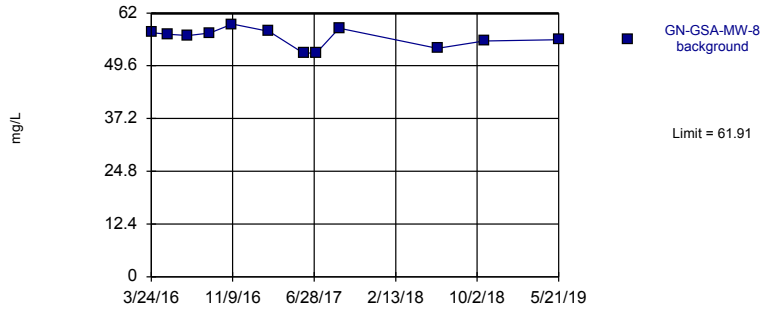


Background Data Summary: Mean=64.91, Std. Dev.=4.678, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9097, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-8

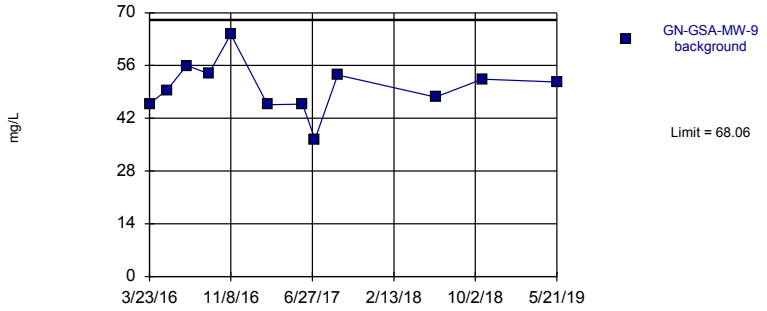


Background Data Summary: Mean=56.16, Std. Dev.=2.214, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.931, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-9



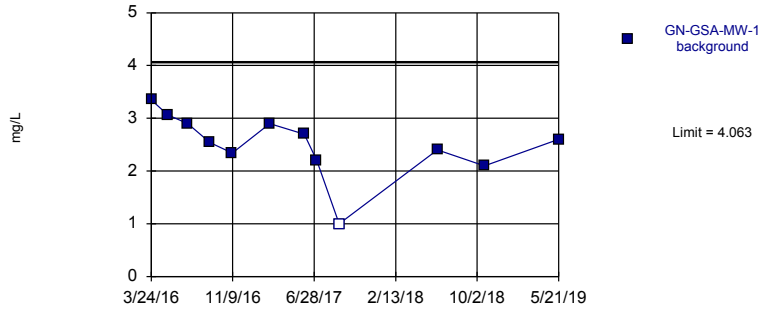
Background Data Summary: Mean=50.19, Std. Dev.=6.875, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9586, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-1



Background Data Summary: Mean=2.508, Std. Dev.=0.5987, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9045, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-7
3/23/2016	59.1
5/11/2016	58.9
7/6/2016	60.8
9/6/2016	62.2
11/8/2016	63.9
2/20/2017	69.6
5/31/2017	63
7/5/2017	64.6
9/7/2017	70.5
6/11/2018	63.5
10/22/2018	70.3
5/20/2019	72.5

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-8
3/24/2016	57.4
5/11/2016	57
7/6/2016	56.7
9/6/2016	57.3
11/8/2016	59.4
2/20/2017	57.7
5/30/2017	52.5
7/5/2017	52.7
9/7/2017	58.4
6/12/2018	53.7
10/22/2018	55.4
5/21/2019	55.7

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-9
3/23/2016	45.9
5/11/2016	49.4
7/6/2016	56
9/7/2016	53.8
11/8/2016	64.3
2/21/2017	45.6
5/30/2017	45.8
7/5/2017	36.4
9/7/2017	53.5
6/12/2018	47.6
10/22/2018	52.4
5/21/2019	51.6

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

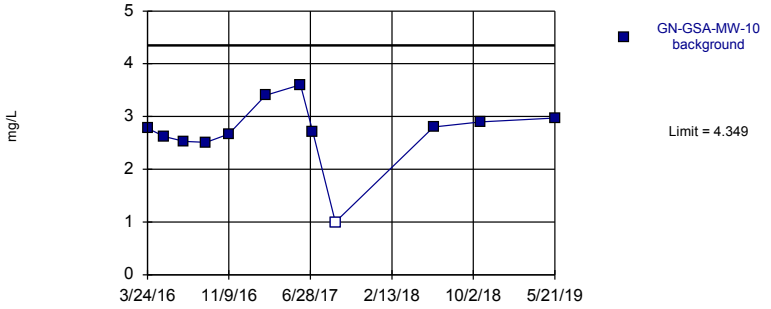
Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1
3/24/2016	3.35
5/10/2016	3.06
7/5/2016	2.9
9/6/2016	2.54
11/8/2016	2.34
2/22/2017	2.9
5/31/2017	2.7
7/5/2017	2.2
9/7/2017	<2 (U*)
6/12/2018	2.4
10/23/2018	2.1
5/21/2019	2.6

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-10



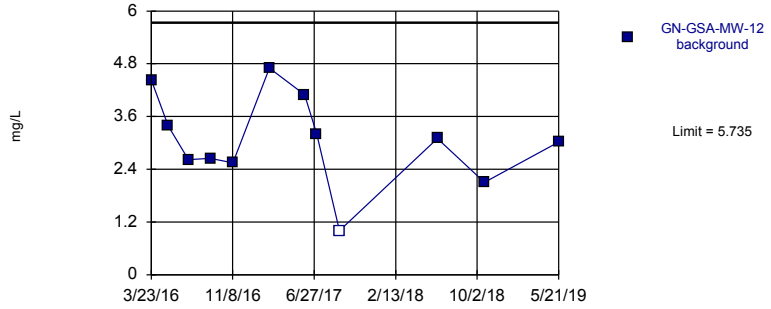
Background Data Summary: Mean=2.707, Std. Dev.=0.6318, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8062, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-12



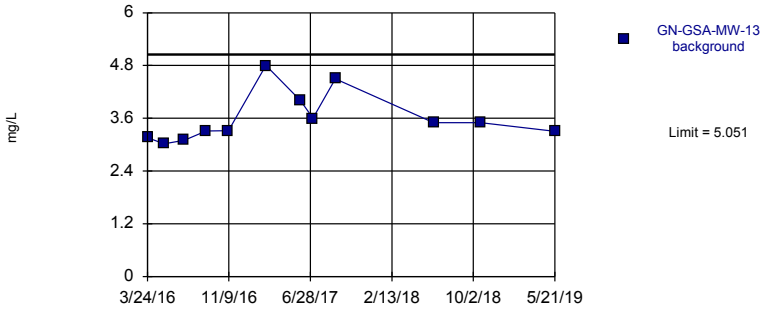
Background Data Summary: Mean=3.071, Std. Dev.=1.025, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9639, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-13



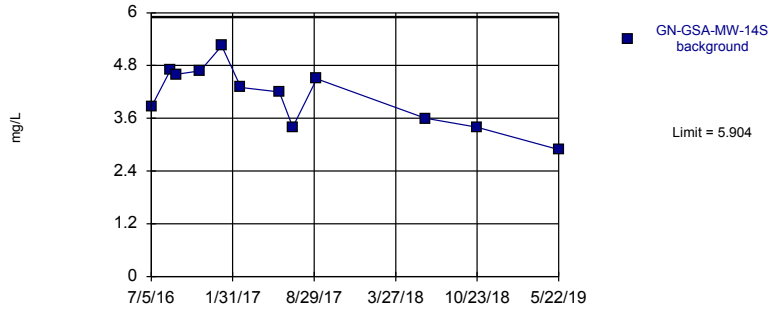
Background Data Summary: Mean=3.593, Std. Dev.=0.561, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8424, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-14S (bg)



Background Data Summary: Mean=4.114, Std. Dev.=0.6886, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9637, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-10
3/24/2016	2.78
5/11/2016	2.62
7/6/2016	2.53
9/6/2016	2.51
11/9/2016	2.67
2/21/2017	3.4
5/31/2017	3.6
7/5/2017	2.7
9/7/2017	<2 (U*)
6/12/2018	2.8
10/24/2018	2.9
5/21/2019	2.97

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-12
3/23/2016	4.43
5/10/2016	3.38
7/6/2016	2.62
9/6/2016	2.65
11/9/2016	2.55
2/21/2017	4.7
5/31/2017	4.1
7/5/2017	3.2
9/7/2017	<2 (U*)
6/12/2018	3.1
10/23/2018	2.1
5/21/2019	3.02

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-13
3/24/2016	3.16
5/10/2016	3.02
7/6/2016	3.1
9/6/2016	3.31
11/8/2016	3.32
2/22/2017	4.8
5/31/2017	4
7/5/2017	3.6
9/7/2017	4.5
6/12/2018	3.5
10/23/2018	3.5
5/21/2019	3.3

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

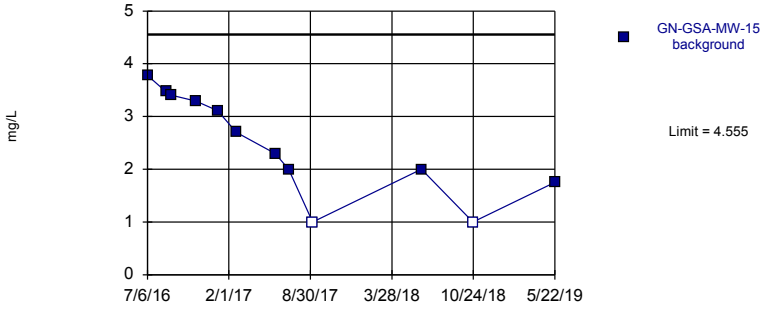
Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-14S
7/5/2016	3.86
8/23/2016	4.69
9/7/2016	4.6
11/8/2016	4.68
1/3/2017	5.25
2/21/2017	4.3
5/31/2017	4.2
7/5/2017	3.4
9/5/2017	4.5
6/12/2018	3.6
10/23/2018	3.4
5/22/2019	2.89

Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-15 (bg)



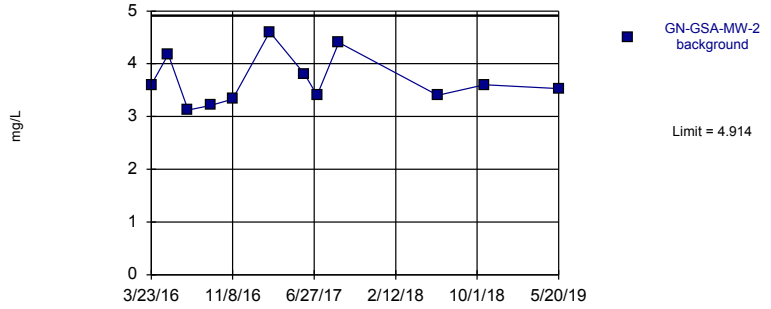
Background Data Summary (after Kaplan-Meier Adjustment): Mean=2.588, Std. Dev.=0.7568, n=12, 16.67% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9277, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-2 (bg)



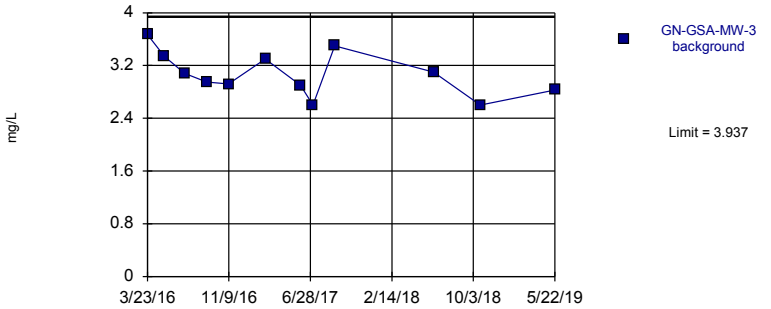
Background Data Summary: Mean=3.681, Std. Dev.=0.4747, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8952, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-3 (bg)



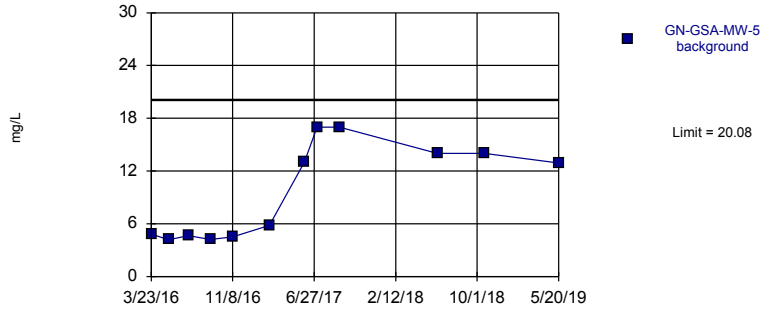
Background Data Summary: Mean=3.066, Std. Dev.=0.3353, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9585, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-5



Background Data Summary (based on square transformation): Mean=120, Std. Dev.=108.9, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8096, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-15
7/6/2016	3.78
8/23/2016	3.47
9/7/2016	3.4
11/8/2016	3.29
1/3/2017	3.11
2/20/2017	2.7
5/31/2017	2.3
7/5/2017	2
9/5/2017	<2 (U*)
6/12/2018	2
10/23/2018	<2 (J)
5/22/2019	1.75

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2
3/23/2016	3.6
5/10/2016	4.18
7/5/2016	3.12
9/6/2016	3.21
11/8/2016	3.33
2/21/2017	4.6
5/31/2017	3.8
7/5/2017	3.4
9/5/2017	4.4
6/12/2018	3.4
10/22/2018	3.6
5/20/2019	3.53

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-3
3/23/2016	3.67
5/10/2016	3.34
7/6/2016	3.08
9/7/2016	2.95
11/8/2016	2.92
2/20/2017	3.3
5/31/2017	2.9
7/5/2017	2.6
9/5/2017	3.5
6/12/2018	3.1
10/23/2018	2.6
5/22/2019	2.83

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

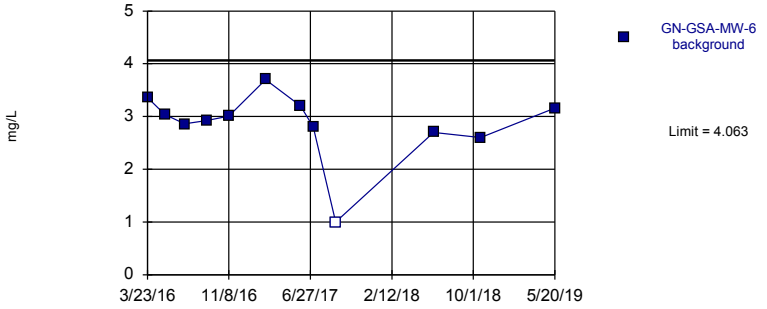
Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-5
3/23/2016	4.84
5/11/2016	4.19
7/6/2016	4.67
9/6/2016	4.23
11/8/2016	4.51
2/20/2017	5.8
5/30/2017	13
7/5/2017	17
9/7/2017	17
6/11/2018	14
10/22/2018	14
5/20/2019	12.9

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-6



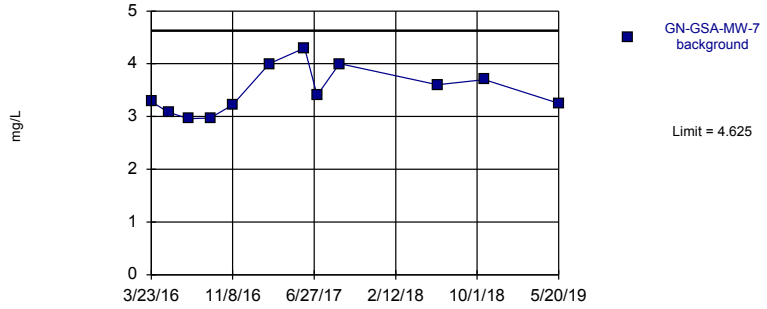
Background Data Summary (based on square transformation): Mean=8.592, Std. Dev.=3.045, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9037, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-7



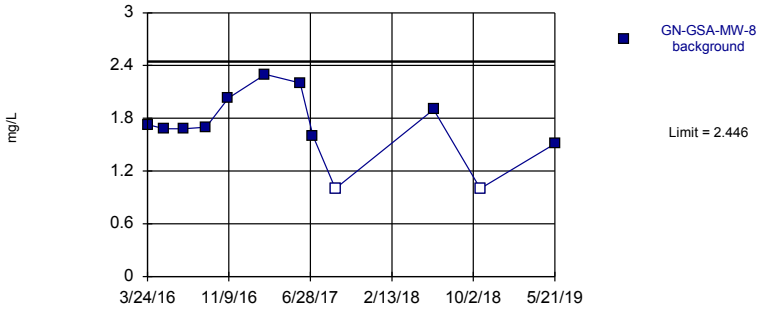
Background Data Summary: Mean=3.48, Std. Dev.=0.4404, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9241, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-8



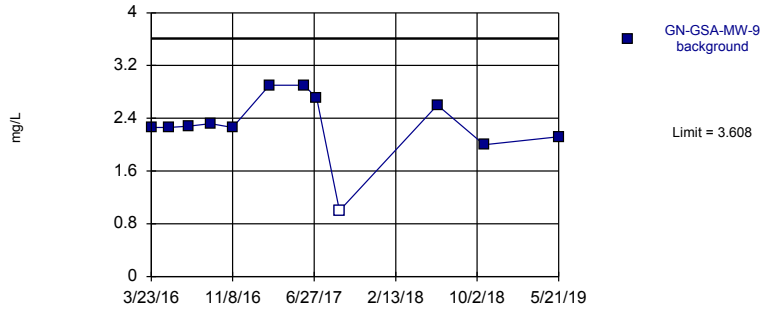
Background Data Summary (after Kaplan-Meier Adjustment): Mean=1.795, Std. Dev.=0.2504, n=12, 16.67% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9252, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-9



Background Data Summary: Mean=2.3, Std. Dev.=0.5034, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8459, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-6
3/23/2016	3.36
5/11/2016	3.04
7/6/2016	2.86
9/6/2016	2.92
11/8/2016	3.01
2/20/2017	3.7
5/30/2017	3.2
7/5/2017	2.8
9/7/2017	<2 (U*)
6/11/2018	2.7
10/22/2018	2.6
5/20/2019	3.16

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-7
3/23/2016	3.28
5/11/2016	3.08
7/6/2016	2.96
9/6/2016	2.97
11/8/2016	3.22
2/20/2017	4
5/31/2017	4.3
7/5/2017	3.4
9/7/2017	4
6/11/2018	3.6
10/22/2018	3.7
5/20/2019	3.25

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-8
3/24/2016	1.73
5/11/2016	1.68
7/6/2016	1.68
9/6/2016	1.7
11/8/2016	2.03
2/20/2017	2.3
5/30/2017	2.2
7/5/2017	1.6 (J)
9/7/2017	<2 (U*)
6/12/2018	1.9 (J)
10/22/2018	<2
5/21/2019	1.51

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

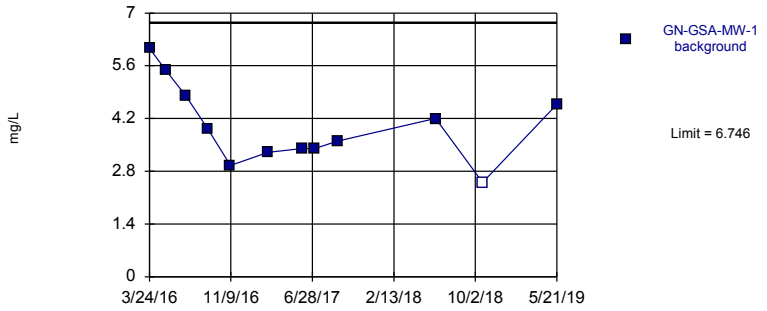
Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-9
3/23/2016	2.26
5/11/2016	2.26
7/6/2016	2.28
9/7/2016	2.32
11/8/2016	2.26
2/21/2017	2.9
5/30/2017	2.9
7/5/2017	2.7
9/7/2017	<2 (U*)
6/12/2018	2.6
10/22/2018	2
5/21/2019	2.12

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-1



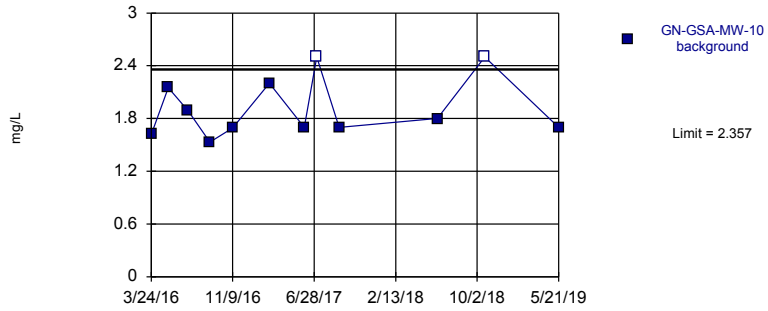
Background Data Summary: Mean=4.014, Std. Dev.=1.051, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9568, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-10



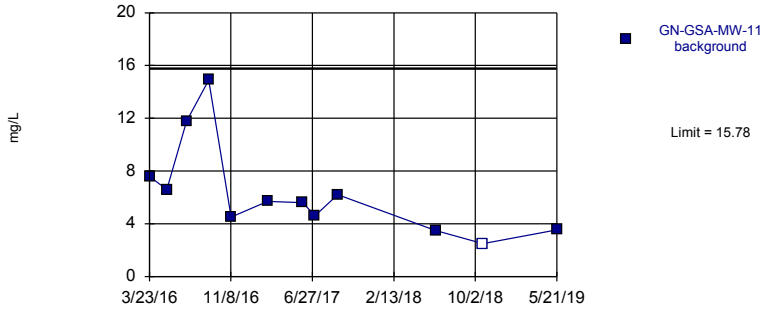
Background Data Summary (after Kaplan-Meier Adjustment): Mean=1.781, Std. Dev.=0.2219, n=12, 16.67% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8511, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-11



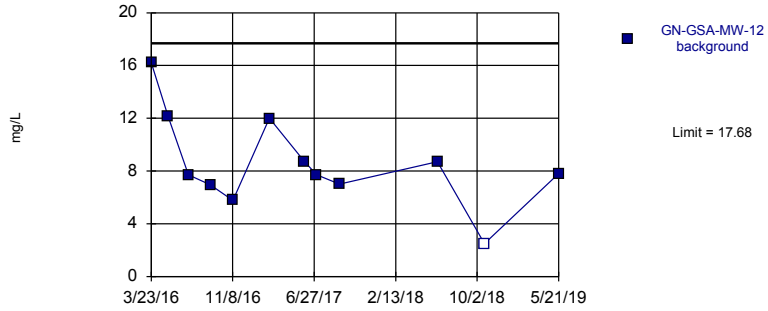
Background Data Summary: Mean=6.42, Std. Dev.=3.601, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8454, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG
Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-12



Background Data Summary: Mean=8.596, Std. Dev.=3.494, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9261, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1
3/24/2016	6.06
5/10/2016	5.47
7/5/2016	4.8
9/6/2016	3.91
11/8/2016	2.95
2/22/2017	3.3 (J)
5/31/2017	3.4 (J)
7/5/2017	3.4 (J)
9/7/2017	3.6 (J)
6/12/2018	4.2 (J)
10/23/2018	<5 (J)
5/21/2019	4.58

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-10
3/24/2016	1.62
5/11/2016	2.15
7/6/2016	1.89
9/6/2016	1.53
11/9/2016	1.69
2/21/2017	2.2 (J)
5/31/2017	1.7 (J)
7/5/2017	<5
9/7/2017	1.7 (J)
6/12/2018	1.8 (J)
10/24/2018	<5
5/21/2019	1.7

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-11
3/23/2016	7.59
5/11/2016	6.6
7/6/2016	11.8
9/7/2016	14.9
11/9/2016	4.5
2/21/2017	5.7
5/31/2017	5.6
7/5/2017	4.6 (J)
9/7/2017	6.2
6/12/2018	3.5 (J)
10/24/2018	<5 (J)
5/21/2019	3.55

Prediction Limit

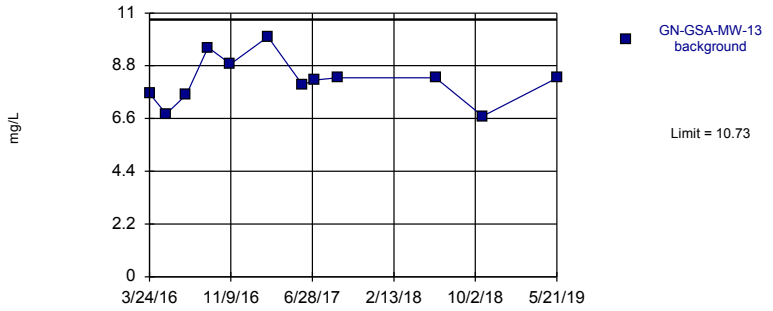
Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-12
3/23/2016	16.2
5/10/2016	12.1
7/6/2016	7.7
9/6/2016	6.97
11/9/2016	5.77
2/21/2017	12
5/31/2017	8.7
7/5/2017	7.7
9/7/2017	7
6/12/2018	8.7
10/23/2018	<5 (J)
5/21/2019	7.81

Prediction Limit

Intrawell Parametric, GN-GSA-MW-13



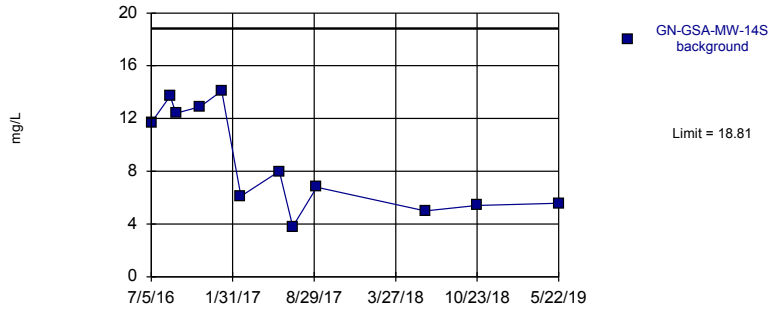
Background Data Summary: Mean=8.187, Std. Dev.=0.9783, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9504, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-14S (bg)



Background Data Summary: Mean=8.789, Std. Dev.=3.857, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8695, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

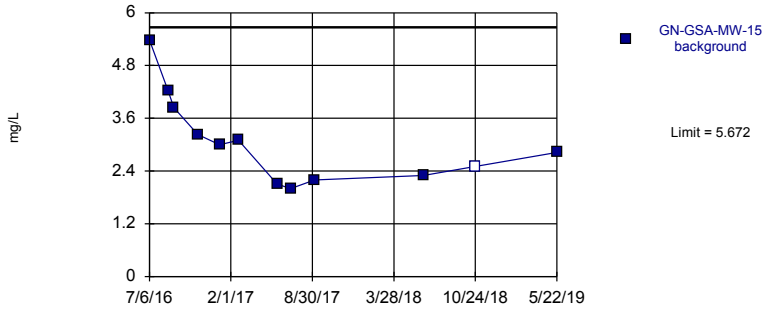
Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-15 (bg)



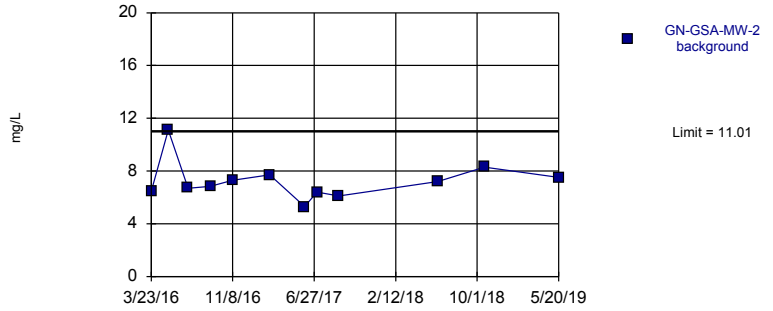
Background Data Summary: Mean=3.058, Std. Dev.=1.006, n=12, 8.333% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8928, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-2 (bg)



Background Data Summary: Mean=7.246, Std. Dev.=1.449, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8542, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-13
3/24/2016	7.64
5/10/2016	6.79
7/6/2016	7.59
9/6/2016	9.56
11/8/2016	8.87
2/22/2017	10
5/31/2017	8
7/5/2017	8.2
9/7/2017	8.3
6/12/2018	8.3
10/23/2018	6.7
5/21/2019	8.29

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-14S
7/5/2016	11.7
8/23/2016	13.7
9/7/2016	12.4
11/8/2016	12.9
1/3/2017	14.1
2/21/2017	6.1
5/31/2017	8
7/5/2017	3.8 (J)
9/5/2017	6.8
6/12/2018	5
10/23/2018	5.4
5/22/2019	5.57

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-15
7/6/2016	5.38
8/23/2016	4.23
9/7/2016	3.84
11/8/2016	3.23
1/3/2017	3
2/20/2017	3.1 (J)
5/31/2017	2.1 (J)
7/5/2017	2 (J)
9/5/2017	2.2 (J)
6/12/2018	2.3 (J)
10/23/2018	<5
5/22/2019	2.82

Prediction Limit

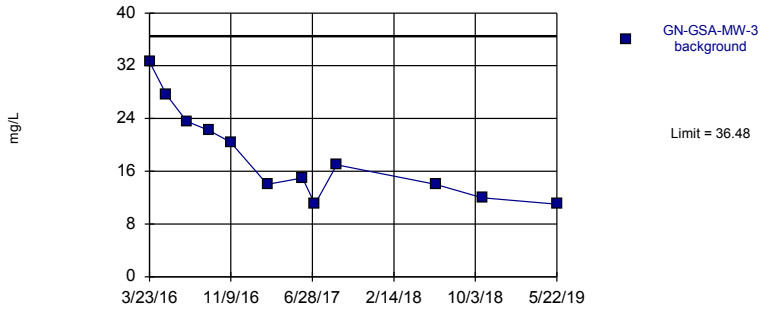
Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2
3/23/2016	6.48
5/10/2016	11.1
7/5/2016	6.7
9/6/2016	6.85
11/8/2016	7.3
2/21/2017	7.7
5/31/2017	5.3
7/5/2017	6.4
9/5/2017	6.1
6/12/2018	7.2
10/22/2018	8.3
5/20/2019	7.52

Prediction Limit

Intrawell Parametric, GN-GSA-MW-3 (bg)



Background Data Summary: Mean=18.37, Std. Dev.=6.971, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9072, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

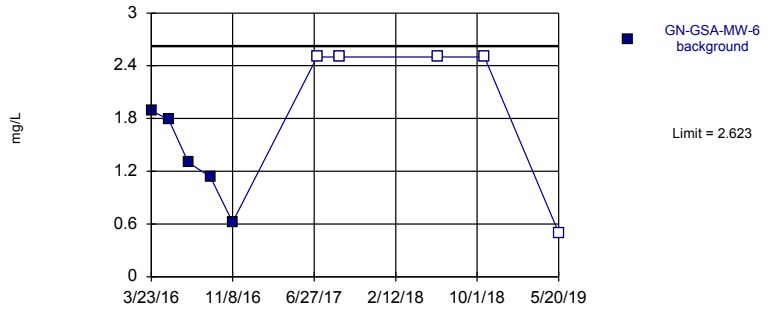
Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Hollow symbols indicate censored values.

Prediction Limit

Intrawell Parametric, GN-GSA-MW-6



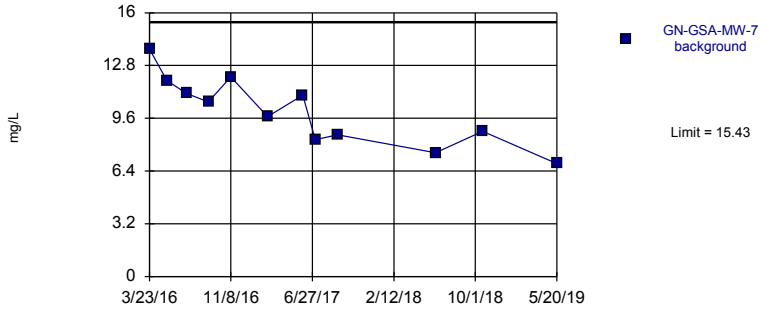
Background Data Summary (after Kaplan-Meier Adjustment): Mean=1.227, Std. Dev.=0.5002, n=10, 50% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8591, critical = 0.781. Kappa = 2.789 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-7



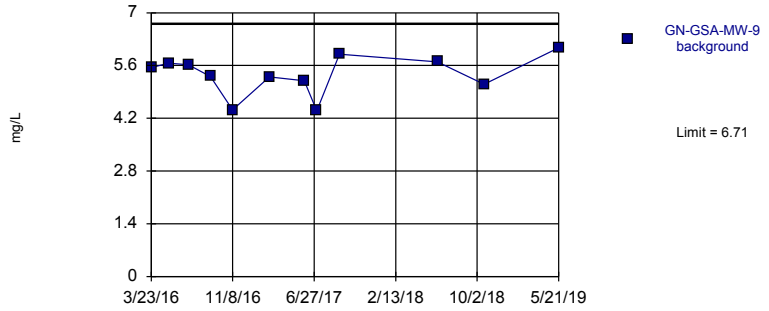
Background Data Summary: Mean=10.02, Std. Dev.=2.08, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9737, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-9



Background Data Summary: Mean=5.352, Std. Dev.=0.5227, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9133, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:12 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-3
3/23/2016	32.6
5/10/2016	27.6
7/6/2016	23.6
9/7/2016	22.2
11/8/2016	20.4
2/20/2017	14
5/31/2017	15
7/5/2017	11
9/5/2017	17
6/12/2018	14
10/23/2018	12
5/22/2019	11

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-6
3/23/2016	1.89
5/11/2016	1.79
7/6/2016	1.3
9/6/2016	1.14
11/8/2016	0.622 (J)
2/20/2017	5 (o)
5/30/2017	5 (o)
7/5/2017	<5
9/7/2017	<5
6/11/2018	<5
10/22/2018	<5
5/20/2019	<1

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-7
3/23/2016	13.8
5/11/2016	11.9
7/6/2016	11.1
9/6/2016	10.6
11/8/2016	12.1
2/20/2017	9.7
5/31/2017	11
7/5/2017	8.3
9/7/2017	8.6
6/11/2018	7.5
10/22/2018	8.8
5/20/2019	6.85

Prediction Limit

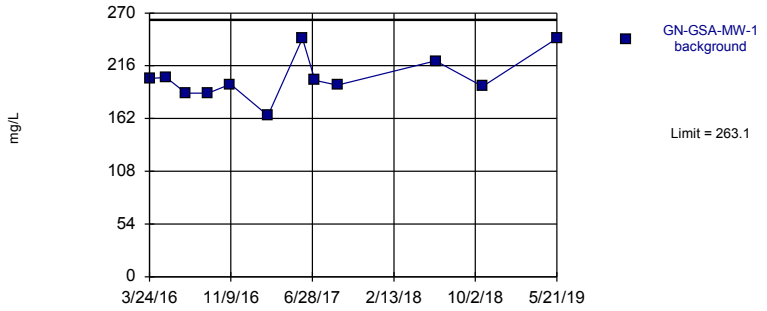
Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-9
3/23/2016	5.54
5/11/2016	5.66
7/6/2016	5.62
9/7/2016	5.31
11/8/2016	4.42
2/21/2017	5.3
5/30/2017	5.2
7/5/2017	4.4 (J)
9/7/2017	5.9
6/12/2018	5.7
10/22/2018	5.1
5/21/2019	6.07

Prediction Limit

Intrawell Parametric, GN-GSA-MW-1



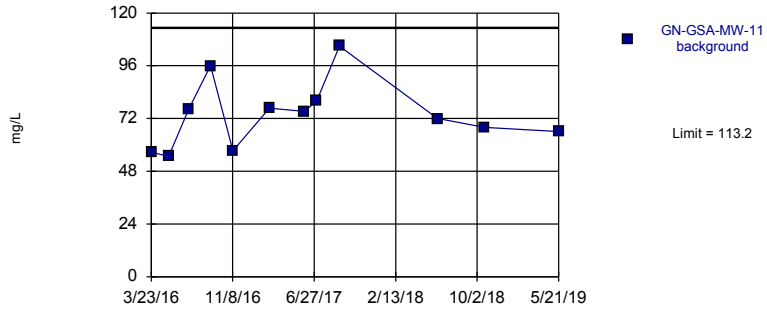
Background Data Summary: Mean=203.8, Std. Dev.=22.81, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9007, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-11



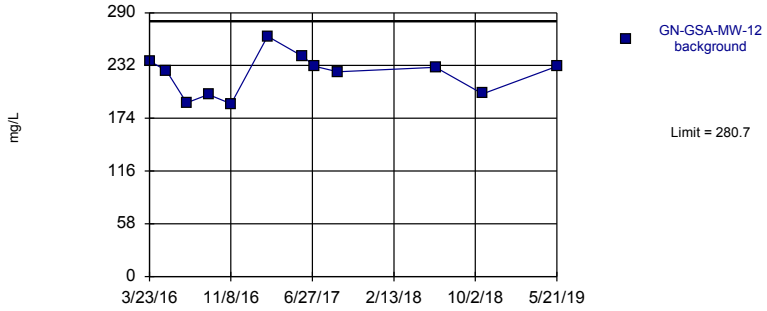
Background Data Summary: Mean=73.64, Std. Dev.=15.22, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9223, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-12



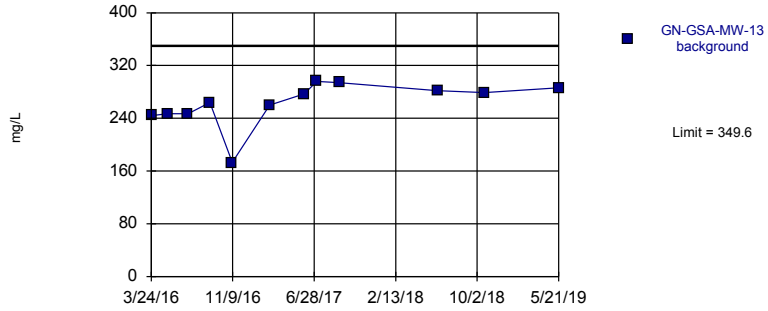
Background Data Summary: Mean=222.3, Std. Dev.=22.46, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9236, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-13



Background Data Summary: Mean=262.4, Std. Dev.=33.54, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8216, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1
3/24/2016	203
5/10/2016	204
7/5/2016	188
9/6/2016	188
11/8/2016	197
2/22/2017	165
5/31/2017	244
7/5/2017	201
9/7/2017	196
6/12/2018	221
10/23/2018	195
5/21/2019	244

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-11
3/23/2016	56.7
5/11/2016	54.7
7/6/2016	76
9/7/2016	96
11/9/2016	57.3
2/21/2017	76.7
5/31/2017	75.3
7/5/2017	80
9/7/2017	105
6/12/2018	72
10/24/2018	68
5/21/2019	66

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-12
3/23/2016	237
5/10/2016	226
7/6/2016	191
9/6/2016	200
11/9/2016	190
2/21/2017	264
5/31/2017	242
7/5/2017	231
9/7/2017	225
6/12/2018	230
10/23/2018	201
5/21/2019	231

Prediction Limit

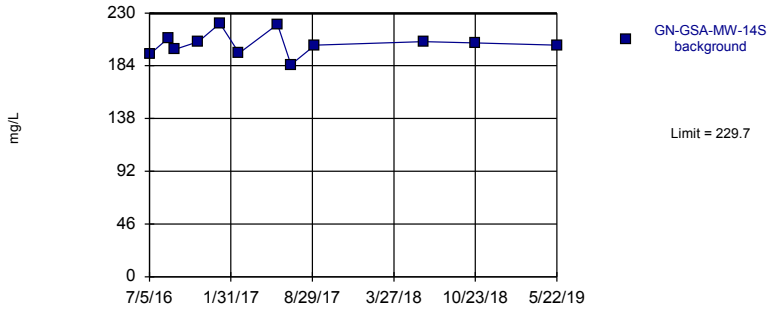
Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-13
3/24/2016	244
5/10/2016	247
7/6/2016	247
9/6/2016	264
11/8/2016	173
2/22/2017	260
5/31/2017	277
7/5/2017	296
9/7/2017	294
6/12/2018	282
10/23/2018	279
5/21/2019	286

Prediction Limit

Intrawell Parametric, GN-GSA-MW-14S (bg)



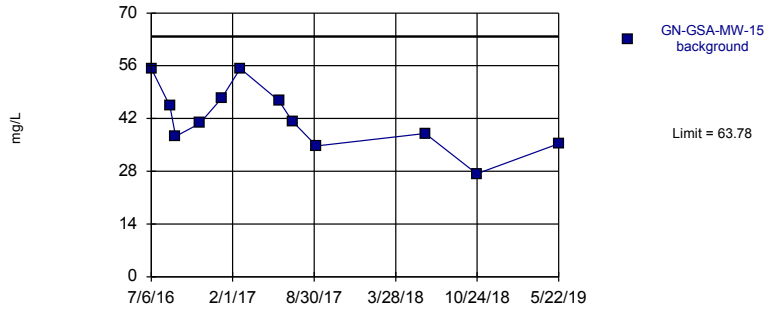
Background Data Summary: Mean=203.3, Std. Dev.=10.19, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9449, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-15 (bg)



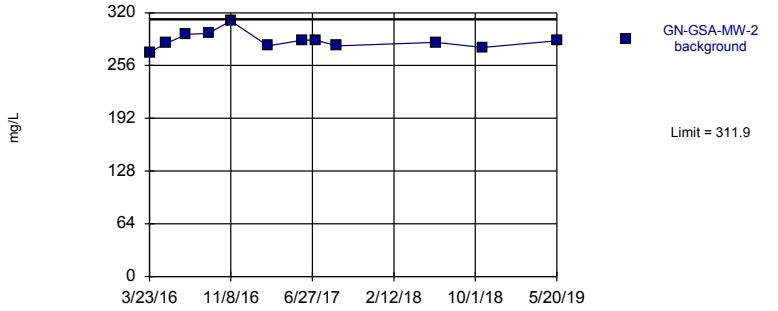
Background Data Summary: Mean=42.04, Std. Dev.=8.363, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9601, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-2 (bg)



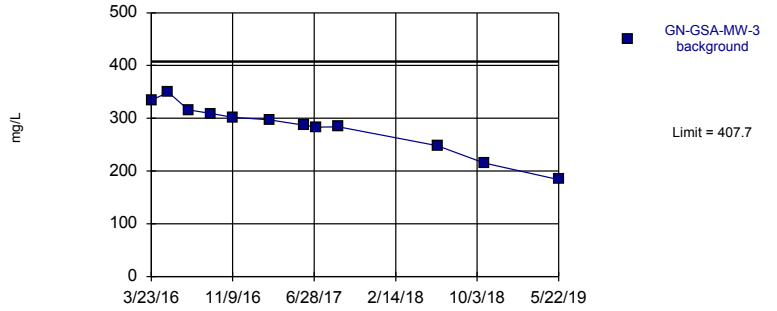
Background Data Summary: Mean=286.3, Std. Dev.=9.847, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9175, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-3 (bg)



Background Data Summary: Mean=284, Std. Dev.=47.61, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.926, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-14S
7/5/2016	194
8/23/2016	208
9/7/2016	198
11/8/2016	205
1/3/2017	221
2/21/2017	195
5/31/2017	220
7/5/2017	185
9/5/2017	202
6/12/2018	205
10/23/2018	204
5/22/2019	202

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-15
7/6/2016	55.3
8/23/2016	45.3
9/7/2016	37.3
11/8/2016	40.7
1/3/2017	47.3
2/20/2017	55.3
5/31/2017	46.7
7/5/2017	41.3
9/5/2017	34.7
6/12/2018	38
10/23/2018	27.3
5/22/2019	35.3

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-2
3/23/2016	272
5/10/2016	283
7/5/2016	294
9/6/2016	295
11/8/2016	310
2/21/2017	280
5/31/2017	287
7/5/2017	287
9/5/2017	280
6/12/2018	284
10/22/2018	278
5/20/2019	286

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

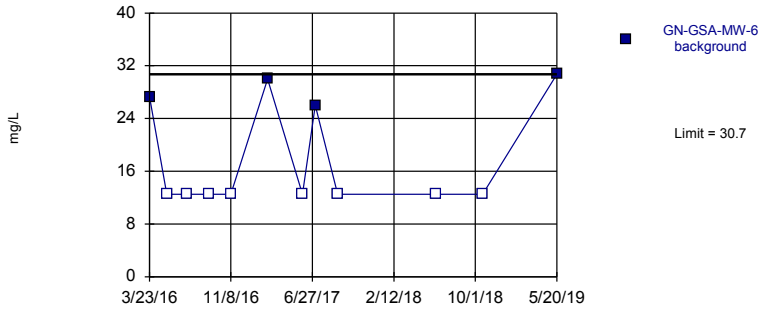
Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-3
3/23/2016	334
5/10/2016	349
7/6/2016	316
9/7/2016	309
11/8/2016	302
2/20/2017	297
5/31/2017	287
7/5/2017	283
9/5/2017	284
6/12/2018	248
10/23/2018	215
5/22/2019	184

Hollow symbols indicate censored values.

Prediction Limit

Intrawell Non-parametric, GN-GSA-MW-6

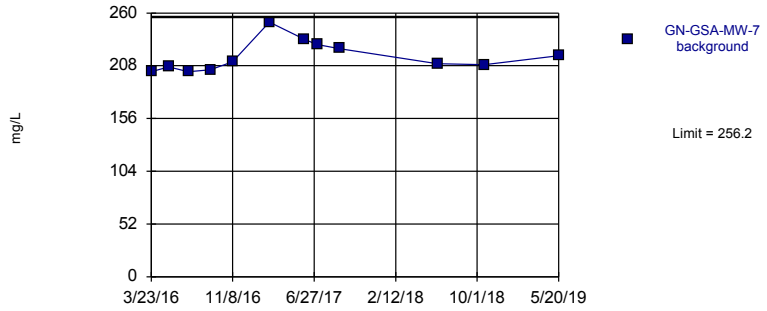


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 12 background values. 66.67% NDs. Well-constituent pair annual alpha = 0.02143. Individual comparison alpha = 0.01077 (1 of 2). Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-7

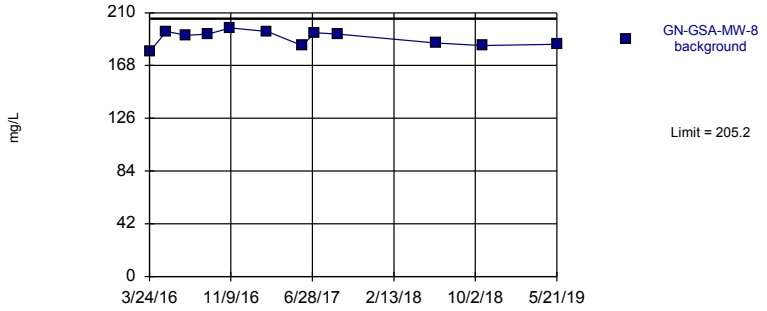


Background Data Summary: Mean=216.9, Std. Dev.=15.11, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8828, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-8

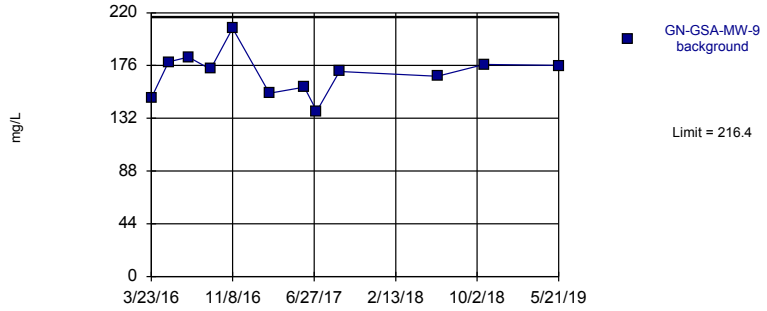


Background Data Summary: Mean=189.8, Std. Dev.=5.921, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9111, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Intrawell Parametric, GN-GSA-MW-9



Background Data Summary: Mean=169.3, Std. Dev.=18.13, n=12. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.966, critical = 0.805. Kappa = 2.599 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:12 PM View: Intrawell
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-6
3/23/2016	27.3
5/11/2016	<25
7/6/2016	<25
9/6/2016	<25
11/8/2016	<25
2/20/2017	30
5/30/2017	<25
7/5/2017	26
9/7/2017	<25
6/11/2018	<25
10/22/2018	<25
5/20/2019	30.7

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-7
3/23/2016	202
5/11/2016	207
7/6/2016	202
9/6/2016	204
11/8/2016	212
2/20/2017	251
5/31/2017	234
7/5/2017	229
9/7/2017	225
6/11/2018	210
10/22/2018	209
5/20/2019	218

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-8
3/24/2016	179
5/11/2016	195
7/6/2016	192
9/6/2016	193
11/8/2016	198
2/20/2017	195
5/30/2017	184
7/5/2017	194
9/7/2017	193
6/12/2018	186
10/22/2018	184
5/21/2019	185

Prediction Limit

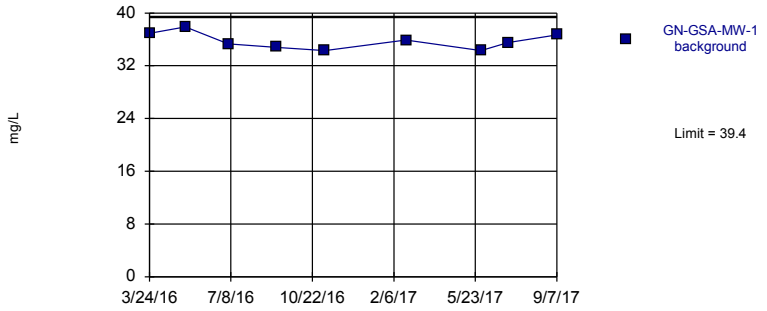
Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Intrawell

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-9
3/23/2016	149
5/11/2016	179
7/6/2016	183
9/7/2016	173
11/8/2016	207
2/21/2017	153
5/30/2017	158
7/5/2017	138
9/7/2017	171
6/12/2018	167
10/22/2018	177
5/21/2019	176

Prediction Limit

Intrawell Parametric, GN-GSA-MW-1



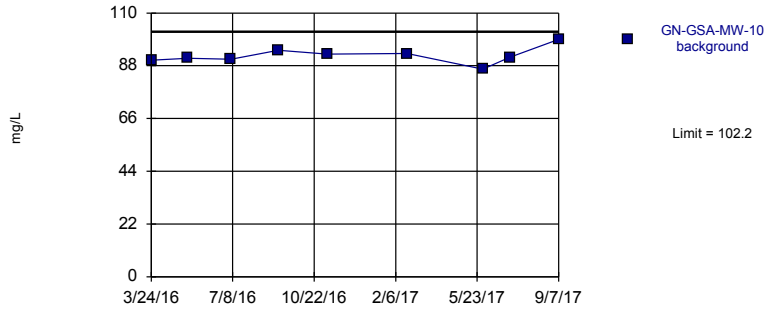
Background Data Summary: Mean=35.73, Std. Dev.=1.237, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9419, critical = 0.764. Kappa = 2.961 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:13 PM View: Mann Whitney
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-10



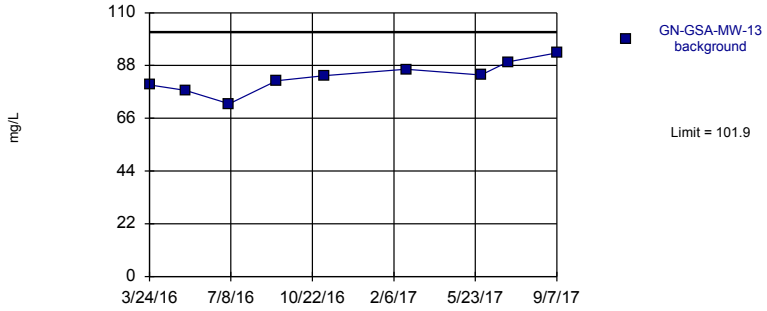
Background Data Summary: Mean=92.19, Std. Dev.=3.387, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9444, critical = 0.764. Kappa = 2.961 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:13 PM View: Mann Whitney
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-13



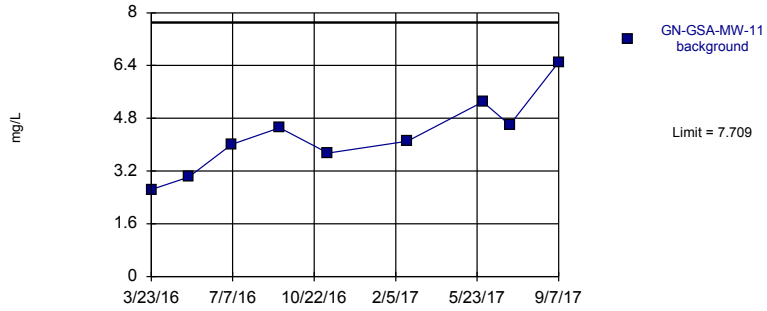
Background Data Summary: Mean=83.12, Std. Dev.=6.337, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9932, critical = 0.764. Kappa = 2.961 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Calcium Analysis Run 9/25/2019 4:13 PM View: Mann Whitney
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-11



Background Data Summary: Mean=4.269, Std. Dev.=1.162, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9661, critical = 0.764. Kappa = 2.961 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Chloride Analysis Run 9/25/2019 4:13 PM View: Mann Whitney
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-1
3/24/2016	36.9
5/10/2016	37.9
7/5/2016	35.3
9/6/2016	34.8
11/8/2016	34.3
2/22/2017	35.9
5/31/2017	34.3
7/5/2017	35.5
9/7/2017	36.7

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-10
3/24/2016	90.3
5/11/2016	91.1
7/6/2016	90.7
9/6/2016	94.5
11/9/2016	92.9
2/21/2017	93.1
5/31/2017	86.6
7/5/2017	91.5
9/7/2017	99

Prediction Limit

Constituent: Calcium (mg/L) Analysis Run 9/25/2019 4:14 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-13
3/24/2016	79.9
5/10/2016	77.6
7/6/2016	72
9/6/2016	81.6
11/8/2016	83.8
2/22/2017	86.4
5/31/2017	84.1
7/5/2017	89.5
9/7/2017	93.2

Prediction Limit

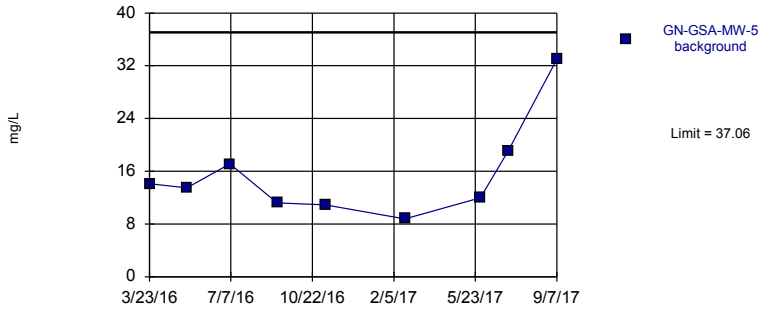
Constituent: Chloride (mg/L) Analysis Run 9/25/2019 4:14 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-11
3/23/2016	2.64
5/11/2016	3.02
7/6/2016	4.01
9/7/2016	4.51
11/9/2016	3.74
2/21/2017	4.1
5/31/2017	5.3
7/5/2017	4.6
9/7/2017	6.5

Prediction Limit

Intrawell Parametric, GN-GSA-MW-5



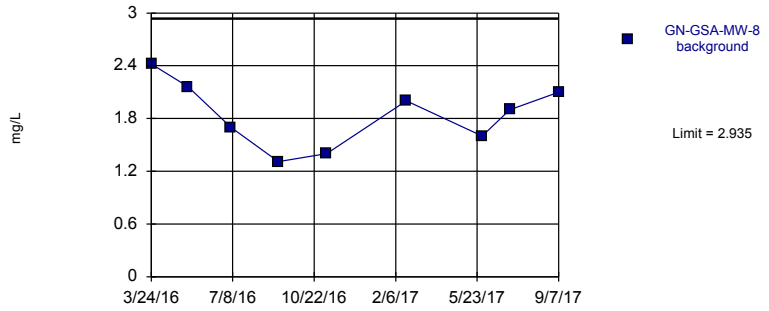
Background Data Summary: Mean=15.51, Std. Dev.=7.278, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7851, critical = 0.764. Kappa = 2.961 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:13 PM View: Mann Whitney
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-8



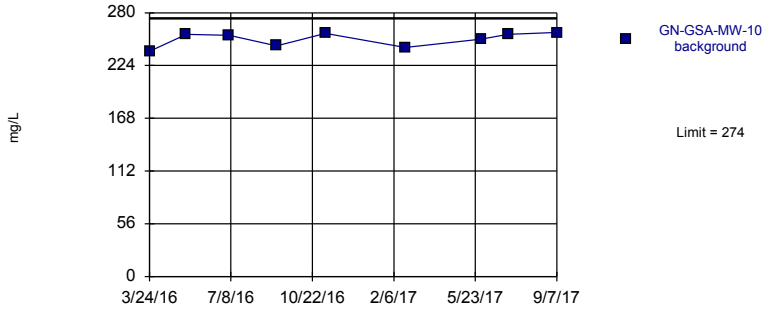
Background Data Summary: Mean=1.843, Std. Dev.=0.3686, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9707, critical = 0.764. Kappa = 2.961 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: Sulfate Analysis Run 9/25/2019 4:13 PM View: Mann Whitney
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-10



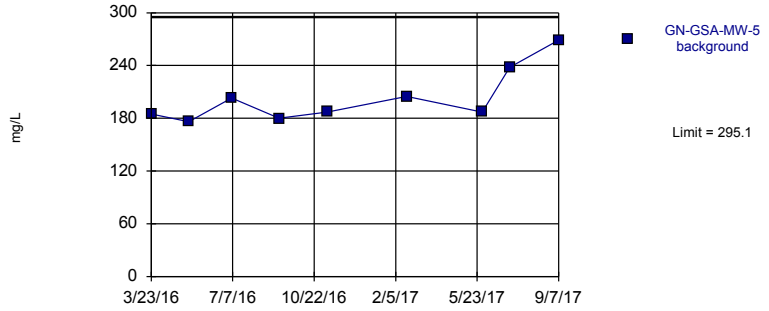
Background Data Summary: Mean=251.8, Std. Dev.=7.496, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8447, critical = 0.764. Kappa = 2.961 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:13 PM View: Mann Whitney
Plant Gaston Client: Southern Company Data: Gaston GSA

Sanitas™ v.9.6.23 Groundwater Stats Consulting. UG

Prediction Limit

Intrawell Parametric, GN-GSA-MW-5



Background Data Summary: Mean=203.3, Std. Dev.=30.98, n=9. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8137, critical = 0.764. Kappa = 2.961 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523. Assumes 1 future value.

Constituent: TDS Analysis Run 9/25/2019 4:13 PM View: Mann Whitney
Plant Gaston Client: Southern Company Data: Gaston GSA

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-5
3/23/2016	14.1
5/11/2016	13.5
7/6/2016	17.1
9/6/2016	11.2
11/8/2016	10.9
2/20/2017	8.8
5/30/2017	12
7/5/2017	19
9/7/2017	33

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 9/25/2019 4:14 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-8
3/24/2016	2.42
5/11/2016	2.16
7/6/2016	1.7
9/6/2016	1.31
11/8/2016	1.4
2/20/2017	2 (J)
5/30/2017	1.6 (J)
7/5/2017	1.9 (J)
9/7/2017	2.1 (J)

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-10
3/24/2016	239
5/11/2016	257
7/6/2016	256
9/6/2016	245
11/9/2016	258
2/21/2017	243
5/31/2017	252
7/5/2017	257
9/7/2017	259

Prediction Limit

Constituent: TDS (mg/L) Analysis Run 9/25/2019 4:14 PM View: Mann Whitney

Plant Gaston Client: Southern Company Data: Gaston GSA

	GN-GSA-MW-5
3/23/2016	185
5/11/2016	176
7/6/2016	203
9/6/2016	180
11/8/2016	187
2/20/2017	205
5/30/2017	187
7/5/2017	238
9/7/2017	269

Appendix C

WFG Low-Flow Groundwater Sampling TSOP

1. Purpose

1.1. The purpose of this Technical SOP (TSOP) is to discuss the process and requirements associated with conducting Low-Flow groundwater sampling.

1.2. This TSOP specifically describes using bladder pumps and peristaltic pumps to obtain groundwater samples collected for laboratory analysis by the Alabama Power Company (APC) Environmental Affairs (EA), Water Field Group (WFG).

2. Scope

2.1. This procedure is to be used by field personnel when collecting and handling groundwater samples using the Low-Flow groundwater collection method in the field.

2.2. The sampling equipment covered in this TSOP may be portable (well-to-well) or well-dedicated.

2.3. The sampling of SVOCs and VOCs should not be collected with the use of peristaltic pumps unless prior written customer approval is attained.

2.4. The procedure is designed to ensure that the samples collected are representative of the aquifer or target formation and that sample cross-contamination is eliminated during the sampling and handling process.

2.5. This procedure cannot replace education and experience. Professional judgment should be used in conjunction with this procedure.

3. Definitions/Abbreviations

3.1. Low-Flow (or micropurge) - Refers to the velocity with which water is withdrawn from the well. The objective of low-flow sampling is to extract fresh samples of the ambient groundwater from within the screened interval of the well with minimal impact to the zone of influence of the well.

3.2. Drawdown - Lowering of the water column within a well due to pumping. Typically associated with high-flow purging of a well for water sampling.

3.3. DI water – De-ionized water. Water that has been passed through a standard deionizing resin column. Water used for decontamination of field equipment.

3.4. Ultra-pure DI water- Water that is filtered and treated to the highest levels of purity. This water is used for the filling of blanks.

3.5. Phosphate-free soap or cleaner – A cleaner which contains, by weight, 0.5% or less of phosphates or derivatives of phosphates (Liquinox® or Luminox®).

3.6. Potable water- Water that is safe to consume. Can be used in detergent solution and first rinse during decontamination. Can be replaced by DI water.

3.7. PPE - Personal Protective Equipment.

3.8. NTU - Nephelometeric Turbidity Units. The unit of measure used when measuring the turbidity of water.

3.9. COC - Chain of Custody. A controlled document used to record sample information and transfer the samples to the laboratory after collection.

3.10. SVOCs and VOCs- Semi-volatile organic compounds and volatile organic compounds.

3.11. DO - Dissolved Oxygen

3.12. ORP - Oxidation Reduction Potential

3.13. SAP - Sampling and Analysis Plan

3.14. EDAS- Environmental Data Acquisition System

3.15. Artesian well- A well in which water rises under pressure from a permeable stratum overlaid by impermeable rock.

4. References

4.1. Internal Documents

4.1.1. WFG Groundwater Equipment Decontamination TSOP
4.1.2. WFG Groundwater Water Level and Total Depth Measurements TSOP
4.1.3. WFG General Water Sampling and Field Measurement TSOP
4.1.4. WFG Deployment and Maintenance of Dedicated Groundwater Equipment TSOP
4.1.5. WFG Turbidity TSOP
4.1.6. WFG Temperature TSOP
4.1.7. WFG Conductivity TSOP
4.1.8. WFG Luminescent Dissolved Oxygen (LDO) TSOP
4.1.9. WFG Oxidation-Reduction Potential (ORP) TSOP
4.1.10. WFG pH (TSOP-SM-4500H) TSOP
4.1.11. WFG Electronic Calibration Form
4.1.12. Groundwater Electronic Chain of Custody

4.1.13. Site specific SAP

4.2. External Documents

4.2.1. United States Environmental Protection Agency (U.S. EPA). Region 4, Groundwater Sampling. Document # SESDPROC-301-R4.

4.2.2. Florida Department of Environmental Protection (DEP). FS 2200 Groundwater Sampling. Document # DEP-SOP-001/01.

4.2.3. United States Environmental Protection Agency (U.S. EPA). Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures. Document # EPA/540/S-95/504.

4.2.4. ASTM Standard D6771-18- Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations

5. Method Overview

5.1. Low flow sampling of groundwater from within the screened interval is accomplished by maintaining a low pump rate that minimizes drawdown of the water column while leaving the more stagnant water above the screened interval undisturbed.

5.2. Indicator parameters and water levels are measured at the beginning of and while micro-purging the well. Stabilization acceptance criteria for turbidity, pH, specific conductance and DO are found in the site specific SAP. Stabilization of these parameters indicates that the water is representative of ambient conditions and sample collection can begin. ORP and temperature measurements should also be collected but will not be used as indicators of stability.

5.3. Non-dedicated sampling equipment must be decontaminated prior to next use in a well to avoid cross contamination. Refer to and understand the Groundwater Equipment Decontamination TSOP prior to performing groundwater sampling.

6. Detection Limit

6.1. Some of the indicator parameter methods used to show equilibrium of the well water have minimum detection limits or other quality control requirements. Refer to the latest version of the TSOPs associated with these procedures (turbidity, pH, specific conductance, and DO).

6.2. Users of this procedure must study and be familiar with the applicable data acceptance criteria and required field measurements. Refer to the SAP for information on these parameters and other information.

7. Safety

7.1. Appropriate PPE should be worn and utilized when sampling groundwater wells in accordance with APC policies. Generally this includes safety glasses, hard hats, gloves and safety-toed boots. Plant-specific requirements may also apply and should be determined/known prior to arriving at the work location.

7.2. Refer to the WFG General Water Sampling and Field Measurement TSOP procedure for general safety requirements.

7.3. If using compressed Nitrogen gas for deep wells, always secure tanks when transporting and ensure protective cap is secured over valve. Take care to avoid exceeding the max pressure rating of the controller, air hose and pump.

8. Equipment and Materials

The following is a basic listing of the necessary reusable and expendable items that are required to complete this procedure.

8.1. Reusable Items

8.1.1. Field Book
8.1.2. Appropriate installation diagram and/or well construction data
8.1.3. Keys for well locks
8.1.4. Water level meter
8.1.5. Pump with parts (tubing grab plates, bladders, O-rings, etc.)
8.1.6. Pump controller
8.1.7. Peristaltic pump
8.1.8. Flow-through cell
8.1.9. iPad
8.1.10. InSitu™ multi-parameter probe
8.1.11. Handheld turbidity meter
8.1.12. Generator (min. 2,000 kW)
8.1.13. Air compressor and hose
8.1.14. Graduated cylinder
8.1.15. Tubing Weight (for peristaltic application)
8.1.16. Tubing caddy with counter unit or other measurement device
8.1.17. Decon/wash containers w/ lids (3)
8.1.18. Coolers for samples
8.1.19. Procedures & SAPs

8.2. Consumable/Disposable Items

8.2.1. Tubing (estimated for number of wells x well depths with extra)
8.2.2. Silicone tubing for peristaltic pump head
8.2.3. COCs (if electronic format is not suitable)
8.2.4. Plastic sheeting
8.2.5. Gasoline (in approved container)
8.2.6. Ice for samples
8.2.7. Sample Bottles
8.2.8. DI water (For decon)
8.2.9. Ultra-Pure DI water (For blanks collection)
8.2.10. Potable water (for decon)
8.2.11. Phosphate free detergent (e.g. Liquinox or Luminox®)
8.2.12. Support rope or coated safety cable
8.2.13. Calibration Standards
8.2.14. Disposal sample bags & trash bags
8.2.15. Paper towels

9. Reagents & Standards

9.1. This document describes the Low-Flow purging and sampling procedure and does not include method calibration procedures. Calibration procedures may be found in the associated method TSOP on the APC Qualtrax site. The instrument(s) used to measure indicator parameters must be verified daily using the below appropriate calibration standards (or equivalent).

9.1.1. ORP- ZoBell's ORP Solution
9.1.2. pH- 3-point calibration

9.1.2.1. 2.00 buffer standard for pH
9.1.2.2. 4.00 buffer standard for pH
9.1.2.3. 7.00 buffer standard for pH
9.1.2.4. 10.00 buffer standard for pH
9.1.2.5. 12.00 buffer standard for pH

9.1.3. DO - NA
9.1.4. Specific Conductance - 1,412 µS/cm, or appropriate conductivity standard
9.1.5. Turbidity – Zeroed with 0.00 standard and calibrated with 10.00 NTU standard

10. Calibration

10.1. Calibration and/or verification of water quality measurement equipment shall be performed at the start of each day and should be specific to the manufacturer's calibration instructions. A verification check of the instrument calibration will be performed after the calibration and at the end of each day with a standard of the same value but different lot number or manufacturer.

10.2. All calibration data, and initial and final LCS data, should be recorded electronically in the calibration log on EDAS.

10.3. Refer to the APC TSOP for each method to complete the instrument calibration (TSOPs: turbidity, pH, temperature, specific conductance, DO and ORP).

11. Procedure

General Note

At the start of each sampling event, a round of water levels from each well should be collected for use in generating a potentiometric surface map. This should be completed on the first day of the sampling event. Refer to the Groundwater Water Level and Total Depth Measurement TSOP for guidance.

11.1. Well lock keys are maintained by the plant compliance contact and must be obtained from the compliance office, if not already assigned a key, prior to beginning work

11.2. Inspect the well for any damage or tampering. If there is evidence of damage or tampering, immediately notify the Technical Manager or the Water Field Services Supervisor. Take photos of the site as documentation and make sure not to disturb the well. The damage/tampering and any discussions about a response should also be documented in the field logbook or electronically in the iPad.

11.3. If the well is in good condition, open the well head and if the well is non-dedicated and non-vented, remove the inner casing cap to allow for atmospheric equilibration. Begin setting up to sample by arranging/organizing the work zone.

11.4. Designate a clean work space or work surface used to provide a contaminant-free area to place sampling equipment during assembly.

11.5. Calibrate or verify all field parameter measurement equipment at the start of each day (this typically includes an InSitu multi-meter probe and a handheld turbidity meter if an inline turbidity sensor is not used). Refer to the appropriate method TSOP and calibration procedure for each instrument used.

11.6. All non-dedicated equipment that will, or could come into contact with groundwater (e.g. pump and water level meter) in the well must be decontaminated prior to each use. Refer to the Groundwater Equipment Decontamination TSOP for more details.

11.7. Using a properly functioning water level indicator, lower the probe into the well and obtain an initial water level measurement for the well (Refer to WFG Groundwater Water Level and Total Depth Measurements TSOP).

11.8. Measure and record all water levels to the nearest hundredth (0.01) foot at the reference point or survey mark on the well casing.

11.9. Refer to the WFG Deployment and Maintenance of Dedicated Groundwater Equipment TSOP for initial or re-deployment of dedicated pumps and for performing maintenance activities.

11.10. Dedicated Low-Flow – Bladder Pump

11.10.1. Connect the external compressor hose to the pump controller intake port using the quick-connect.

11.10.2. Connect the pump air supply line to the “Air Out” quick connect on the control box. Connect the other end of the air supply line to the air connection on the dedicated well cap.

11.10.3. Connect a short piece of tubing to the existing sample line on the dedicated well cap and then connect to the bottom of the flow-through cell for the InSitu multi-probe. Use care to ensure proper connection of the tubing.

11.10.4. Using data from the Field Logbook, SAP, or associated well construction data (See Section 15), determine the total well depth and the intake screen mid-point depth. Ensure that the dedicated pump is still located below the water table, and at a suitable sampling depth.

11.10.5. Insert the InSitu multi-parameter probe into the flow-through cell and press the power button

11.10.6. Turn on the iPad and open the InSitu Low-Flow application (iSitu® or VuSitu® app). Enter the initial data needed to initiate the program or if a template is available, open the well specific template. Refer to the manufacturer’s instructions for a step-by-step explanation of the Low-Flow app and the data input required.

11.10.7. Continue to fill in all appropriate information in the InSitu program using the parameter stabilization criteria set forth in the site-specific SAP. Always confirm with the Technical Manager that the current SAP is being used.

11.10.8. Place the generator as far away as possible from the well, preferable downwind. Start the generator and the air compressor to

begin pumping. If the well is too deep for a traditional air compressor, use of compressed Nitrogen gas, high pressure controller and pressure regulator may be required.

11.10.9. Monitor the water level and adjust the flow rate on the pump controller to provide a constant water level in the well. Pump rates should not exceed three tenths of a foot (0.3) water level drawdown when sampling. During initial pump start-up, drawdown may exceed three tenths of a foot (0.3) while flow rate adjustments are being made or while water level stabilization occurs.

11.10.10. Use a graduated cylinder (or similar) to measure the flow rate in milliliters per minute (ml/min). Purge rates must fall between 100 and 500 ml/min or meet the specific requirements provided in the project SAP. If the minimum flow rate requirement of 100 ml/min cannot be achieved without water level drawdown exceeding three tenths of a foot (0.3), refer to section 16.1.

11.10.10.1. If the well has been previously purged and sampled, refer back to the most recent well record and make an effort to target that purge rate for consistency.

11.10.11. When a stable purge rate is attained, enter that flow rate in the InSitu program and set the measurement frequency to every 5 minutes. The Low-Flow application (iSitu® or VuSitu® app) will now be used to determine when groundwater samples can be taken. The Low-Flow app uses the previously entered SAP acceptance criteria and applies them to each measurement. When the criteria are met, the indicator parameter will be highlighted in green on the iPad screen, indicating equilibration.

11.10.12. Note the start time and other well information in the field log book and start the program.

11.10.13. Turbidity measurements may be taken with an inline turbidity sensor or with an external handheld unit. If using an external turbidity meter, readings must collected as close as possible to the time as the readings acquired from the InSitu meter.

11.10.14. Continue to measure water level and turbidity at the same measurement frequency as the indicator parameters, entering the values in the iPad InSitu application.

11.10.15. Once the water level and all field parameters have stabilized and turbidity is less than 10 NTU according to the criteria in the SAP, the well is considered equilibrated and sampling may take place. Refer to the site-specific SAP and Sections 16.2 and 16.3 of this procedure for direction on wells where 10 NTU are unattainable.

11.10.16. Tap the "**Finish Test**" button on the iPad and enter any relevant notes such as time sampled in the comment section. Email the data file to a secure company email address for storage and use. In the event that there is no data service to email the file and the iPad is damaged or lost before the field report can be sent, the well will be re-sampled.

11.10.17. **DO NOT** turn off the pump. Complete the labeling for all sample bottles and also record the same information for each sample in the field log book, and all electronic forms.

11.10.18. Put on nitrile or latex gloves and make sure that all bottles are preserved with the appropriate acid.

11.10.19. Carefully remove the sample line from the bottom of the flow-through cell. Cut the end off of the sample tubing and begin filling up the sample containers.

11.10.20. Do not adjust the flow rate when sampling.

11.10.21. Fill up the containers by placing the tubing in the mouth of the bottle, using care not to touch the mouth or sides of the container. Do not overfill sample bottles. Bottle should be filled to the top leaving a small amount of headspace, unless otherwise directed by the customer or lab.

11.10.22. Upon filling and capping all sample containers, place the samples in the sample cooler and ensure that the samples with temperature requirements are placed on ice.

11.10.23. Turn off the controller, air compressor and generator.

11.10.24. Remove the water level indicator from the well, making sure to decontaminate the wetted tape and probe portion.

11.10.25. Disconnect the airline tubing from the controller and make sure the sample line tubing is disconnected. Secure the dedicated tubing within the wellhead in such manner that the tubing stays clean and does not fall into the well. Close and secure the well.

11.11. Non- Dedicated Low Flow- Bladder Pump

11.11.1. Complete Steps 11.1 – 11.9 from the above procedure.

11.11.2. Assemble a clean pump system with a bladder, and connect the support rope or cable, sample line, and air line to the top of the pump assembly. Use care to ensure proper connection and positioning. Never lower a pump in a well without a support rope attached.

11.11.3. Using data from the Field Logbook, SAP, or associated well construction data (See Section 15), determine the total well depth and the intake screen mid-point depth.

11.11.4. Slowly lower the pump assembly into the well, using care to minimize disturbance once the groundwater interface is reached. The tubing counter or other depth measurement devices can be used to aid in determining appropriate depth.

11.11.5. Recharge characteristics may dictate the need to place the pump intake slightly lower than the mid-screen depth if drawdown historically is unavoidable.

11.11.6. With the pump intake lowered to approximately mid-screen depth, secure the support rope or cable so that the pump is fixed and stationary in the well.

11.11.7. Cut the air line to an appropriate length and attach to the air hose on the pump controller. Next, cut the water line to an appropriate length and attach to the bottom of the flow-through cell.

11.11.8. Re-lower the water level meter into the well.

11.11.9. Follow above Steps 11.10.5 – 11.10.23.

11.11.10. Remove the pump and tubing from the well. Discard the used tubing and pump bladder. Never re-use disposable sampling equipment or tubing.

11.11.11. Place the well cap back on the well and close and lock the well lid.

11.12. Low Flow –Peristaltic Pumps

11.12.1. Complete steps 11.1 – 11.9 from the above procedures.

11.12.2. Peristaltic- Dedicated Well Tubing

11.12.2.1. Prepare an adequate length of clean silicon tubing that has the correct outside and inside dimensions to allow proper fit in the pump head. Insert into the pump head rollers and secure (refer to pump user manual for additional information).

11.12.2.2. Connect the vacuum end of the silicone tubing to the barb fitting on the dedicated well cap.

11.12.2.3. Attach the discharge end of the silicone tubing to the bottom of the flow through cell.

11.12.3. Peristaltic- Non-Dedicated Well Tubing

11.12.3.1. Attach the tubing weight to the end of clean polyethylene tubing.

11.12.3.2. Using data from the Field Logbook, SAP, or associated well construction data (See Section 15), determine the total well depth and the intake screen mid-point depth.

11.12.3.3. Using the tubing caddy or another tubing depth measurement device, slowly lower the tubing and weight to the mid-screen depth.

11.12.3.4. Once the tubing intake is at the correct depth, allow for excess tubing at the surface and insert into the pump head rollers and secure.

11.12.3.5. Allow for a short section (one to three feet) of tubing from the discharge side of the pump head. This may be used for both the purge discharge and to fill sample bottles upon stabilization.

11.12.3.6. Attach the discharge tubing to the intake (lower) port of the flow-through cell.

11.12.4. Insert the InSitu multi-parameter probe into the flow-through cell and press the power button on the battery pack.

11.12.5. Turn on the iPad and open the InSitu Low-Flow application (iSitu® or VuSitu® app). Enter the initial data needed to initiate the program or if a template is available, open the well-specific template. Refer to the manufacturer's instructions for a step-by-step explanation of the Low-Flow app and the data input required.

11.12.6. Make the necessary preparations to provide power to the pump. Turn on the peristaltic pump to produce a vacuum on the well side of the pump head and begin purging. Observe pump direction to ensure that the pump operation is applying a vacuum to the sample line (down-hole) tubing.

11.12.7. Monitor the water level and adjust the flow rate to provide a constant water level in the well. The pump rate will initially require adjustment based on the site and well properties. Pump rates should not exceed three tenths of a foot (0.3) water level drawdown when sampling. During initial pump start-up, drawdown may exceed three tenths of a foot (0.3) while flow rate adjustments are being made or while water level stabilization occurs. If the minimum flow rate requirement of 100 ml/min cannot be achieved without water level drawdown exceeding three tenths of a foot (0.3), refer to section 16.1.

11.12.8. Continue to fill in all appropriate information in the InSitu program using the parameter stabilization criteria set forth in the site-specific SAP. Always confirm with the Technical Manager that the current SAP data are being used.

11.12.9. Use a graduated cylinder (or similar) to measure the flow rate in milliliters per minute (ml/min). Purge rates must fall between 100 and 500 ml/min or meet the specific requirements provided in the project SAP.

11.12.9.1. If the well has been previously purged and sampled, refer back to the most recent well record and make an effort to match the purge rate for consistency.

11.12.10. When a stable purge rate is attained, enter that flow rate in the InSitu program and set the measurement frequency to 5 minutes. The Low-Flow application (iSitu® or VuSitu® app) will now be used to determine when groundwater samples can be taken. The Low-Flow app uses the previously entered SAP acceptance criteria and compares them to each measurement. When the criteria are met, the indicator parameter will be highlighted in green on the iPad screen, indicating equilibration.

11.12.11. Note the start time and other well information in the field log book and start the program.

11.12.12. Turbidity measurements may be taken with an inline turbidity sensor or with an external handheld unit. If using an external turbidity meter, readings must be collected as close as possible to the time as the readings acquired from the InSitu meter.

11.12.13. Continue to measure water level and turbidity at the same measurement frequency as the indicator parameters, entering the values in the iPad SmarTROLL™ application.

11.12.14. Once the water level and all field parameters have stabilized and turbidity is less than 10 NTU according to the criteria in the SAP, the well is considered equilibrated and sampling may take place. Refer to the site-specific SAP and Sections 16.2 and 16.3 of this procedure for wells where 10 NTU is unattainable.

11.12.15. Tap the "**Finish Test**" button on the iPad and enter any relevant notes such as time sampled in the comment section. Email the data file to a secure company email address for storage and use. In the event that there is no data service to email the file and the iPad is damaged or lost before the field report can be sent, the well will be re-sampled.

11.12.16. **DO NOT** turn off the pump. Complete the labeling for all sample bottles and also record the same information for each sample in the field log book and associated electronic forms.

11.12.17. Make sure that all bottles are preserved with the appropriate acid.

11.12.18. Carefully remove the sample line from the bottom of the flow-through cell. Cut the end off of the sample tubing and begin filling up the sample containers.

11.12.19. Do not adjust the flow rate when sampling.

11.12.20. Fill up the containers by placing the tubing in the mouth of the bottle, using care not to touch the mouth or sides of the container. Do not overfill sample bottles. Bottles should be filled to the top leaving a

small amount of headspace unless otherwise directed by the customer or lab.

11.12.21. Upon filling and capping all sample containers, place the samples in the sample cooler and ensure that the samples with temperature requirements are placed on ice.

11.12.22. Stop the pump and reverse the flow direction so that the sample line is emptied of water.

11.12.23. Turn off the peristaltic pump and generator.

11.12.24. Remove the water level indicator from the well, making sure to decontaminate the wetted tape and probe.

11.12.25. For dedicated tubing, disconnect the silicone tubing piece from the pump and dedicated well cap and throw away. Close and secure the well. For non-dedicated tubing, disconnect the tubing from the pump and throw away.

11.13. Decontamination and Clean-Up – For all Reusable Components

11.13.1. Decontamination of any reusable components can be completed as a separate task at a later time but must not be re-used until decontaminated according to the WFG Groundwater Equipment Decontamination TSOP.

11.13.2. Do not re-use any disposable sampling equipment and throw away all non-dedicated tubing and bladders after use.

11.13.3. Pack up and secure all equipment and complete all sample information on the COC.

11.13.4. Reattach well cap (as appropriate) and close and lock the wellhead.

12. Calculations and Reports

12.1. Sample reports should be emailed in the field using the InSitu iPad application to a secure company email address.

13. Data Interpretation, Recording and Reporting

13.1. Data interpretation and reporting will be completed by personnel with Southern Company Services (SCS) and will subsequently be used to produce the compliance report per the Coal Combustion Residuals Rule [80 FR 21301] and respective state agency requirements.

13.2. Recording of field data used to support the interpretation and reporting process will be completed using field log books and/or sample reports that will be filled out each time groundwater monitoring activities are conducted. The field log book or sample report should contain the following information:

13.2.1. Well identification number
13.2.2. Well depth
13.2.3. Static water level depth, date & time
13.2.4. Pumping rate, drawdown, indicator parameter values, time at five minute intervals; calculated or measured total volume pumped
13.2.5. Time of sample collection
13.2.6. Field observations
13.2.7. Name of sample collectors
13.2.8. Weather conditions
13.2.9. QA/QC data for blanks (sample time and location)

13.3. Information on sample times, dates, analytical methods, personnel, etc. should be filled out on the COC for each sample and turned in with the samples to the proper lab.

14. Quality Control Acceptance Criteria and Corrective Actions for Failed QC

14.1. Any deviations or issues related to the well sampling process should be documented in the field log book or sample report.

14.2. One sample duplicate and one field blank shall be collected per every group of 10 wells sampled as specified in the SAP. An equipment rinsate blank should also be collected at a rate of 1 per every CCR storage unit. Refer to the site specific SAP for guidance. Ultra-pure DI water shall be used as the control water for all blanks.

14.3. Calibration acceptance criteria for field parameters may be found in the individual TSOP documents. Refer to individual TSOPs for guidance on initial and final LCS failures.

15. Diagrams

15.1. Well construction logs are maintained by SCS Earth Sciences and may be consulted to confirm total well depth and screened interval.

16. Deviations/Exceptions

16.1. The low-flow sampling method is not always feasible in some wells due to very slow recharge rates. Depending on the geology and conditions of water bearing zones, water levels may decline at rates greater than the accepted minimum drawdown limit of three tenths of a foot (0.3 ft) even with minimal flow rates. If this is the case, and the well has a dedicated pump, minimum

purge sampling may be necessary. Follow the below steps for minimum purge sampling:

16.1.1. Calculate the total system volume (bladder, tubing & flow through cell) by inputting the necessary information in the InSitu program.
16.1.2. Purge 1-3 times the system volume, depending on the volume of the overhead water column.
16.1.3. Purge rates should occur at rates less than 100 ml/min.
16.1.4. Collect field readings after at least 1 system volume has been purged.
16.1.5. Commence sampling once system volume(s) have been purged.
16.1.6. Document field methodology, data, calculations and observations.

16.2. The target for monitoring turbidity is readings less than or equal to 5 NTUs, however this value is not mandatory (EPA, July 1996). In some instances, turbidity levels may exceed the recommended turbidity level due to natural aquifer conditions, changes in aquifer recharge, or other well characteristics. When these conditions are encountered, the following guidelines shall be considered:

16.2.1. If turbidity readings are greater than 5 NTU but less than 10 NTU and all other parameter criteria has been met, sampling can commence.
16.2.2. If turbidity readings are slightly above 10 NTU, but are trending downward, purging and monitoring shall continue.
16.2.3. If turbidity readings are greater than 10 NTUs and are stable within 10% for the final 3 consecutive readings and pumping has occurred for at least 2 hours, well sampling shall be based upon stabilization of critical indicator parameters (pH, Specific Conductance and DO).

16.2.3.1. In situations described in the above section, first collect a preserved sample set followed by an additional preserved sample set to be field filtered.
16.2.3.2. After the first sample set is collected, attach a 0.45 micron field filter to the end of the sample line. Allow for about 300 ml of sample water to pass through the filter prior to sample collection. Once filtered bottles have been filled, dispose of the filter. Ensure that the filtered sample set is properly denoted on the label.

16.3. Artesian Wells

16.3.1. For wells that are artesian, water may free flow out of the well casing before it reaches equilibrium. In such cases, a dedicated pump is not required. It is acceptable to collect the sample using traditional low flow criteria utilizing a special well cap fitted with control valve routed directly to the flow through cell. A minimum of 1 well volume should be purged before sample collection.

17. Client-Defined Specifications/Observations/Specialized Analysis

17.1. A project SAP is required on a groundwater sampling project and is available for review in the groundwater folder on EDAS. This document provides project-specific information regarding regulatory, sampling, containerization, chemical analysis, and data acceptance criteria requirements.

*****END OF DOCUMENT*****

APPENDIX 12

ADJACENT PROPERTY OWNERS

No other landowners adjoin the surveyed facility boundary for this CCR Unit.