

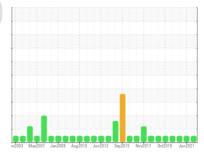
OIL ANALYSIS REPORT

[21-3682]

TURBLEX AERATION BLOWER 1 (S/N 3888)

Hydraulic System

SHELL TELLUS 46 (273 GAL)



Sample Rating Trend



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

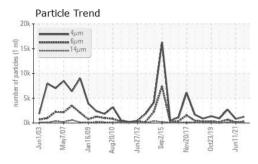
Fluid Condition

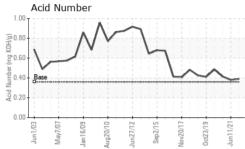
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

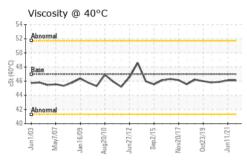
Company Comp							
Sample Date Client Info 17 Feb 2022 11 Jun 2021 29 Oct 2020	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 131236 126246 122867	Sample Number		Client Info		WC0528877	WC0528875	WC0408704
Dil Age	Sample Date		Client Info		17 Feb 2022	11 Jun 2021	29 Oct 2020
Contamination Cilient Info Not Change Filtered NORMAL NORMAL NORMAL	Machine Age	hrs	Client Info		131236	126246	122867
NORMAL NORMAL NORMAL NORMAL	Oil Age	hrs	Client Info		0	0	0
Water WC Method So.05 NEG	Oil Changed		Client Info		Not Changd	Filtered	Filtered
Water WC Method >0.05 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1	Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 0 <1 Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m <1 0 <1 Aluminum ppm ASTM D5185m >20 0 0 0 0 Lead ppm ASTM D5185m >20 0 0 0 0 Copper ppm ASTM D5185m >20 0 0 0 0 Candium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 history2 Boron ppm ASTM D5185m 0 0 0 0 0 Barium	CONTAMINATION		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >20 <1 0 0 0 0	Water		WC Method	>0.05	NEG	NEG	NEG
Chromium	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>20	<1	0	<1
Description	Chromium	ppm	ASTM D5185m	>20	0	0	0
Silver	Nickel	ppm	ASTM D5185m	>20	0	0	0
Astropage Ast	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >20 0 0 0 Copper ppm ASTM D5185m >20 1 1 1 Tin ppm ASTM D5185m >20 0 0 0 Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ASTM D5185m 0 0 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Walgnesium ppm ASTM D5185m 13 1 4 4 Calcium ppm ASTM D5185m 266 423 348 360	Silver	ppm	ASTM D5185m		<1	0	<1
Copper	Aluminum	ppm	ASTM D5185m	>20	0	0	0
Tin	Lead	ppm	ASTM D5185m	>20	0	0	0
Antimony	Copper	ppm	ASTM D5185m	>20	1	1	1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0.0 3 1 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 11 3 4 4 Calcium ppm ASTM D5185m 35 132 120 116 Phosphorus ppm ASTM D5185m 266 423 348 360 Zinc ppm ASTM D5185m 276 458 446 447 Sulfur ppm ASTM D5185m >15 3 1 2 <	Tin	ppm	ASTM D5185m	>20	0	0	0
Description	Antimony	ppm	ASTM D5185m		0	0	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Serium ppm ASTM D5185m 0.0 3 1 2	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 <1 <1 Manganese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 11 3 4 4 Calcium ppm ASTM D5185m 35 132 120 116 Phosphorus ppm ASTM D5185m 266 423 348 360 Zinc ppm ASTM D5185m 276 458 446 447 Sulfur ppm ASTM D5185m 1847 2147 1699 1864 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m >20 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Particles >4µm ASTM D7647 >1300 262 135							
Manganese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 11 3 4 4 Calcium ppm ASTM D5185m 35 132 120 116 Phosphorus ppm ASTM D5185m 266 423 348 360 Zinc ppm ASTM D5185m 276 458 446 447 Sulfur ppm ASTM D5185m 1847 2147 1699 1864 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m >2 2 3 Potassium ppm ASTM D5185m >20 0 0 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >1300 262 135 <td< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td>0.0</td><th>3</th><td>1</td><td>2</td></td<>	Boron	ppm	ASTM D5185m	0.0	3	1	2
Magnesium ppm ASTM D5185m 11 3 4 4 Calcium ppm ASTM D5185m 35 132 120 116 Phosphorus ppm ASTM D5185m 266 423 348 360 Zinc ppm ASTM D5185m 276 458 446 447 Sulfur ppm ASTM D5185m 1847 2147 1699 1864 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m >20 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >21μm ASTM D7647 >40 7 6 40	Boron Barium						_
Calcium ppm ASTM D5185m 35 132 120 116 Phosphorus ppm ASTM D5185m 266 423 348 360 Zinc ppm ASTM D5185m 276 458 446 447 Sulfur ppm ASTM D5185m 1847 2147 1699 1864 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m >20 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >10 2 0 3 <		ppm	ASTM D5185m	0	0	0	0
Phosphorus ppm ASTM D5185m 266 423 348 360 Zinc ppm ASTM D5185m 276 458 446 447 Sulfur ppm ASTM D5185m 1847 2147 1699 1864 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m 2 2 3 Potassium ppm ASTM D5185m >20 0 0 0 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >10 2 0 3 Particles >7	Barium	ppm ppm	ASTM D5185m ASTM D5185m	0	0	0 <1	0 <1
Zinc ppm ASTM D5185m 276 458 446 447 Sulfur ppm ASTM D5185m 1847 2147 1699 1864 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m 2 2 3 Potassium ppm ASTM D5185m >20 0 0 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0 Particles	Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	0 0 0	0 <1 0	0 <1 0
Sulfur ppm ASTM D5185m 1847 2147 1699 1864 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m 2 2 3 Potassium ppm ASTM D5185m >20 0 0 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0	0 0 0 3	0 <1 0 4	0 <1 0 4
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m 2 2 3 Potassium ppm ASTM D5185m >20 0 0 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 11 35	0 0 0 3 132	0 <1 0 4 120	0 <1 0 4 116
Silicon ppm ASTM D5185m >15 3 1 2 Sodium ppm ASTM D5185m 2 2 3 Potassium ppm ASTM D5185m >20 0 0 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 11 35 266	0 0 0 3 132 423	0 <1 0 4 120 348	0 <1 0 4 116 360
Sodium ppm ASTM D5185m 2 2 3 Potassium ppm ASTM D5185m >20 0 0 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 111 35 266 276	0 0 0 3 132 423 458	0 <1 0 4 120 348 446	0 <1 0 4 116 360 447
Potassium ppm ASTM D5185m >20 0 0 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 11 35 266 276 1847	0 0 0 3 132 423 458 2147	0 <1 0 4 120 348 446 1699	0 <1 0 4 116 360 447 1864
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 11 35 266 276 1847 limit/base	0 0 0 3 132 423 458 2147	0 <1 0 4 120 348 446 1699 history1	0 <1 0 4 116 360 447 1864 history2 2
Particles >4μm ASTM D7647 1243 827 2689 Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 11 35 266 276 1847 limit/base	0 0 0 3 132 423 458 2147 current	0 <1 0 4 120 348 446 1699 history1 1 2	0 <1 0 4 116 360 447 1864 history2 2
Particles >6μm ASTM D7647 >1300 262 135 682 Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 11 35 266 276 1847 limit/base >15	0 0 0 3 132 423 458 2147 current 3	0 <1 0 4 120 348 446 1699 history1 1 2	0 <1 0 4 116 360 447 1864 history2 2 3
Particles >14μm ASTM D7647 >160 24 14 94 Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 111 35 266 276 1847 limit/base >15	0 0 0 3 132 423 458 2147 current 3 2	0 <1 0 4 120 348 446 1699 history1 1 2 0	0 <1 0 4 116 360 447 1864 history2 2 3 0
Particles >21μm ASTM D7647 >40 7 6 40 Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 111 35 266 276 1847 limit/base >15	0 0 0 3 132 423 458 2147 current 3 2 0	0 <1 0 4 120 348 446 1699 history1 1 2 0 history1	0 <1 0 4 116 360 447 1864 history2 2 3 0 history2
Particles >38μm ASTM D7647 >10 2 0 3 Particles >71μm ASTM D7647 >3 0 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 111 35 266 276 1847 limit/base >15 >20 limit/base	0 0 0 3 132 423 458 2147 current 3 2 0	0 <1 0 4 120 348 446 1699 history1 1 2 0 history1 827	0 <1 0 4 116 360 447 1864 history2 2 3 0 history2 2689
Particles >71μm ASTM D7647 >3 0 0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 111 35 266 276 1847 limit/base >15 >20 limit/base >1300	0 0 0 3 132 423 458 2147 current 3 2 0 current 1243 262	0 <1 0 4 120 348 446 1699 history1 1 2 0 history1 827 135	0 <1 0 4 116 360 447 1864 history2 2 3 0 history2 2689 682
	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m	0 0 0 111 35 266 276 1847 limit/base >15 >20 limit/base	0 0 0 3 132 423 458 2147 current 3 2 0 current 1243 262 24	0 <1 0 4 120 348 446 1699 history1 1 2 0 history1 827 135 14	0
Dil Cleanliness ISO 4406 (c) >/17/14 17/15/12 17/14/11 19/17/14	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 111 35 266 276 1847 limit/base >15 >20 limit/base >160 >40	0 0 0 3 132 423 458 2147 current 3 2 0 current 1243 262 24 7	0 <1 0 4 120 348 446 1699 history1 1 2 0 history1 827 135 14 6	0 <1 0 4 116 360 447 1864 history2 2 3 0 history2 2689 682 94 40
	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 11 35 266 276 1847 limit/base >15 >20 limit/base >160 >40 >10	0 0 0 3 132 423 458 2147 current 3 2 0 current 1243 262 24 7	0 <1 0 4 120 348 446 1699 history1 1 2 0 history1 827 135 14 6 0	0

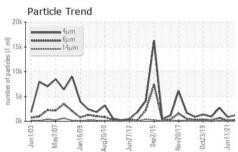


OIL ANALYSIS REPORT

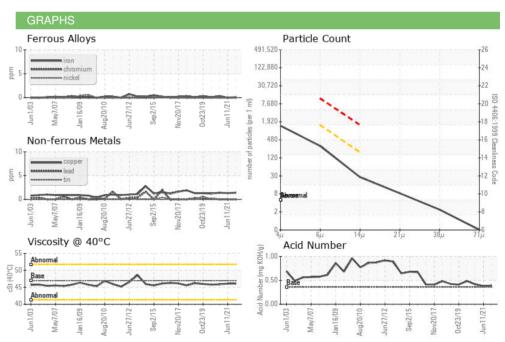








FLUID DEGRADATION		method				history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.36	0.39	0.380	0.415
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	VLITE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	TES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	46.99	46.1	46.1	45.9
SAMPLE IMAGES	5	method	limit/base	current	history1	history2







Certificate 12367

Laboratory Sample No.

Lab Number : 05477068

Test Package : IND 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0528877 Unique Number : 9866282

Color

Bottom

Received : 24 Feb 2022 **Tested**

: 28 Feb 2022

Diagnosed

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: 01 Mar 2022 - Jonathan Hester

US 01001 Contact: Paul Orzechowski paul.orzechowski@veolia.com T: (413)575-3782

VEOLIA NORTH AMERICA

190 M STREET EXTENSION

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

F: (413)732-7071 Contact/Location: Paul Orzechowski - USWSPR

AGAWAM, MA