



A Waters Company

Thekkekalathil Chandrasekhar
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2600 Blair Stone Road
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USA

SOIL-87



Final Report

Soil/Hazardous Waste Proficiency Testing

Soil Study

Open Date: 07/21/14

Close Date: 09/04/14

Report Issued Date: 09/08/14



A Waters Company

September 8, 2014

Thekkekalathil Chandrasekhar
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Enclosed is your final report for ERA's SOIL-87 Proficiency Testing (PT) study. Your final report includes an evaluation of all results submitted by your laboratory to ERA.

Data Evaluation Protocols: All analytes in ERA's SOIL-87 Proficiency Testing study have been evaluated using the following tiered approach. If the analyte is listed in the current TNI Fields of Proficiency Testing (FoPT) tables, the evaluation was completed by comparing the reported result to the acceptance limits generated using the criteria contained in the current TNI FoPT tables. If the analyte is not included in the TNI FoPT tables, the reported result has been evaluated using the procedures outlined in ERA's Standard Operating Procedure for the Generation of Performance Acceptance Limits (SOP 0260).

Corrective Action Help: As part of your accreditation(s), you may be required to identify the root cause of any "Not Acceptable" results, implement the necessary corrective actions, and then satisfy your PT requirements by participating in a Supplemental (Quik™Response) or future ERA PT study. ERA's technical staff is available to help your laboratory resolve any technical issues that may be impairing your PT performance and possibly affecting your routine data quality. Our laboratory and technical staff have many years of collective experience in performing the full range of environmental analyses. As part of our technical support, ERA offers QC samples that can be useful in helping you work through your technical issues.

At the request of the TNI Accreditation Council, we have included a Laboratory Exception Report that includes a list of all analytes reported with less than qualifiers when the assigned value was greater than "0." In addition, because we have received many requests from laboratories, this report also includes a list of all analytes with "Not Acceptable" evaluations.

Some states have elected not to convert to the 2009 TNI Standards at this time. If you have released your results to a state that has retained the 2003 NELAC Evaluation Criteria, your final report will include a section that evaluates the results according to the 2003 Standard in addition to the 2009 TNI Standards.

Thank you for your participation in ERA's SOIL-87 Proficiency Testing study. If you have any questions, please contact our Proficiency Testing Department at 1-800-372-0122.

Sincerely,

Kristina Sanchez
Quality Officer

attachments



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Report Recipient	Contact/Phone Number	Reporting Type	Evaluation Type
Florida	Steve Arms / 904-791-1502	All Analytes	2009 TNI



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SOIL-87 Definitions & Study Discussion

Study Dates: 07/21/14 - 09/04/14

Report Issued: 09/08/14

SOIL Study Definitions

The Reported Value is the value that the laboratory reported to ERA.

The ERA Assigned Value for the Organic Proficiency Testing Standards is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation as applicable. The ERA assigned value for the Inorganic Proficiency Testing Standards, with the exception of the TCLP Metals in Soil and Total Organic Carbon (TOC) in the Nutrients in Soil sample, is equal to the maximum amount of the parameter available in the standard by applicable EPA methodologies. The ERA assigned value for the TCLP metals and TOC is equal to the mean of the study data, after the removal of outliers. All parameters not added to the standard are given an Assigned Value of "< PTRL", per the guidelines contained in the 2009 TNI Standards. The assigned values are directly traceable to the commercially prepared starting materials used to manufacture the PT standards.

The Acceptance Limits are established per the criteria contained in the most current TNI Fields of Proficiency Testing (FoPT) tables, or ERA's SOP for the Generation of Performance Acceptance Limits™ as applicable.

The Performance Evaluation:

Acceptable = Reported Value falls within the Acceptance Limits.

Not Acceptable = Reported Value falls outside the Acceptance Limits.

No Evaluation = Reported Value cannot be evaluated.

Not Reported = No Value reported.

The Method Description is the method the laboratory reported to ERA.

SOIL Study Discussion

ERA's SOIL-87 Proficiency Testing (PT) study has been reviewed by ERA senior management and certified compliant with the requirements of the 2009 TNI PT Standard and the criteria contained in the most current TNI Fields of Proficiency Testing (FoPT) tables.

ERA's SOIL-87 study standards were examined for any anomalies. A full review of all homogeneity, stability and accuracy verification data was completed. All analytical verification data for all analytes in the standards met the acceptance criteria contained in the 2009 TNI PT Standard and the criteria contained in the most current TNI FoPT tables.

The data submitted by participating laboratories was also examined for study anomalies. There were no anomalies observed during the statistical review of the data.

ERA's SOIL-87 Proficiency Testing study reports shall not be reproduced except in its entirety and not without the permission of the participating laboratory. The report must not be used by the participating laboratories to claim product endorsement any agency of the U. S. government.

The data contained herein are confidential and intended for your use only.

If you have any questions or concerns regarding your assessment in ERA's SOIL Proficiency Testing program, please contact our Proficiency Testing Department at 1-800-372-0122.





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SOIL-87 Laboratory Exception Report

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2009 TNI Evaluation Checks

There are no values reported with < where the assigned value was greater than 0.

2009 TNI Not Acceptable Evaluations

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description
<i>SOIL Volatiles in Soil (cat# 623)</i>							
5240	m&p-Xylene	µg/kg	63.2	137	66.5 - 203	Not Acceptable	EPA 8260C



All analytes are included in ERA's A2LA accreditation. Lab Code: 1539-01

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Final Report Results For Laboratory State of Florida DEP Chemistry Laboratory

2009 TNI Evaluation Report

Study: **SOIL-87**

ERA Customer Number: **S744803**

Laboratory Name: **State of Florida DEP
Chemistry Laboratory**

Inorganic Results



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SOIL-87 2009 TNI Evaluation Final Complete Report

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TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Metals in Soil (cat# 620)

1000	Aluminum	mg/kg	8570	9830	3090 - 12800	Acceptable	EPA 6010C 3 2007	8/5/2014	0.379	7930	1700	AYRES_J
1005	Antimony	mg/kg	65.4	214	21.4 - 267	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.659	105	59.4	AYRES_J
1010	Arsenic	mg/kg	92.5	130	68.3 - 143	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.700	98.5	8.64	AYRES_J
1015	Barium	mg/kg	300	342	228 - 388	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.345	308	23.7	AYRES_J
1020	Beryllium	mg/kg	69.3	68.4	48.6 - 83.4	Acceptable	EPA 6010C 3 2007	8/5/2014	0.578	66.0	5.78	AYRES_J
1025	Boron	mg/kg	143	176	82.1 - 194	Acceptable	EPA 6010C 3 2007	8/21/2014	0.383	137	16.3	AYRES_J
1030	Cadmium	mg/kg	147	162	107 - 185	Acceptable	EPA 6010C 3 2007	8/5/2014	0.0641	146	12.7	AYRES_J
1035	Calcium	mg/kg	6770	6360	4900 - 8320	Acceptable	EPA 6010C 3 2007	8/5/2014	0.305	6610	537	AYRES_J
1040	Chromium	mg/kg	180	203	129 - 236	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.157	182	14.1	AYRES_J
1050	Cobalt	mg/kg	172	171	120 - 203	Acceptable	EPA 6010C 3 2007	8/5/2014	0.834	162	12.5	AYRES_J
1055	Copper	mg/kg	106	120	79.0 - 133	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.00431	106	8.70	AYRES_J
1070	Iron	mg/kg	16900	16300	5120 - 23600	Acceptable	EPA 6010C 3 2007	8/5/2014	0.733	14400	3450	AYRES_J
1075	Lead	mg/kg	133	138	94.2 - 165	Acceptable	EPA 6010C 3 2007	8/5/2014	0.280	130	11.8	AYRES_J
1085	Magnesium	mg/kg	2900	3000	1700 - 3590	Acceptable	EPA 6010C 3 2007	8/5/2014	0.904	2640	285	AYRES_J
1090	Manganese	mg/kg	404	439	313 - 508	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.186	410	34.1	AYRES_J
1095	Mercury	mg/kg		6.66	3.64 - 10.6	Not Reported				7.10	0.875	
1100	Molybdenum	mg/kg	174	186	116 - 211	Acceptable	EPA 6010C 3 2007	8/5/2014	0.601	164	17.4	AYRES_J
1105	Nickel	mg/kg	161	169	109 - 189	Acceptable	EPA 6010C 3 2007	8/5/2014	0.994	149	12.0	AYRES_J
1125	Potassium	mg/kg	2740	2960	1550 - 3540	Acceptable	EPA 6010C 3 2007	8/5/2014	0.716	2550	272	AYRES_J
1140	Selenium	mg/kg	163	170	104 - 204	Acceptable	EPA 6010C 3 2007	8/5/2014	0.679	154	13.2	AYRES_J



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SOIL Metals in Soil (cat# 620) (Continued)

1150	Silver	mg/kg	39.3	45.1	27.0 - 54.7	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.382	40.9	4.06	AYRES_J
1155	Sodium	mg/kg	2590	2770	1620 - 3330	Acceptable	EPA 6010C 3 2007	8/5/2014	0.433	2480	261	AYRES_J
1160	Strontium	mg/kg	90.0	88.0	59.5 - 110	Acceptable	EPA 6010C 3 2007	8/5/2014	0.601	84.8	8.66	AYRES_J
1165	Thallium	mg/kg	189	199	120 - 229	Acceptable	EPA 6010C 3 2007	8/5/2014	0.838	175	17.2	AYRES_J
1175	Tin	mg/kg	95.3	113	58.4 - 146	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.779	102	9.15	AYRES_J
1180	Titanium	mg/kg	443	465	110 - 687	Acceptable	EPA 6010C 3 2007	8/5/2014	0.464	398	96.2	AYRES_J
1185	Vanadium	mg/kg	102	109	62.9 - 131	Acceptable	EPA 6010C 3 2007	8/5/2014	0.431	96.7	12.3	AYRES_J
1190	Zinc	mg/kg	184	179	133 - 249	Acceptable	EPA 6010C 3 2007	8/5/2014	-0.414	191	16.4	AYRES_J



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SOIL Metals in Soil (cat# 620)

1000	Aluminum	mg/kg		9830	3090 - 12800	Not Reported				7930	1700	
1005	Antimony	mg/kg	65.5	214	21.4 - 267	Acceptable	EPA 6020A 1 2007	8/7/2014	-0.657	105	59.4	PETERSON_C
1010	Arsenic	mg/kg	102	130	68.3 - 143	Acceptable	EPA 6020A 1 2007	8/7/2014	0.399	98.5	8.64	PETERSON_C
1015	Barium	mg/kg	308	342	228 - 388	Acceptable	EPA 6020A 1 2007	8/7/2014	-0.00774	308	23.7	PETERSON_C
1020	Beryllium	mg/kg	66.6	68.4	48.6 - 83.4	Acceptable	EPA 6020A 1 2007	8/12/2014	0.111	66.0	5.78	PETERSON_C
1025	Boron	mg/kg		176	82.1 - 194	Not Reported				137	16.3	
1030	Cadmium	mg/kg	151	162	107 - 185	Acceptable	EPA 6020A 1 2007	8/7/2014	0.379	146	12.7	PETERSON_C
1035	Calcium	mg/kg		6360	4900 - 8320	Not Reported				6610	537	
1040	Chromium	mg/kg	189	203	129 - 236	Acceptable	EPA 6020A 1 2007	8/7/2014	0.479	182	14.1	PETERSON_C
1050	Cobalt	mg/kg	173	171	120 - 203	Acceptable	EPA 6020A 1 2007	8/7/2014	0.914	162	12.5	PETERSON_C
1055	Copper	mg/kg	110	120	79.0 - 133	Acceptable	EPA 6020A 1 2007	8/7/2014	0.456	106	8.70	PETERSON_C
1070	Iron	mg/kg		16300	5120 - 23600	Not Reported				14400	3450	
1075	Lead	mg/kg	136	138	94.2 - 165	Acceptable	EPA 6020A 1 2007	8/7/2014	0.535	130	11.8	PETERSON_C
1085	Magnesium	mg/kg		3000	1700 - 3590	Not Reported				2640	285	
1090	Manganese	mg/kg	418	439	313 - 508	Acceptable	EPA 6020A 1 2007	8/7/2014	0.225	410	34.1	PETERSON_C
1095	Mercury	mg/kg		6.66	3.64 - 10.6	Not Reported				7.10	0.875	
1100	Molybdenum	mg/kg	176	186	116 - 211	Acceptable	EPA 6020A 1 2007	8/7/2014	0.716	164	17.4	PETERSON_C
1105	Nickel	mg/kg	162	169	109 - 189	Acceptable	EPA 6020A 1 2007	8/7/2014	1.08	149	12.0	PETERSON_C
1125	Potassium	mg/kg		2960	1550 - 3540	Not Reported				2550	272	
1140	Selenium	mg/kg	162	170	104 - 204	Acceptable	EPA 6020A 1 2007	8/7/2014	0.603	154	13.2	PETERSON_C



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SOIL Metals in Soil (cat# 620) (Continued)

1150	Silver	mg/kg	42.5	45.1	27.0 - 54.7	Acceptable	EPA 6020A 1 2007	8/7/2014	0.406	40.9	4.06	PETERSON_C
1155	Sodium	mg/kg		2770	1620 - 3330	Not Reported				2480	261	
1160	Strontium	mg/kg		88.0	59.5 - 110	Not Reported				84.8	8.66	
1165	Thallium	mg/kg	198	199	120 - 229	Acceptable	EPA 6020A 1 2007	8/7/2014	1.36	175	17.2	PETERSON_C
1175	Tin	mg/kg		113	58.4 - 146	Not Reported				102	9.15	
1180	Titanium	mg/kg		465	110 - 687	Not Reported				398	96.2	
1185	Vanadium	mg/kg		109	62.9 - 131	Not Reported				96.7	12.3	
1190	Zinc	mg/kg	206	179	133 - 249	Acceptable	EPA 6020A 1 2007	8/7/2014	0.926	191	16.4	PETERSON_C



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SOIL Metals in Soil (cat# 620)

1000	Aluminum	mg/kg		9830	3090 - 12800	Not Reported				7930	1700	
1005	Antimony	mg/kg		214	21.4 - 267	Not Reported				105	59.4	
1010	Arsenic	mg/kg		130	68.3 - 143	Not Reported				98.5	8.64	
1015	Barium	mg/kg		342	228 - 388	Not Reported				308	23.7	
1020	Beryllium	mg/kg		68.4	48.6 - 83.4	Not Reported				66.0	5.78	
1025	Boron	mg/kg		176	82.1 - 194	Not Reported				137	16.3	
1030	Cadmium	mg/kg		162	107 - 185	Not Reported				146	12.7	
1035	Calcium	mg/kg		6360	4900 - 8320	Not Reported				6610	537	
1040	Chromium	mg/kg		203	129 - 236	Not Reported				182	14.1	
1050	Cobalt	mg/kg		171	120 - 203	Not Reported				162	12.5	
1055	Copper	mg/kg		120	79.0 - 133	Not Reported				106	8.70	
1070	Iron	mg/kg		16300	5120 - 23600	Not Reported				14400	3450	
1075	Lead	mg/kg		138	94.2 - 165	Not Reported				130	11.8	
1085	Magnesium	mg/kg		3000	1700 - 3590	Not Reported				2640	285	
1090	Manganese	mg/kg		439	313 - 508	Not Reported				410	34.1	
1095	Mercury	mg/kg	7.16	6.66	3.64 - 10.6	Acceptable	EPA 7473 1998	8/26/2014	0.0712	7.10	0.875	TOPOLSKI_B
1100	Molybdenum	mg/kg		186	116 - 211	Not Reported				164	17.4	
1105	Nickel	mg/kg		169	109 - 189	Not Reported				149	12.0	
1125	Potassium	mg/kg		2960	1550 - 3540	Not Reported				2550	272	
1140	Selenium	mg/kg		170	104 - 204	Not Reported				154	13.2	



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SOIL Metals in Soil (cat# 620) (Continued)

1150	Silver	mg/kg		45.1	27.0 - 54.7	Not Reported				40.9	4.06	
1155	Sodium	mg/kg		2770	1620 - 3330	Not Reported				2480	261	
1160	Strontium	mg/kg		88.0	59.5 - 110	Not Reported				84.8	8.66	
1165	Thallium	mg/kg		199	120 - 229	Not Reported				175	17.2	
1175	Tin	mg/kg		113	58.4 - 146	Not Reported				102	9.15	
1180	Titanium	mg/kg		465	110 - 687	Not Reported				398	96.2	
1185	Vanadium	mg/kg		109	62.9 - 131	Not Reported				96.7	12.3	
1190	Zinc	mg/kg		179	133 - 249	Not Reported				191	16.4	



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SOIL Metals in Soil (cat# 620)

1000	Aluminum	mg/kg		9830	3090 - 12800	Not Reported				7930	1700	
1005	Antimony	mg/kg		214	21.4 - 267	Not Reported				105	59.4	
1010	Arsenic	mg/kg		130	68.3 - 143	Not Reported				98.5	8.64	
1015	Barium	mg/kg		342	228 - 388	Not Reported				308	23.7	
1020	Beryllium	mg/kg		68.4	48.6 - 83.4	Not Reported				66.0	5.78	
1025	Boron	mg/kg		176	82.1 - 194	Not Reported				137	16.3	
1030	Cadmium	mg/kg		162	107 - 185	Not Reported				146	12.7	
1035	Calcium	mg/kg		6360	4900 - 8320	Not Reported				6610	537	
1040	Chromium	mg/kg		203	129 - 236	Not Reported				182	14.1	
1050	Cobalt	mg/kg		171	120 - 203	Not Reported				162	12.5	
1055	Copper	mg/kg		120	79.0 - 133	Not Reported				106	8.70	
1070	Iron	mg/kg		16300	5120 - 23600	Not Reported				14400	3450	
1075	Lead	mg/kg		138	94.2 - 165	Not Reported				130	11.8	
1085	Magnesium	mg/kg		3000	1700 - 3590	Not Reported				2640	285	
1090	Manganese	mg/kg		439	313 - 508	Not Reported				410	34.1	
1095	Mercury	mg/kg	7.90	6.66	3.64 - 10.6	Acceptable	DEPSOP:HG-008-3	8/5/2014	0.917	7.10	0.875	ACOSTA_M
1100	Molybdenum	mg/kg		186	116 - 211	Not Reported				164	17.4	
1105	Nickel	mg/kg		169	109 - 189	Not Reported				149	12.0	
1125	Potassium	mg/kg		2960	1550 - 3540	Not Reported				2550	272	
1140	Selenium	mg/kg		170	104 - 204	Not Reported				154	13.2	



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Study #: SOIL-87





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SOIL Metals in Soil (cat# 620) (Continued)

1150	Silver	mg/kg		45.1	27.0 - 54.7	Not Reported				40.9	4.06	
1155	Sodium	mg/kg		2770	1620 - 3330	Not Reported				2480	261	
1160	Strontium	mg/kg		88.0	59.5 - 110	Not Reported				84.8	8.66	
1165	Thallium	mg/kg		199	120 - 229	Not Reported				175	17.2	
1175	Tin	mg/kg		113	58.4 - 146	Not Reported				102	9.15	
1180	Titanium	mg/kg		465	110 - 687	Not Reported				398	96.2	
1185	Vanadium	mg/kg		109	62.9 - 131	Not Reported				96.7	12.3	
1190	Zinc	mg/kg		179	133 - 249	Not Reported				191	16.4	

SOIL Nutrients in Soil (cat# 869)

1515	Ammonia as N	mg/kg		402	168 - 624	Not Reported				396	74.7	
1795	Total Kjeldahl Nitrogen	mg/kg		872	458 - 1310	Not Reported				882	152	
2040	Total Organic Carbon (TOC)	mg/kg	5080	5430	1500 - 9370	Acceptable	DEPSOP:NU-076-1	7/30/2014	-0.269	5430	1310	DEARMAN_G
1910	Total Phosphorus	mg/kg		837	207 - 1550	Not Reported				878	127	



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2009 TNI Evaluation Report

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ERA Customer Number: **S744803**

Laboratory Name: **State of Florida DEP
Chemistry Laboratory**

Organic Results



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SOIL Volatiles in Soil (cat# 623)

4315	Acetone	µg/kg	211	419	41.9 - 672	Acceptable	EPA 8260C	8/26/2014	-1.87	421	112	BOOESHAG_F
4320	Acetonitrile	µg/kg		260	6.64 - 565	Not Reported				286	93.1	
4325	Acrolein	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4375	Benzene	µg/kg	110	124	74.5 - 170	Acceptable	EPA 8260C	8/26/2014	-0.826	123	16.0	BOOESHAG_F
4385	Bromobenzene	µg/kg		< 40.0	0.00 - 40.0	Not Reported						
4390	Bromochloromethane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4395	Bromodichloromethane	µg/kg	75.4	72.4	45.8 - 101	Acceptable	EPA 8260C	8/26/2014	0.208	73.4	9.80	BOOESHAG_F
4400	Bromoform	µg/kg	79.0	75.0	37.6 - 111	Acceptable	EPA 8260C	8/26/2014	0.308	74.8	13.5	BOOESHAG_F
4950	Bromomethane	µg/kg	< 2.00	< 80.0	0.00 - 80.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4410	2-Butanone (MEK)	µg/kg	160	225	59.8 - 355	Acceptable	EPA 8260C	8/26/2014	-1.31	213	40.2	BOOESHAG_F
4435	n-Butylbenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4440	sec-Butylbenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4445	tert-Butylbenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5000	tert-Butyl methyl ether (MTBE)	µg/kg	< 2.00	< 7.80	0.00 - 7.80	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4450	Carbon disulfide	µg/kg	< 2.00	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4455	Carbon tetrachloride	µg/kg	128	157	76.5 - 232	Acceptable	EPA 8260C	8/26/2014	-1.34	162	25.3	BOOESHAG_F
4475	Chlorobenzene	µg/kg	68.4	67.1	37.1 - 92.5	Acceptable	EPA 8260C	8/26/2014	0.312	65.7	8.74	BOOESHAG_F
4575	Chlorodibromomethane	µg/kg	138	150	91.9 - 206	Acceptable	EPA 8260C	8/26/2014	-0.908	152	15.4	BOOESHAG_F
4485	Chloroethane	µg/kg	< 2.00	< 80.0	0.00 - 80.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4500	2-Chloroethylvinylether	µg/kg		< 20.0	0.00 - 20.0	Not Reported						



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SOIL Volatiles in Soil (cat# 623) (Continued)

4505	Chloroform	µg/kg	47.6	48.4	28.7 - 68.5	Acceptable	EPA 8260C	8/26/2014	0.282	45.9	5.92	BOOESHAG_F
4960	Chloromethane	µg/kg	< 2.00	< 80.0	0.00 - 80.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4535	2-Chlorotoluene	µg/kg	< 2.00	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4540	4-Chlorotoluene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4570	1,2-Dibromo-3-chloropropane (DBCP)	µg/kg		< 4.00	0.00 - 4.00	Not Reported						
4585	1,2-Dibromoethane (EDB)	µg/kg		48.1	28.6 - 68.5	Not Reported				47.5	5.85	
4595	Dibromomethane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4610	1,2-Dichlorobenzene	µg/kg	84.6	81.7	39.1 - 116	Acceptable	EPA 8260C	8/26/2014	0.316	80.0	14.4	BOOESHAG_F
4615	1,3-Dichlorobenzene	µg/kg	87.0	87.2	32.7 - 129	Acceptable	EPA 8260C	8/26/2014	0.0445	86.3	15.8	BOOESHAG_F
4620	1,4-Dichlorobenzene	µg/kg	64.8	64.3	22.3 - 91.5	Acceptable	EPA 8260C	8/26/2014	0.166	62.9	11.3	BOOESHAG_F
4625	Dichlorodifluoromethane (Freon 12)	µg/kg	< 2.00	< 80.0	0.00 - 80.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4630	1,1-Dichloroethane	µg/kg	< 2.00	< 11.0	0.00 - 11.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4635	1,2-Dichloroethane	µg/kg	44.0	40.7	24.3 - 58.0	Acceptable	EPA 8260C	8/26/2014	0.371	42.0	5.47	BOOESHAG_F
4640	1,1-Dichloroethylene	µg/kg	< 2.00	< 13.0	0.00 - 13.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4645	cis-1,2-Dichloroethylene	µg/kg	< 2.00	< 20.0	0.00 - 20.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4700	trans-1,2-Dichloroethylene	µg/kg	< 2.00	< 23.0	0.00 - 23.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4655	1,2-Dichloropropane	µg/kg	147	157	91.8 - 210	Acceptable	EPA 8260C	8/26/2014	-0.623	159	19.5	BOOESHAG_F
4660	1,3-Dichloropropane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4665	2,2-Dichloropropane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4670	1,1-Dichloropropene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						



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SOIL Volatiles in Soil (cat# 623) (Continued)

4680	cis-1,3-Dichloropropylene	µg/kg	< 2.00	< 40.0	0.00 - 40.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4685	trans-1,3-Dichloropropylene	µg/kg	< 2.00	< 40.0	0.00 - 40.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
4765	Ethylbenzene	µg/kg	35.5	35.1	18.1 - 52.9	Acceptable	EPA 8260C	8/26/2014	-0.0567	35.8	4.70	BOOESHAG_F
4835	Hexachlorobutadiene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4840	Hexachloroethane	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4860	2-Hexanone	µg/kg	84.8	102	30.7 - 163	Acceptable	EPA 8260C	8/26/2014	-0.511	93.0	16.0	BOOESHAG_F
4900	Isopropylbenzene	µg/kg		< 40.0	0.00 - 40.0	Not Reported						
4910	4-Isopropyltoluene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
4975	Methylene chloride	µg/kg	102	106	49.4 - 154	Acceptable	EPA 8260C	8/26/2014	-0.338	107	15.1	BOOESHAG_F
4995	4-Methyl-2-pentanone (MIBK)	µg/kg	184	175	75.8 - 256	Acceptable	EPA 8260C	8/26/2014	0.408	173	27.6	BOOESHAG_F
5005	Naphthalene	µg/kg		140	66.1 - 211	Not Reported				131	32.0	
5015	Nitrobenzene	µg/kg		136	54.4 - 218	Not Reported				135	32.5	
5090	n-Propylbenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5100	Styrene	µg/kg	82.2	81.2	52.5 - 118	Acceptable	EPA 8260C	8/26/2014	-0.208	84.7	11.9	BOOESHAG_F
5105	1,1,1,2-Tetrachloroethane	µg/kg		71.5	46.2 - 98.8	Not Reported				69.9	9.66	
5110	1,1,2,2-Tetrachloroethane	µg/kg	< 2.00	< 8.90	0.00 - 8.90	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
5115	Tetrachloroethylene	µg/kg	< 2.00	< 8.30	0.00 - 8.30	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
5140	Toluene	µg/kg	116	127	73.1 - 178	Acceptable	EPA 8260C	8/26/2014	-0.917	130	15.5	BOOESHAG_F
5150	1,2,3-Trichlorobenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5155	1,2,4-Trichlorobenzene	µg/kg		78.9	31.6 - 126	Not Reported				71.8	17.6	



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SOIL Volatiles in Soil (cat# 623) (Continued)

5160	1,1,1-Trichloroethane	µg/kg	< 2.00	< 9.00	0.00 - 9.00	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
5165	1,1,2-Trichloroethane	µg/kg	< 2.00	< 13.0	0.00 - 13.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
5170	Trichloroethylene	µg/kg	120	143	73.6 - 204	Acceptable	EPA 8260C	8/26/2014	-1.24	140	15.8	BOOESHAG_F
5175	Trichlorofluoromethane	µg/kg	< 2.00	< 80.0	0.00 - 80.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
5180	1,2,3-Trichloropropane (TCP)	µg/kg		< 8.30	0.00 - 8.30	Not Reported						
5210	1,2,4-Trimethylbenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5215	1,3,5-Trimethylbenzene	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5225	Vinyl acetate	µg/kg		< 20.0	0.00 - 20.0	Not Reported						
5235	Vinyl chloride	µg/kg	< 2.00	< 80.0	0.00 - 80.0	Acceptable	EPA 8260C	8/26/2014				BOOESHAG_F
5240	m&p-Xylene	µg/kg	63.2	137	66.5 - 203	Not Acceptable	EPA 8260C	8/26/2014	-3.96	136	18.4	BOOESHAG_F
5250	o-Xylene	µg/kg	105	115	55.4 - 171	Acceptable	EPA 8260C	8/26/2014	-0.858	118	15.5	BOOESHAG_F
5260	Xylenes, total	µg/kg	168	252	124 - 370	Acceptable	EPA 8260C	8/26/2014	-2.45	254	35.0	BOOESHAG_F





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SOIL Base/Neutrals and Acids in Soil (cat# 467)

5500	Acenaphthene	µg/kg	3650	4210	981 - 4890	Acceptable	EPA 8270D 3	8/26/2014	0.977	2930	733	GHAFFARI_M
5505	Acenaphthylene	µg/kg	< 6.70	< 100	0.00 - 100	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5145	2-Amino-1-methylbenzene (o-toluidine)	µg/kg	< 180	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5545	Aniline	µg/kg	< 360	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5555	Anthracene	µg/kg	4600	4980	1120 - 5930	Acceptable	EPA 8270D 3	8/26/2014	1.41	3520	763	GHAFFARI_M
5595	Benzidine	µg/kg	< 1300	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5610	Benzoic acid	µg/kg		< 1000	0.00 - 1000	Not Reported						
5575	Benzo(a)anthracene	µg/kg	3320	3640	1090 - 4430	Acceptable	EPA 8270D 3	8/26/2014	0.938	2760	597	GHAFFARI_M
5585	Benzo(b)fluoranthene	µg/kg	5940	6380	1750 - 8290	Acceptable	EPA 8270D 3	8/26/2014	0.798	5020	1150	GHAFFARI_M
5600	Benzo(k)fluoranthene	µg/kg	< 6.70	< 100	0.00 - 100	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5590	Benzo(g,h,i)perylene	µg/kg	6720	7630	1470 - 8610	Acceptable	EPA 8270D 3	8/26/2014	1.38	5040	1220	GHAFFARI_M
5580	Benzo(a)pyrene	µg/kg	3110	3320	790 - 4410	Acceptable	EPA 8270D 3	8/26/2014	0.979	2600	521	GHAFFARI_M
5630	Benzyl alcohol	µg/kg	< 60.0	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5760	bis(2-Chloroethoxy)methane	µg/kg	< 60.0	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5765	bis(2-Chloroethyl)ether	µg/kg	< 60.0	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5780	bis(2-Chloroisopropyl)ether	µg/kg	< 60.0	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5660	4-Bromophenyl-phenylether	µg/kg	6010	6500	1920 - 7990	Acceptable	EPA 8270D 3	8/26/2014	0.892	4960	1180	GHAFFARI_M
5670	Butylbenzylphthalate	µg/kg	10200	9170	1940 - 11900	Acceptable	EPA 8270D 3	8/26/2014	1.82	6940	1790	GHAFFARI_M
5680	Carbazole	µg/kg	< 60.0	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5745	4-Chloroaniline	µg/kg		< 1000	0.00 - 1000	Not Reported						



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SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)

5700	4-Chloro-3-methylphenol	µg/kg	5860	7060	1550 - 7770	Acceptable	EPA 8270D 3	8/26/2014	1.25	4470	1110	GHAFFARI_M
5790	1-Chloronaphthalene	µg/kg		< 1000	0.00 - 1000	Not Reported						
5795	2-Chloronaphthalene	µg/kg	< 60.0	< 100	0.00 - 100	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5800	2-Chlorophenol	µg/kg	4830	5920	762 - 6510	Acceptable	EPA 8270D 3	8/26/2014	1.26	3480	1070	GHAFFARI_M
5825	4-Chlorophenyl-phenylether	µg/kg	3620	5450	1370 - 6360	Acceptable	EPA 8270D 3	8/26/2014	-0.265	3870	929	GHAFFARI_M
5855	Chrysene	µg/kg	< 6.70	< 100	0.00 - 100	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5895	Dibenz(a,h)anthracene	µg/kg	< 6.70	< 100	0.00 - 100	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5905	Dibenzofuran	µg/kg	< 60.0	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5925	Di-n-butylphthalate	µg/kg	3070	3170	521 - 4370	Acceptable	EPA 8270D 3	8/26/2014	1.06	2450	588	GHAFFARI_M
4610	1,2-Dichlorobenzene	µg/kg		3910	391 - 4300	Not Reported				2080	909	
4615	1,3-Dichlorobenzene	µg/kg		< 150	0.00 - 150	Not Reported						
4620	1,4-Dichlorobenzene	µg/kg		5740	574 - 6310	Not Reported				2880	1430	
5945	3,3'-Dichlorobenzidine	µg/kg	< 3600	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6000	2,4-Dichlorophenol	µg/kg	2590	3360	336 - 4020	Acceptable	EPA 8270D 3	8/26/2014	0.796	2170	527	GHAFFARI_M
6005	2,6-Dichlorophenol	µg/kg	< 60.0	< 1500	0.00 - 1500	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6070	Diethylphthalate	µg/kg	4120	3910	707 - 5120	Acceptable	EPA 8270D 3	8/26/2014	1.85	2910	651	GHAFFARI_M
6130	2,4-Dimethylphenol	µg/kg	< 360	< 3000	0.00 - 3000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6135	Dimethylphthalate	µg/kg	2660	3040	617 - 3820	Acceptable	EPA 8270D 3	8/26/2014	0.867	2220	511	GHAFFARI_M
6175	2,4-Dinitrophenol	µg/kg	< 360	< 3000	0.00 - 3000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6185	2,4-Dinitrotoluene	µg/kg	4750	5210	776 - 6600	Acceptable	EPA 8270D 3	8/26/2014	1.08	3690	977	GHAFFARI_M



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SOIL-87 2009 TNI Evaluation Final Complete Report

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EPA ID:
ERA Customer Number:
Report Issued:
Study Dates:

FL01181
S744803
09/08/14
07/21/14 - 09/04/14

TNI Analyte Code	Analyte	Units	Reported Value	Assigned Value	Acceptance Limits	Performance Evaluation	Method Description	Analysis Date	Z Score	Study Mean	Study Standard Deviation	Analyst Name
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SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)

6190	2,6-Dinitrotoluene	µg/kg	< 60.0	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6200	Di-n-octylphthalate	µg/kg	< 60.0	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6065	bis(2-Ethylhexyl)phthalate	µg/kg	5810	5090	1120 - 6630	Acceptable	EPA 8270D 3	8/26/2014	1.94	3870	1000	GHAFFARI_M
6265	Fluoranthene	µg/kg	6430	6920	2140 - 8260	Acceptable	EPA 8270D 3	8/26/2014	0.999	5200	1230	GHAFFARI_M
6270	Fluorene	µg/kg	6760	7600	2320 - 8760	Acceptable	EPA 8270D 3	8/26/2014	0.915	5540	1330	GHAFFARI_M
6275	Hexachlorobenzene	µg/kg	< 60.0	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
4835	Hexachlorobutadiene	µg/kg	< 180	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6285	Hexachlorocyclopentadiene	µg/kg	< 60.0	< 1500	0.00 - 1500	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
4840	Hexachloroethane	µg/kg	1670	3220	322 - 3540	Acceptable	EPA 8270D 3	8/26/2014	0.0573	1630	734	GHAFFARI_M
6315	Indeno(1,2,3-cd)pyrene	µg/kg	4040	4730	473 - 6350	Acceptable	EPA 8270D 3	8/26/2014	0.781	3340	901	GHAFFARI_M
6320	Isophorone	µg/kg	6330	7100	1610 - 7980	Acceptable	EPA 8270D 3	8/26/2014	1.07	4790	1440	GHAFFARI_M
6360	4,6-Dinitro-2-methylphenol	µg/kg	< 60.0	< 3000	0.00 - 3000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6385	2-Methylnaphthalene	µg/kg	4200	5020	1250 - 5580	Acceptable	EPA 8270D 3	8/26/2014	0.865	3420	908	GHAFFARI_M
6400	2-Methylphenol	µg/kg	< 60.0	< 300	0.00 - 300	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6410	4-Methylphenol	µg/kg	2080	4390	439 - 4830	Acceptable	EPA 8270D 3	8/26/2014	1.80	1330	416	GHAFFARI_M
5005	Naphthalene	µg/kg	3310	4110	688 - 4520	Acceptable	EPA 8270D 3	8/26/2014	0.971	2580	755	GHAFFARI_M
6460	2-Nitroaniline	µg/kg	< 60.0	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6465	3-Nitroaniline	µg/kg		< 1000	0.00 - 1000	Not Reported						
6470	4-Nitroaniline	µg/kg		< 1000	0.00 - 1000	Not Reported						
5015	Nitrobenzene	µg/kg	< 60.0	< 150	0.00 - 150	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M



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SOIL Base/Neutrals and Acids in Soil (cat# 467) (Continued)

6490	2-Nitrophenol	µg/kg	5490	7340	734 - 8380	Acceptable	EPA 8270D 3	8/26/2014	0.618	4550	1520	GHAFFARI_M
6500	4-Nitrophenol	µg/kg	2500	5520	552 - 7120	Acceptable	EPA 8270D 3	8/26/2014	-0.696	3160	947	GHAFFARI_M
6525	N-Nitrosodiethylamine	µg/kg	< 60.0	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6530	N-Nitrosodimethylamine	µg/kg	< 360	< 1500	0.00 - 1500	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6535	N-Nitrosodiphenylamine	µg/kg	< 60.0	< 1500	0.00 - 1500	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6545	N-Nitroso-di-n-propylamine	µg/kg	4830	5220	522 - 6630	Acceptable	EPA 8270D 3	8/26/2014	1.31	3530	987	GHAFFARI_M
6590	Pentachlorobenzene	µg/kg	< 60.0	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6605	Pentachlorophenol	µg/kg	3360	5140	514 - 5650	Acceptable	EPA 8270D 3	8/26/2014	1.41	2300	751	GHAFFARI_M
6615	Phenanthrene	µg/kg	7430	7440	2290 - 8710	Acceptable	EPA 8270D 3	8/26/2014	1.55	5500	1250	GHAFFARI_M
6625	Phenol	µg/kg	4810	5940	594 - 6690	Acceptable	EPA 8270D 3	8/26/2014	1.10	3600	1100	GHAFFARI_M
6665	Pyrene	µg/kg	< 6.70	< 100	0.00 - 100	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5095	Pyridine	µg/kg	< 360	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6715	1,2,4,5-Tetrachlorobenzene	µg/kg	< 60.0	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
6735	2,3,4,6-Tetrachlorophenol	µg/kg	< 60.0	< 1000	0.00 - 1000	Acceptable	EPA 8270D 3	8/26/2014				GHAFFARI_M
5155	1,2,4-Trichlorobenzene	µg/kg	6680	8340	1380 - 9170	Acceptable	EPA 8270D 3	8/26/2014	0.861	5160	1770	GHAFFARI_M
6835	2,4,5-Trichlorophenol	µg/kg	2840	3300	432 - 4050	Acceptable	EPA 8270D 3	8/26/2014	1.00	2240	594	GHAFFARI_M
6840	2,4,6-Trichlorophenol	µg/kg	4100	5160	735 - 5680	Acceptable	EPA 8270D 3	8/26/2014	1.22	3120	800	GHAFFARI_M



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SOIL Chlorinated Acid Herbicides in Soil (cat# 626)

8505	Acifluorfen	µg/kg	747	744	0.00 - 1350	Acceptable	EPA 8321B	8/25/2014	0.904	488	287	REDDY_S
8530	Bentazon	µg/kg	623	575	41.5 - 759	Acceptable	EPA 8321B	8/25/2014	1.87	400	120	REDDY_S
8540	Chloramben	µg/kg		620	0.00 - 682	Not Reported				149	63.9	
8545	2,4-D	µg/kg	407	359	35.9 - 552	Acceptable	EPA 8321B	8/25/2014	1.71	215	113	REDDY_S
8560	2,4-DB	µg/kg	272	367	36.7 - 518	Acceptable	EPA 8321B	8/25/2014	0.538	218	100	REDDY_S
8550	Dacthal diacid (DCPA)	µg/kg		< 100	0.00 - 100	Not Reported						
8555	Dalapon	µg/kg		< 100	0.00 - 100	Not Reported						
8595	Dicamba	µg/kg	537	603	60.3 - 826	Acceptable	EPA 8321B	8/25/2014	1.30	315	170	REDDY_S
8600	3,5-Dichlorobenzoic acid	µg/kg		215	0.00 - 287	Not Reported				106	60.3	
8605	Dichlorprop	µg/kg	783	792	0.00 - 1060	Acceptable	EPA 8321B	8/25/2014	1.72	418	213	REDDY_S
8620	Dinoseb	µg/kg	760	823	82.3 - 1160	Acceptable	EPA 8321B	8/25/2014	1.51	356	268	REDDY_S
7775	MCPA	µg/kg	< 13.0	< 1000	0.00 - 1000	Acceptable	EPA 8321B	8/25/2014				REDDY_S
7780	MCPP	µg/kg	< 13.0	< 1000	0.00 - 1000	Acceptable	EPA 8321B	8/25/2014				REDDY_S
6500	4-Nitrophenol	µg/kg		736	0.00 - 1040	Not Reported				482	73.5	
6605	Pentachlorophenol	µg/kg		239	23.9 - 263	Not Reported				129	43.2	
8645	Picloram	µg/kg	309	374	60.7 - 411	Acceptable	EPA 8321B	8/25/2014	1.81	216	51.6	REDDY_S
8655	2,4,5-T	µg/kg	710	706	70.6 - 1050	Acceptable	EPA 8321B	8/25/2014	1.47	389	219	REDDY_S
8650	2,4,5-TP (Silvex)	µg/kg	274	295	29.5 - 420	Acceptable	EPA 8321B	8/25/2014	1.20	176	81.2	REDDY_S



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CERTIFICATE OF RECOGNITION

ERA congratulates

State of Florida DEP Chemistry Laboratory

SOIL-87

For your participation and successful evaluation, we recognize the performance of this laboratory for achieving acceptable evaluation in the following standards.

Base/Neutrals and Acids in Soil

Chlorinated Acid Herbicides in
Soil

Metals in Soil

Nutrients in Soil



Kristina Sanchez
Quality Officer