

1005 BOSTON POST ROAD
MADISON, CT 06443



ENVIRONMENTAL
CONSULTING LABORATORIES, INC.

Phone 203-245-0568
Fax 203-318-0830
Connecticut Certification PH-0535
www.eclinonline.com

January 24, 2019

Town of Old Lyme WPCA
Attn: Richard Prendergast
Town Hall
82 Lyme Street
Old Lyme, Ct 06371

RE: Monitoring Well Test Results

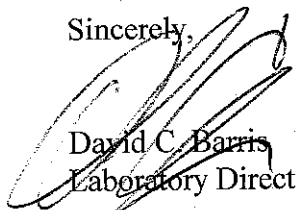
Dear Mr Prendergast,

Enclosed is the report of test results for samples collected on January 9, 2019.

As discussed we will collect the next round in March 2019.

Please contact me should you have any questions.

Sincerely,



David C. Barris
Laboratory Director

Enclosure

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REPORT OF TESTS

REPORT PREPARED FOR:

**Town of Old Lyme WPCA
83 Lyme Street
Old Lyme, CT 06371**

REPORT PREPARED BY:



**David C. Barris
Laboratory Director**

**ENVIRONMENTAL CONSULTING LABORATORIES, INC.
1005 Boston Post Road
Madison, CT 06443**

REPORT DATE: January 24, 2019

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INTRODUCTION

ENVIRONMENTAL CONSULTING LABORATORIES, INC., is a State of Connecticut certified public health laboratory. Dedicated to servicing our clients, we offer comprehensive, cost-effective environmental consulting and testing services. Analytical capabilities include testing of industrial effluents, groundwater, hazardous wastes, sewage, sludge, sediment, soils. All sampling and analytical procedures are in accordance with Federal and State regulations.

Environmental Consulting Laboratories, Inc., maintains strict quality control and assurance procedures to ensure data that can be used with confidence. Strict adherence to EPA approved methods, blanks, standards, spikes, and duplicate sample analyses are routine lab practice. In addition, Environmental Consulting Laboratories, Inc., participates in EPA and Connecticut proficiency performance evaluations.

SAMPLE & SITE IDENTIFICATION

Ground water samples were collected by Environmental Consulting Laboratories, Inc., on January 9, 2019. Monitoring wells are identified as HN-1-98, HN-2-98, HN-3-98, HN-4N, HN-5N, HN-6, HN-7, HN-8, HN-9, HN-10 and HN-11. See Site Map in Appendix B

SAMPLING METHODOLOGY

Groundwater samples were taken in accordance with Town of Old Lyme Groundwater Monitoring Standard Operating Procedures. See document in Appendix D.

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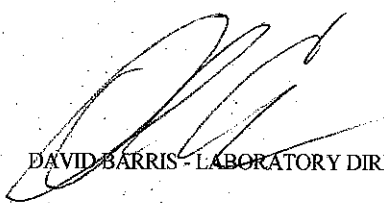
Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 122224
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-1-98

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	1/10/2019	KC
Chloride	18.9	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	5.99	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	ND	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	<0.50	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	5.99	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	152	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	31	NTU	180.1	0.05	1/9/2019	JB


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Comments < = Less than our Method Detection Limit.

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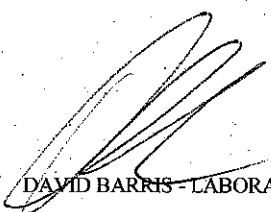
Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 122225
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-2-98

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	10	MPN/100mL	Colilert-18	0	1/9/2019	JB
Coliform, Total	52	MPN/100mL	Colilert-18	0	1/9/2019	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	<0.05	mg/L	ASTM D6919-03	0.05	1/10/2019	KC
Chloride	26.7	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	3.71	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	ND	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	<0.50	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	3.71	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	165	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	5.4	NTU	180.1	0.05	1/9/2019	JB


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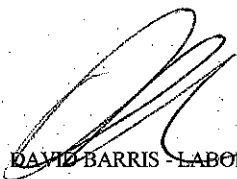
Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 122226
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-3-98

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	41	MPN/100mL	Colilert-18	0	1/9/2019	JB
Enterococcus Bacteria	52	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	1/10/2019	KC
Chloride	19.9	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	4.11	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	<0.04	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	1.30	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	5.41	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	172	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	45	NTU	180.1	0.05	1/9/2019	JB


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Report of Analysis

Name: Old Lyme Town Hall
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82 Lyme Street
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Attn: Richard Prendergast

Sample ID#: 122227
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-4N

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	402	MPN/100mL	Colilert-18	0	1/9/2019	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	1/17/2019	KC
Chloride	28.6	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	1.78	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	0.16	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	1.15	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	2.93	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	151	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	550	NTU	180.1	0.05	1/9/2019	JB


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Report of Analysis

Name: Old Lyme Town Hall
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Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 122228
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-5N

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	399	MPN/100mL	Colilert-18	0	1/9/2019	JB
Enterococcus Bacteria	132	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	7.78	mg/L	ASTM D6919-03	0.05	1/14/2019	KC
Chloride	38.5	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	0.72	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	0.01	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	0.46	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	9.63	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	10.4	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	382	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	1400	NTU	180.1	0.05	1/9/2019	JB


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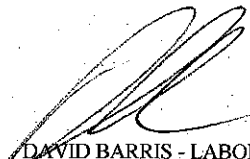
Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 122229
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-6

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	<0.05	mg/L	ASTM D6919-03	0.05	1/14/2019	KC
Chloride	34.2	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	4.99	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	0.13	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	0.79	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	5.78	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	234	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	250	NTU	180.1	0.05	1/9/2019	JB


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Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast
Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-7

Sample ID#: 122230
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	155	MPN/100mL	Colilert-18	0	1/9/2019	JB
Enterococcus Bacteria	73	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	1/14/2019	KC
Chloride	129	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	0.73	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	0.57	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	3.14	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	3.87	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	503	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	4400	NTU	180.1	0.05	1/9/2019	JB

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Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 122231
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-8

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	171	MPN/100mL	Colilert-18	0	1/9/2019	JB
Enterococcus Bacteria	98	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	ND	mg/L	ASTM D6919-03	0.05	1/14/2019	KC
Chloride	41.5	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	1.50	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	0.34	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	4.26	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	5.76	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	1890	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	1900	NTU	180.1	0.05	1/9/2019	JB


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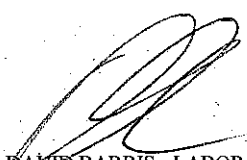
Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 122232
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-9

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	0.76	mg/L	ASTM D6919-03	0.05	1/14/2019	KC
Chloride	4632	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	0.18	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	0.37	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	1.76	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	1.94	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	8540	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	140	NTU	180.1	0.05	1/9/2019	JB


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Name: Old Lyme Town Hall
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82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast

Sample ID#: 122233
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-10

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	20	MPN/100mL	Colilert-18	0	1/9/2019	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	1.11	mg/L	ASTM D6919-03	0.05	1/14/2019	KC
Chloride	1484	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	0.17	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	ND	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	1.61	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	1.78	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	3180	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	31	NTU	180.1	0.05	1/9/2019	JB


DAVID BARRIS - LABORATORY DIRECTOR

ND = Not Detected

Comments <= Less than our Method Detection Limit.

1005 BOSTON POST ROAD
MADISON, CT 06443



ENVIRONMENTAL
CONSULTING LABORATORIES, INC.

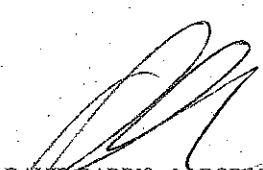
Phone 203-245-0568
Fax 203-318-0830
Connecticut Certification PH-0535
www.eclinconline.com

Report of Analysis

Name: Old Lyme Town Hall
c/o WPCA
82 Lyme Street
Old Lyme, CT 06371
Attn: Richard Prendergast
Sample Date: 1/9/2019
Receipt Date: 1/9/2019
Report Date: 1/23/2019
Sample Site: HN-11

Sample ID#: 122234
Sample Type: Groundwater
Sample Source: Monitoring Wells
Sampler: ECL - MB

Parameter	Sample Result	Units	Method	MDL	Analysis Date	Analyst
Biological						
Coliform, E. Coli	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Coliform, Total	86	MPN/100mL	Colilert-18	0	1/9/2019	JB
Enterococcus Bacteria	<10	MPN/100mL	Enterolert	10	1/9/2019	JB
Fecal Coliform Bacteria	<10	MPN/100mL	Colilert-18	10	1/9/2019	JB
Fecal Strep Bacteria	<10	col/100ml	SM9230	10	1/9/2019	JB
Chemical						
Ammonia as N	0.20	mg/L	ASTM D6919-03	0.05	1/14/2019	KC
Chloride	3091	mg/L	EPA300.0	0.5	1/9/2019	JB
Nitrate as N	0.28	mg/L	EPA300.0	0.1	1/9/2019	JB
Nitrite as N	ND	mg/L	EPA300.0	0.01	1/9/2019	JB
Phosphorous -Total as P	0.05	mg/L	EPA 200.7	0.04	1/14/2019	JM
TKN as N	1.20	mg/L	4500NorgC	0.5	1/22/2019	KC
Total Nitrogen as N	1.48	mg/L	CALC	1	1/23/2019	KC
Physical						
Conductivity	5740	umhos/cm	SM2510B	1	1/9/2019	JB
Turbidity	90	NTU	180.1	0.05	1/9/2019	JB


DAVID BARRIS - LABORATORY DIRECTOR

ND = Not Detected

Comments < = Less than our Method Detection Limit.

APPENDIX A

CONSULTING LABORATORIES, INC.

**1005 Boston Post Road
Madison, CT 06443**

(203) 245-0568 Phone
(203) 318-0830 Fax

[illegible]

APPENDIX B

Legend

- Proposed Wells - Phase II
- Existing Monitoring Well
- Sub-Areas
- Project Area

0 300 600 1,200 Feet

Notes:

1. Groundwater monitoring well locations are approximated based on Monitoring Well Location Plan, Prepared for Old Lyme WPCA, by J. Robert Planner & Associates, P.C., dated May 23, 2017.
2. Proposed locations for the new wells are subject to change based on a review of site conditions and input from stakeholders.

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, Inverness P. Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, Mapbox India, OpenStreetMap

Long Island Sound

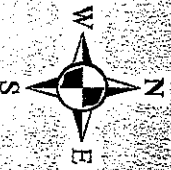


Figure 1

Town of Old Lyme WPCA
Old Lyme, Connecticut
Proposed Areas for Additional
Groundwater Monitoring

SCALE: 1 in = 600 ft

DRAWN BY: ACB

DATE: May 2018

JOB NO.: 228617

DOC: Figure1_Proposed_updated5-25-18.mxd



APPENDIX C

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HIV-1-98
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 11:05m
6. Weather: Cloudy ☒ Cold Snow
Sunny ☒ Warm Rain
Hot ☒ Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 22.10 Feet
9. Depth to Water: 10.30 Feet
10. #8 - #9 = LWC: 10.70 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 1.70 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 5.2- Gallons to purge

[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-2-98
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 9:50am
6. Weather: Cloudy ~~Cold~~ Snow
~~Sunny~~ Warm Rain
Hot ~~Windy~~
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 15.60 Feet
9. Depth to Water: 6.60 Feet
10. #8 - #9 = LWC: 9.0 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 1.47 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 4.40- Gallons to purge

FIELD WATER QUALITY MEASUREMENTS FORM

Well Number HW-2-98 Date 1-9-19

[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-3-98
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 10:06am
6. Weather: Cloudy Cold Snow
 ~~Sunny~~ Warm Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 13.0 Feet
9. Depth to Water: 5.30 Feet
10. #8 - #9 = LWC: 7.70 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2" Diameter well = $0.163 \times \text{LWC} =$ 1.25 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.77 Gallons to purge

FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name) - Old Lyme

Well Number HN-3-98 Date 1-9-19

[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HIN-4W
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 10:50 Am
6. Weather: Cloudy Cold Snow
Sunny Warm Rain
Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 16.3 Feet
9. Depth to Water: 9.10 Feet
10. #8 - #9 = LWC: 7.20 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 1.17 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.5 — Gallons to purge

FIELD WATER QUALITY MEASUREMENTS FORM

Well Number HW-4W Date 1-9-19

[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-5N
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 10:20am
6. Weather: Cloudy Cold Snow
 ~~Sunny~~ Warm Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 12.90 Feet
9. Depth to Water: 4.40 Feet
10. #8 - #9 = LWC: 8.50 Feet (**Length of water column**)
11. Diameter of inner casings: (2") 4" 6"
12. Volume of water in well:
(2") Diameter well = $0.163 \times \text{LWC} =$ 1.39 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 4.12 Gallons to purge

Town of Old Lyme

Location (Site/Facility Name) - Old LymeWell Number HN-5N Date 1-9-19[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-6
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 11:20am
6. Weather: Cloudy ~~Cold~~ Snow
~~Sunny~~ Warm Rain
Hot ~~Windy~~
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 13.0 Feet
9. Depth to Water: 8.60 Feet
10. #8 - #9 = LWC: 4.40 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 0.72 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 2.15 Gallons to purge

FIELD WATER QUALITY MEASUREMENTS FORM

Well Number HIV-6 Date 1-9-19 Location (Site/Facility Name) - Old Lyme

[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HIV-7
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 11:45 Am
6. Weather: Cloudy Cold Snow
 ~~Sunny~~ Warm Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 16.80 Feet
9. Depth to Water: 7.60 Feet
10. #8 - #9 = LWC: 9.20 Feet (Length of water column)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2"Diameter well = $0.163 \times \text{LWC} =$ 1.50 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 4.5 Gallons to purge

FIELD WATER QUALITY MEASUREMENTS FORM

[illegible]Date 1-9-19[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-8
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 10:40a
6. Weather: Cloudy ☒ Cold ☒ Snow ☐
Sunny ☐ Warm ☐ Rain ☐
Hot ☐ Windy ☒
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 11.90 Feet
9. Depth to Water: 5.40 Feet
10. #8 - #9 = LWC: 6.50 Feet (**Length of water column**)
11. Diameter of inner casings: ☒ 2" ☐ 4" ☐ 6"
12. Volume of water in well:
☒ 2" Diameter well = $0.163 \times \text{LWC} =$ 1.10 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.2 - Gallons to purge

Town of Old Lyme

Location (Site/Facility Name) - Old Lyme

Well Number FW-8

Date 1-9-19

[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-9
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 9:33m
6. Weather: Cloudy ~~Cold~~ Snow
 Sunny Warm Rain
 Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 11.40 Feet
9. Depth to Water: 3.0 Feet
10. #8 - #9= LWC: 8.40 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
 2"Diameter well = $0.163 \times \text{LWC} =$ 1.37 Gallons
 4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
 6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 4.11 Gallons to purge

FIELD WATER QUALITY MEASUREMENTS FORM

Well Number HV-9 Date 1-9-19[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-10
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 9:12 AM
6. Weather: ~~Cloudy~~ Cold ~~Sunny~~ Warm ~~Hot~~ Windy ~~Snow~~ ~~Rain~~
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 11.50 Feet
9. Depth to Water: 3.50 Feet
10. #8 - #9 = LWC: 8.0 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 1.30 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.9 Gallons to purge

Town of Old Lyme

Location (Site/Facility Name) - Old Lyme

Well Number HN-10 Date 1-9-19

[illegible]

GROUND WATER SAMPLE LOG

1. Sample Location: OL
2. Well Number: HN-11
3. Sampled By: MB
4. Date: 1-9-19
5. Time: 8:50 AM
6. Weather: Cloudy Cold Snow
Sunny Warm Rain
Hot Windy
7. Sample Method: **Bailer (Disposable)**
8. Depth to bottom of well from measuring point: 11.40 Feet
9. Depth to Water: 4.20 Feet
10. #8 - #9 = LWC: 7.20 Feet (**Length of water column**)
11. Diameter of inner casings: 2" 4" 6"
12. Volume of water in well:
2" Diameter well = $0.163 \times \text{LWC} =$ 1.17 Gallons
4" Diameter Well = $0.633 \times \text{LWC} =$ _____ Gallons
6" Diameter Well = $1.467 \times \text{LWC} =$ _____ Gallons
13. Purge Volume: $3 \times \#12 =$ 3.5 Gallons to purge

[illegible]

APPENDIX D

Town of Old Lyme Ground Water Monitoring

SAMPLING SOP Rev 4 - Environmental Consulting Lab

Groundwater Monitoring Wells

Bailer Purge Technique

Overview:

Stagnant water must be removed from the monitoring well in order to obtain an accurate sample of groundwater for laboratory analysis.

This SOP will address the bailing and sampling procedures to be taken.

Safety:

Prior to sampling, field personnel should conduct a preliminary assessment of the area to determine any safety hazards.

Placement of traffic cones, safety vests and truck hazard lights should be used.

Minimize monitoring well water contact with potential personal protective equipment i.e. safety glasses & nitrile gloves.

Procedure:

Prior to purging the well, observe for any physical problems with monitoring well, ie: lock present, well cap broken or missing, condition of casing, etc.

Measure groundwater to the nearest hundredth of inch record on field sheet with time of measurement. Calculate the volume of standing water to purge a minimum of three volumes using prior readings of depth to bottom, to avoid agitating fines that may have accumulated on the bottom of the well.

A separate new bailer will be used for each well to minimize the potential for cross contamination of sampling equipment.

Lower bailer into monitoring well in a manner as to create minimum water disturbance. Repeat this process until three well volumes have been purged.

Following purging of three well volumes, measure pH and Temperature of the groundwater and record on field worksheet.

Sample Collection:

1. Do not rinse or empty bottles. Several bottles contain a preservative that must remain in the bottle.
2. If there is an overflow while filling a sample bottle that contains preservatives, restart the procedure using a new sample bottle.
3. If one bottle is to be used for several different tests, be sure there are no conflicts with preservation requirements.

Field Logs:

Use the Ground Water Sample Log (attached) to record all field information. Include Well ID, Date and Time, Weather, readings, observations and calculations for purge volume

Complete the Chain of Custody form (attached). Include sample ID/location, date and time.

The following pages contain specific sampling instructions and procedures that are dependent on analyte type.

GROUP:
Inorganics

SUBGROUP:

Chloride, Nitrate, Nitrite

BOTTLE: 500-mL

Preservative: Chill to 4 degrees C.

Holding Time: 48 Hrs

Test Method: EPA 300.1 Ion Chromatography

PROCEDURE

1. Using waterproof ink, fill out and attach label. At a minimum, include the Well ID number, sampling point and date.
2. Remove the sampling container cap. Be careful not to touch the inside of the sampling container or cap with your fingers. When possible, hold the sampling container in one hand and the cap in the other or set the cap on a clean surface. Quickly position the sampling container under the water flow.
3. Fill to the shoulder of the container. Do not over fill.
4. Quickly remove the sampling container from the water flow.
5. Replace cap and tighten.
6. Completely fill out the chain of custody form.
7. Sample must be placed in coolers for laboratory submittal.

GROUP:
Bacteria

Total/ Fecal
Coliforms,
Enterococci, Fecal
Strep

BOTTLE: (4) 120 mL sterile plastic bottle

Preservative: Chill to 4 degrees C.

Holding Time: 8 Hrs.

Test Methods: Colilert-18, Enterolert, SM9230

PROCEDURE

1. Using waterproof ink, fill out and attach label. At a minimum, include the Well ID number, sampling point and date.
2. Remove the sampling container cap. Be careful not to touch the inside of the sampling container or cap with your fingers. When possible, hold the sampling container in one hand and the cap in the other or set the cap on a clean surface. Quickly position the sampling container under the water flow.
3. Fill to at least the 100 mL mark. Leave some air space.
4. Quickly remove the sampling container from the waterflow.
5. Replace cap and tighten.
6. Completely fill out the chain of custody form.
7. Sample must be placed in coolers for laboratory submittal.

GROUP:
Inorganic

SUBGROUP:

Phosphorus-Total

BOTTLE: One 125 ml

Preservative: PH<2 1:1 Nitric Acid

Test Method: EPA 200.7 ICP

PROCEDURE:

1. Using waterproof ink, fill out and attach label. At a minimum, include the Well ID number, sampling point and date.
2. Remove the sampling container cap. Be careful not to touch the inside of the sampling container or cap with your fingers. When possible, hold the sampling container in one hand and the cap in the other or set the cap on a clean surface. Quickly position the sampling container under the water flow.
3. Fill to the shoulder of the container. Do not over fill.
4. Quickly remove the sampling container from the water flow.
5. Bottle contains Nitric Acid Preservative.
6. Replace cap and tighten.
7. Completely fill out the chain of custody form.
8. Sample must be placed in coolers for laboratory submittal.

GROUP:
Inorganic

SUBGROUP:
Ammonia, TKN

BOTTLE: 125-mL

Preservative: PH <2 with 1:1 Sulfuric Acid

Holding time: 28 Days

Test Method: ASTM D6919-03, SM 4500-Norg C

PROCEDURE

1. Using waterproof ink, fill out and attach label. At a minimum, include the Well ID number, sampling point and date.
2. Remove the sampling container cap. Be careful not to touch the inside of the sampling container or cap with your fingers. When possible, hold the sampling container in one hand and the cap in the other or set the cap on a clean surface. Quickly position the sampling container under the water flow.
3. Fill to the shoulder of the container. Do not over fill.
4. Quickly remove the sampling container from the water flow.
5. Bottle contains Sulfuric Acid Preservative.
6. Replace cap and tighten.
7. Completely fill out the chain of custody form.
8. Sample must be placed in coolers for laboratory submittal

