

WATER QUALITY LABORATORY INORGANIC ANALYSES PERIOD OF 01/01/2012 TO 12/31/2012

Distribution Site Representing Griffith Treatment Plant

Aggressive Index Number Units 11 11 11 11 11 11 11		Quant																		
Alkalinity, Bicarbonate mg/L	# of Tests	Limit ³	Min	Max	Avg	Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan	Units ²	MCL 1	Parameter
Alkalinity, Carbonate mg/L 0 0 0 0 0 0 0 0 0	10	-	11	11	11		11	11	11	11		11	11	11	11	11	11	Units		Aggressive Index Number
Alkalinify, Hydroxyl mg/L 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	10	-	36	79	57		36	79	78	73		54	42	56	58	48	47	mg/L		Alkalinity, Bicarbonate
Alkalinity, Phenoiphthalein Mg/L	10	-	0	0	0		0	0	0	0		0	0	0	0	0	0	mg/L		Alkalinity, Carbonate
Alkalinity, Total mg/L	10	-	0	0	0		0	0	0	0		0	0	0	0	0	0	mg/L		Alkalinity, Hydroxyl
Bromide mg/L 0.01 0.02 0.02 0.02 BQL BQL 0.02 0.02 0.03 BQL 0.01 0.03 BQL 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.0	10	-	0	0	0		0	0	0	0		0	0	0	0	0	0	mg/L		Alkalinity, Phenolphthalein
Carbon Dioxide mg/L 4 2 3 4 4 3 4 5 4 5 4 1 - 3 3 5 1 - 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10	-	36	79	57		36	79	78	73		54	42	56	58	48	47	mg/L		Alkalinity, Total
Chloride 250.0 S mg/L 27.9 36.7 48.7 41.0 25.9 26.5 - 43.0 48.6 44.4 31.4 - 37.4 48.7 25.9 5.0 Chlorine, Free mg/L 0.1 0.0 0.1 2.2 2.6 1.3 - 0.2 0.3 0.2 0.1 - 0.7 2.6 0.0 0.0 Chlorine, Total mg/L 2.5 3.0 2.5 2.4 3.0 1.6 - 2.3 3.0 3.0 3.1 - 2.6 3.1 1.6 0.0 Chlorine, Total mg/L 18.9 21.1 19.0 13.6 11.7 13.4 - 14.1 11.3 13.1 17.1 - 15.3 21.1 11.3 0.0 Dissolved Oxygen mg/L 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	10	0.01	BQL	0.03	0.01	-	BQL	0.03	0.02	0.02		BQL	BQL	0.02	0.02	0.02	0.01	mg/L		Bromide
Chlorine, Free mg/L 0.1 0.0 0.1 2.2 2.6 1.3 0.2 0.3 0.2 0.1 0.7 2.6 0.0 0.0 Chlorine, Total mg/L 2.5 3.0 2.5 2.4 3.0 1.6 2.3 3.0 3.0 3.0 3.1 2.6 3.1 1.6 0.0 Chlorine, Total 15 S Units 1 0 4 3.0 1.6 0 1 1 1 0 1 4 0.0 Chlorine, Total 18.9 21.1 19.0 13.6 11.7 13.4 14.1 11.3 13.1 17.1 15.3 21.1 11.3 0.0 Dissolved Oxygen mg/L 18.9 21.1 19.0 13.6 11.7 13.4 14.1 11.3 13.1 17.1 15.3 21.1 11.3 0.0 Fluoride 4.0/2.0 P/S mg/L 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	10	-	1	5	3		1	4	5	4		4	3	4	3	2	4	mg/L		Carbon Dioxide
Chlorine, Total mg/L 2.5 3.0 2.5 2.4 3.0 1.6 - 2.3 3.0 3.0 3.1 - 2.6 3.1 1.6 0.0 Color 15 S Units 1 - 0 4 0 0 - 0 1 1 1 0 0 - 1 4 0 0 0 Dissolved Oxygen mg/L 18.9 21.1 19.0 13.6 11.7 13.4 - 14.1 11.3 13.1 17.1 - 15.3 21.1 11.3 0.0 Elucidor 4.0/2.0 P/S mg/L 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	10	5.0	25.9	48.7	37.4		31.4	44.4	48.6	43.0		26.5	25.9	41.0	48.7	36.7	27.9	mg/L	250.0 S	Chloride
Color 15 S Units 1 0 4 0 0 0 0 1 1 1 0 1 4 0 0 0 Florophy	10	0.0	0.0	2.6	0.7		0.1	0.2	0.3	0.2		1.3	2.6	2.2	0.1	0.0	0.1	mg/L		Chlorine, Free
Dissolved Oxygen mg/L 18.9 21.1 19.0 13.6 11.7 13.4 14.1 11.3 13.1 17.1 15.3 21.1 11.3 0.0	10	0.0	1.6	3.1	2.6		3.1	3.0	3.0	2.3		1.6	3.0	2.4	2.5	3.0	2.5	mg/L		Chlorine, Total
Fluoride 4.0/2.0 P/S mg/L 0.6 0.6 0.6 0.6 0.6 BQL 0.6 0.7 0.6 0.7 0.7 0.6 0.7 BQL 0.2 Hardness, Calcium mg/L 48 57 77 64 32 41 82 91 95 30 62 95 30 Hardness, Calcium mg/L 69 80 106 93 43 56 105 116 121 41 83 121 41 Methylene Blue Activated Substances 0.5 S mg/L BQL 0.7 0.6 0.7 0.7 0.7 0.6 0.7 0.7 0.7 0.6 0.8 0 0.6 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	9	0	0	4	1		0	1	1	0		0	0	4	0		1	Units	15 S	Color
Hardness, Calcium mg/L flar mg	10	0.0	11.3	21.1	15.3		17.1	13.1	11.3	14.1		13.4	11.7	13.6	19.0	21.1	18.9	mg/L		Dissolved Oxygen
Hardness, Total mg/L 69 80 106 93 43 56 105 116 121 41 83 121 41 Methylene Blue Activated Substances 0.5 S mg/L BQL BQL 0.05 N, Ammonia (Ammonia as N) mg/L 0.69 0.64 0.59 BQL BQL BQL BQL BQL 0.69 0.71 0.80 0.46 0.80 BQL 0.20 N, Nitrate (Nitrate as N) 10 P mg/L 1.0 1.0 1.1 0.8 0.7 0.6 1.0 0.9 1.7 0.6 0.9 1.7 0.6 0.2 N, Nitrite (Nitrite as N) 1 P mg/L 0.01 0.02 BQL	10	0.2	BQL	0.7	0.6		0.7	0.7	0.6	0.7		0.6	BQL	0.6	0.6	0.6	0.6	mg/L	4.0/2.0 P/S	Fluoride
Methylene Blue Activated Substances 0.5 S mg/L BQL BQL BQL BQL BQL 0.05 N, Ammonia (Ammonia as N) mg/L 0.69 0.64 0.59 BQL BQL BQL BQL - 0.69 - 0.71 0.80 - 0.46 0.80 BQL 0.20 N, Nitrate (Nitrate as N) 10 P mg/L 1.0 1.0 1.1 0.8 0.7 0.6 - 1.0 0.9 1.7 0.6 - 0.9 1.7 0.6 0.2 N, Nitrite (Nitrite as N) 1 P mg/L 0.01 0.02 BQL	10	-	30	95	62		30	95	91	82		41	32	64	77	57	48	mg/L		Hardness, Calcium
N, Ammonia (Ammonia as N) mg/L n, Ammonia (Ammonia as N) mg/L n, Air Marconia (Ammonia as N) mg/L n, Nitrate (Nitrate as N) n p mg/L n p mg/L n, Nitrate (Nitrate as N) n p mg/L n, Nitrate (Nitrate as N) n p mg/L n, Nitrate (Nitrate as N) n p mg/L n	10	-	41	121	83		41	121	116	105		56	43	93	106	80	69	mg/L		Hardness, Total
N, Nitrate (Nitrate as N) 10 P mg/L 1.0 1.0 1.1 0.8 0.7 0.6 1.0 0.9 1.7 0.6 0.9 1.7 0.6 0.2 N, Nitrite (Nitrite as N) 1 P mg/L 0.01 0.02 BQL BQL BQL BQL BQL BQL BQL BQL BQL 0.01 BQL 0.02 BQL 0.01 PH 6.5-8.5 S Units 7.4 7.6 7.6 7.6 7.4 7.4 7.4 7.4 7.4 7.6 7.6 7.5 7.6 8.0 7.6 8.0 7.4 7.6 Phosphate as Phosphorous mg/L 0.59 0.46 0.31 0.28 0.35 0.32 0.29 0.31 0.31 0.38 0.36 0.59 0.28 0.10 Solids, Total mg/L 127 190 204 192 119 136 216 254 254 105 180 254 105 1 Solids, Total Dissolved 500 S mg/L 66 148 194 208 120 156 264 222 246 92 172 264 66 1 Solids, Total Suspended mg/L BQL BQL BQL BQL BQL BQL BQL BQL BQL BQ	1	0.05	BQL	BQL	BQL					BQL								mg/L	0.5 S	Methylene Blue Activated Substances
N, Nitrite (Nitrite as N) 1 P mg/L 0.01 0.02 BQL 0.01 BQL 0.02 BQL 0.01 pH 6.5-8.5 S Units 7.4 7.6 7.6 7.6 7.4 7.4 7.4 7.6 7.5 7.6 8.0 7.6 8.0 7.4 Phosphate as Phosphorous mg/L 0.59 0.46 0.31 0.28 0.35 0.32 0.29 0.31 0.31 0.38 0.36 0.59 0.28 0.10 Solids, Total mg/L 127 190 204 192 119 136 216 254 254 105 180 254 105 1 Solids, Total Dissolved 500 S mg/L 66 148 194 208 120 156 264 222 246 92 172 264 66 1 Solids, Total Suspended mg/L BQL BQL BQL BQL BQL BQL BQL B	9	0.20	BQL	0.80	0.46		0.80	0.71		0.69		BQL	BQL	BQL	0.59	0.64	0.69	mg/L		N, Ammonia (Ammonia as N)
PH 6.5-8.5 S Units 7.4 7.6 7.6 7.4 7.4 7.4 7.6 7.5 7.6 8.0 7.6 8.0 7.4 7.6 Phosphate as Phosphorous mg/L 0.59 0.46 0.31 0.28 0.35 0.32 0.29 0.31 0.31 0.38 0.36 0.59 0.28 0.10 Solids, Total mg/L 127 190 204 192 119 136 216 254 254 105 180 254 105 1 Solids, Total Dissolved 500 S mg/L 66 148 194 208 120 156 264 222 246 92 172 264 66 1 Solids, Total Suspended mg/L BQL BQL BQL BQL BQL BQL BQL BQL BQL BQ	10	0.2	0.6	1.7	0.9		0.6	1.7	0.9	1.0		0.6	0.7	0.8	1.1	1.0	1.0	mg/L	10 P	N, Nitrate (Nitrate as N)
Phosphate as Phosphorous mg/L 0.59 0.46 0.31 0.28 0.35 0.32 0.29 0.31 0.31 0.38 0.36 0.59 0.28 0.10 Solids, Total mg/L 127 190 204 192 119 136 216 254 254 105 180 254 105 1 Solids, Total Dissolved 500 S mg/L 66 148 194 208 120 156 264 222 246 92 172 264 66 1 Solids, Total Suspended mg/L BQL <	10	0.01	BQL	0.02	BQL		0.01	BQL	BQL	BQL		BQL	BQL	BQL	BQL	0.02	0.01	mg/L	1 P	N, Nitrite (Nitrite as N)
Solids, Total 127 190 204 192 119 136 216 254 254 105 180 254 105 1 Solids, Total Dissolved 500 S mg/L 66 148 194 208 120 156 264 222 246 92 172 264 66 1 Solids, Total Suspended mg/L BQL Conductivity mhos/cm 250 300 337 315 210 240 401 453 455 215 318 455 210 0 Sulfate 250.0 S mg/L 20.7 26.2 36.7 29.7 12.4 15.9 41.4 46.9 52.5 12.6 29.5 52.5 12.4 5.0	10	-	7.4	8.0	7.6		8.0	7.6	7.5	7.6		7.4	7.4	7.4	7.6	7.6	7.4	Units	6.5-8.5 S	pH
Solids, Total Dissolved 500 S mg/L 66 148 194 208 120 156 264 222 246 92 172 264 66 1 Solids, Total Suspended mg/L BQL	10	0.10	0.28	0.59	0.36		0.38	0.31	0.31	0.29		0.32	0.35	0.28	0.31	0.46	0.59	mg/L		Phosphate as Phosphorous
Solids, Total Suspended mg/L BQL BQL BQL BQL BQL BQL BQL BQL BQL BQ	10	1	105	254	180		105	254	254	216		136	119	192	204	190	127	mg/L		Solids, Total
Specific Conductivity μmhos/cm 250 300 337 315 210 240 401 453 455 215 318 455 210 0 Sulfate 250.0 S mg/L 20.7 26.2 36.7 29.7 12.4 15.9 41.4 46.9 52.5 12.6 29.5 52.5 12.4 5.0	10	1	66	264	172		92	246	222	264		156	120	208	194	148	66	mg/L	500 S	Solids, Total Dissolved
Sulfate 250.0 S mg/L 20.7 26.2 36.7 29.7 12.4 15.9 41.4 46.9 52.5 12.6 29.5 52.5 12.4 5.0	10	1	BQL	BQL	BQL		BQL	BQL	BQL	BQL		BQL	BQL	BQL	BQL	BQL	BQL	mg/L		Solids, Total Suspended
	10	0	210	455	318		215	455	453	401		240	210	315	337	300	250	µmhos/cm		Specific Conductivity
	10	5.0	12.4	52.5	29.5		12.6	52.5	46.9	41.4		15.9	12.4	29.7	36.7	26.2	20.7	mg/L	250.0 S	Sulfate
Taste Units 2 2 3 3 3 2 3 2 3 3 3 2 1	10	1	2	3	3		3	2	3	2		3	3	3	3	2	2	Units		Taste
Temperature °C 16.9 15.6 14.3 19.4 23.2 24.0 24.8 25.5 21.8 20.3 20.6 25.5 14.3 -	10	-	14.3	25.5	20.6		20.3	21.8	25.5	24.8		24.0	23.2	19.4	14.3	15.6	16.9	°C		Temperature
Threshold Odor Number 3 S Units 3 3 1 3 1 4 5 3 3 1 3 5 1 0	10	0	1	5	3		1	3	3	5		4	1	3	1	3	3	Units	3 S	Threshold Odor Number
Total Organic Carbon mg/L 2.2 1.9 2.3 2.2 2.5 2.7 2.4 2.6 2.6 2.8 2.4 2.8 1.9 0.5	10	0.5	1.9	2.8	2.4		2.8	2.6	2.6	2.4		2.7	2.5	2.2	2.3	1.9	2.2	mg/L		Total Organic Carbon
Turbidity ≤5P NTU 0.05 0.15 0.30 0.55 0.15 0.15 0.10 0.15 0.10 0.15 0.19 0.55 0.05 0.00	10	0.00	0.05	0.55	0.19		0.15	0.10	0.15	0.10		0.15	0.15	0.55	0.30	0.15	0.05		≤ 5 P	Turbidity

BQL = The lowest quantitation limit of all analyses for the particular parameter, Below Quantitation Limit.

¹ Environmental Protection Agency/Virginia Department of Health established levels for drinking water at points of entry to the water distribution system P=Primary-enforceable, S=Secondary-non-enforceable, AL=Action Level on specific taps, MCL=Maximum Contaminant Level.

² mg/L = milligrams per liter, µg/L = micrograms per liter, µmhos/cm = micromhos per centimeter, NTU = Nephelometric Turbidity Units

³ Quant Limit = Quantitation Limit = lowest level of measurement



WATER QUALITY LABORATORY METAL ANALYSES PERIOD OF 01/01/2012 TO 12/31/2012

Distribution Site Representing Griffith Treatment Plant

																		Quant	
Parameter	MCL 1	Units ²	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	Max	Min	Limit ³	# of Tests
Aluminum	50-200 S	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	25.0	4
Antimony	6 P	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	2.0	4
Arsenic	10 P	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	2.0	4
Barium	2000 P	μg/L	BQL			31.8				31.5		32.3			BQL	32.3	BQL	25.0	4
Beryllium	4 P	μg/L	BQL			BQL	-			BQL		BQL		-	BQL	BQL	BQL	2.0	4
Cadmium	5 P	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	2.0	4
Calcium		mg/L	20.1			25.2				32.2		39.5		-	29.3	39.5	20.1	1.0	4
Chromium	100 P	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	5.0	4
Copper	1300 AL	μg/L	BQL	BQL	BQL	28.0	BQL	29.8		26.4	BQL	BQL	BQL		BQL	29.8	BQL	25.0	10
Iron	300 S	μg/L	BQL	BQL	BQL	BQL	BQL	BQL		BQL	BQL	BQL	BQL		BQL	BQL	BQL	25.0	10
Lead	15 AL	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	2.0	4
Magnesium		mg/L	5.3			6.0				6.1		7.1			6.1	7.1	5.3	1.0	4
Manganese	50 S	μg/L	BQL	BQL	BQL	BQL	BQL	BQL		BQL	BQL	BQL	BQL		BQL	BQL	BQL	25.0	10
Mercury	2 P	μg/L	BQL					BQL							BQL	BQL	BQL	0.50	2
Nickel	100 P	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	5.0	4
Potassium		mg/L	3.0			3.2				6.3		6.5			4.8	6.5	3.0	1.0	4
Selenium	50 P	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	5.0	4
Silicon		mg/L	5.0			3.5				3.1		3.4			3.8	5.0	3.1	1.0	4
Silver	100 S	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	5.0	4
Sodium		mg/L	21.8	24.9	28.9	25.8	22.5	22.0		32.1	36.1	35.0	22.0		27.1	36.1	21.8	1.0	10
Thallium	2 P	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	2.0	4
Zinc	5000 S	μg/L	BQL			BQL				BQL		BQL			BQL	BQL	BQL	25.0	4

BQL = The lowest quantitation limit of all analyses for the particular parameter, Below Quantitation Limit.

Report No: 012813122327

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 $^{^{2}}$ mg/L = milligrams per liter, μ g/L = micrograms per liter

³ Quant Limit = Quantitation Limit = lowest level of measurement