A SEPTIC SYSTEM REPAIR
IN LAKEVILLE, MA
FOR PAUL LYNCH
DATE: MARCH 11, 2020

SENNA FITZGERALD GILBERT ASSOCIATES
CIVIL ENGINEERS & LAND SURVEYORS
28 MAIN STREET
LAKEVILLE, MA 02347
(508) 946-5258
TEL./FAX. (508) 947-1090

18 THIRD AVENUE, MAP 41, BLOCK 10, LOT 8

OWNER: PAUL & HELEN LYNCH
163 PLEASANT STREET
ATTLEBORO, MA 02703
DEED REF.: BOOK 5220, PAGE 113

18 THIRD AVENUE, MAP 41, BLOCK 10, LOT 8

SHEET 1 OF 2

BUCKYANCY CALCULATIONS
SEPTIC TANK SITS 3.49' IN WATER.
10.83' X 5.67' X 3.49' X 62.4 LBS/CF / 2000 LBS/TON = 6.69 TONS OF UPLIFT
SEPTIC TANK WEIGHTS 5.8 TONS.
SEPTIC TANK HAS 0.91' OF COVER.
10.83' X 5.67' X 0.91' X 100 LBS/CF / 2000 LBS/TON = 2.79 TONS OF COVER
5.8 TONS + 2.79 TONS = 8.59 TONS > 6.69 TONS.
PUMP CHAMBER SITS 3.84' IN WATER.
8.38' X 5.64' X 3.84' X 62.4 LBS/CF / 2000 LBS/TON = 5.56 TONS OF UPLIFT
PUMP CHAMBER WEIGHTS 5.0 TONS.
PUMP CHAMBER HAS 1.16' OF COVER.
8.38' X 5.64' X 1.16' X 100 LBS/CF / 2000 LBS/TON = 2.69 TONS OF COVER
5.0 TONS + 2.69 TONS = 7.69 TONS > 5.56 TONS.

BOARD OF HEALTH NOTES
See Sheet 2 for the Board of Health Notes.
See Sheet 2 for Local Upgrade & Variance Requests.

LEGEND

- Deep Observation Hole
- Existing Contour
- Proposed Contour
- Existing Trench
- Water Service
- Utility Pole
- Overhead Utilities
- Existing Tree
- Existing Fence

PUMP CALCULATIONS
CLASS II SOIL REQUIRES 1 DOSE/DAY
RECOMMEND 2 DOSES/DAY
110 GALLONS TO BE PUMPED
PUMP CHAMBER INSIDE DIMENSIONS:
8.0' X 4.5' X 7.48 GAL/CF = 269 GAL/FT
110/269 = 0.41' TO BE PUMPED
ALARM FLOTT TO BE SET A MINIMUM OF 1.64' BELOW THE OUTLET ELEVATION

HEAD LOSS
STATIC HEAD: 101.49 - 94.23 = 7.26'
DYNAMIC HEAD: 2' SERV., i = 25', v = 3.0 FPS
EQUIV. LENGTHS: 1 TEE: 6.6'
2 ELBOWS: 24.3' SAY 25'
EQUIV. LENGTH: 25' + 25' = 50'
A = .02 50' r = .04
hL = (3.0) .02 (50) .02 = 1.25'
TOTAL HEAD: 7.26' + 1.25' = 8.51' SAY 10'
LIBERTY LE41M PUMPS 100 GPM @ 10'

DIMENSIONAL DATA:
Height: 14'
Major Widths 10'7' (rounded scoring)
MSSCENST field temperature 148 F.

60 Hz PERFORMANCE CURVE

BRADLEY STEVEN FITZGERALD
No.35070
CIVIL
LIBERTY PUMPS • 7000 Apple Tree Avenue • Irving, New York 14414 • Phone 202-256-2959 For (IN) 494-1630
www.libertypumps.com

IN LAKEVILLE, MA
FOR PAUL LYNCH
DATE: MARCH 11, 2020

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18 THIRD AVENUE, MAP 41, BLOCK 10, LOT 8
SHEET 2 OF 2

TEST PIT INFORMATION

Report of Hydrometer

<table>
<thead>
<tr>
<th>Soil Name</th>
<th>Test Number</th>
<th>Moisture</th>
<th>Sieve Size</th>
<th>Specific Gravity</th>
<th>Liquid Limit</th>
<th>Plastic Limit</th>
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<tr>
<td>C</td>
<td>280</td>
<td>2.95</td>
<td>1.00</td>
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S. W. COLE ENGINEERING, INC.

ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED

(2) 6" X 8" HDPE DRAINAGE PIPE

(1) 6" X 4" HDPE DRAINAGE PIPE

4" DIA. SCH. 40 PERF. PVC INSPI.
PORT WITH SCREW TYPE CAP TO WITHIN 3" OF FINISH GRADE

SECTION END CAP P/V/C. "KEND" WITH SCREEN

CONCRETE BLOCK RETAINING WALL - USE 3' WIDE X 2' HIGH X 2' DEEP BLOCKS TOP ELEV.: 103.54
FINISH GRADE: 100.04

4" DIA. SCH. 40 PERF. PVC INSPI.
PORT WITH SCREW TYPE CAP TO WITHIN 3" OF FINISH GRADE

GABLE DE
DIST. BOXES BURIED GREATER THAN 9" SHALL BE EQUIPPED WITH RISERS.

TOP RISER
19 STAINLESS STEEL
B. STRENGTH - INSTALL TEE IN DIST. BOX
6" OF CRUSHED STONE
DB INLET INV. 101.49

GROUND WATER ELEV. = 96.49
5' EXCAVATION AREA - REPLACE WITH CLEAN SAND & GRAVEL ELEV.: 93.83

QUICK4 PLUS STANDARD CHAMBERS

INSTALL 4 ROWS OF 7 QUICK4 PLUS STANDARD CHAMBERS
A SEPTIC SYSTEM REPAIR
IN LAKEVILLE, MA
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18 THIRD AVENUE, MAP 41, BLOCK 10, LOT 8
SHEET 2 OF 2

TEST PIT INFORMATION

QUICK4 PLUS STANDARD CHAMBERS

PRECAST CONCRETE DISTRIBUTION BOX

GROUND WATER ELEV. = 98.49
5' EXCAVATION AREA — REPLACE WITH CLEAN SAND & GRAVEL
ELEV. = 93.83'

REPORT OF HYDROMETER

ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED

TABLE OF WATER QUALITY

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<tr>
<th>Parameter</th>
<th>Value</th>
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<td>pH</td>
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<td>TDS</td>
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<td>Temperature</td>
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TABLE OF SOIL PROPERTIES

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<th>Layer</th>
<th>Soil Type</th>
<th>Density (g/cm³)</th>
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<tr>
<td>0-1</td>
<td>Loamy Sand</td>
<td>1.6</td>
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<tr>
<td>1-2</td>
<td>Clay Loam</td>
<td>1.8</td>
</tr>
<tr>
<td>2-3</td>
<td>Sand</td>
<td>1.4</td>
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TABLE OF HYDROMETER RESULTS

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<th>Particle Size (μm)</th>
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<th>Specific Gravity</th>
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<td>30</td>
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<td>2.69</td>
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<tr>
<td>&gt;600</td>
<td>10</td>
<td>2.71</td>
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FINISHED GRADE 103.5 ±

PREPROPOSED CONC. BLOCK RETAINING WALL TOP EL.: 103.5

BACKFILL WITH 9" MINIMUM, 36" MAXIMUM OF NATIVE MATERIAL

FINISHED GRADE 103.5 ±

POLY BARRIER

RETAINING WALL SECTION

4" DIA. SCH. 40 PERF. PVC INSPI. PORT WITH SCREW TYPE CAP — TO WITHIN 3" OF FINISH GRADE

CONCRETE BLOCK RETAINING WALL — USE 3" WIDE X 2" HIGH X 2' DEEP BLOCKS

TOP ELEV.: 103.0 ± BASE ELEV.: 98.0 ±
A MONOLITHIC TANK

* TANK CONSTRUCTION SHALL MEET THE REQUIREMENTS
  SPECIFIED IN TITLE 5, SECTION 15.226.
* CONCRETE IS TO BE 4000 PSI, 60 YEAR RES.
* ALL RSRS ARE TO BE MADE WATERTIGHT.
* INSTALL A ZIBEL, OR EQUIVALENT EFFLUENT FILTER
  IN THE SEPTIC TANK OUTLET TEE.
* ALL PIPE IS TO BE SCH. 40 P.V.C. OR EQUIVALENT.
* ALL JOINTS ARE TO BE MADE WATERTIGHT.
* ALL STONE IS TO BE DOUBLE WASHED.
* ALL COMPONENTS SHALL HAVE A MINIMUM OF 9" AND A MAXIMUM 36" OF COVER.
* THE PUMP IS TO BE WIRED, THROUGH A 1-1/4" CONDUIT, TO ITS OWN 20 AMP CIRCUIT BREAKER.
* THE CONTROL FLOAT TO A HIGH WATER ALARM INSIDE
  THE HOUSE. THE ALARM IS TO BE AUDIO AND VISUAL.
* THE ALARM IS TO BE ON A SEPARATE CIRCUIT FROM THE PUMP.
* THE VENT IS TO BE PLACED IN AN AREA WHERE IT WILL NOT
  BE SUSCEPTIBLE TO DAMAGE.
* THE CONTRACTOR IS TO VERIFY ALL ELEVATIONS AND UTILITY
  LOCATIONS PRIOR TO CONSTRUCTION. ANY DIFFERENCES
  SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
* THE EXISTING CSSPOOL AND OVERFLOW ARE TO BE PUMPED
  AND REMOVED, ALONG WITH ALL CONTAMINATED MATERIALS.
* THE RESERVE AREA IS TO BE IN THE SAME LOCATION AS THE ACTIVE SYSTEM.
* THERE ARE NO CONFLICTS WITH TITLE 5, SECTION 15.226(4)(K)
  LOCATION OF PUBLIC AND PRIVATE WATER SUPPLIES.
* 5' IS TO BE EXCAVATED ALL AROUND THE SYSTEM,
  DOWN 46° TO THE CI LAYER, AND REPLACED WITH CLEAN
  SAND & GRAVEL AS PER TITLE 5, SECTION 15.255.
* INSTALL A 40 MIL THICK IMPERVIOUS POLY BARRIERN ON THE FACE
  OF THE OVER-DIG, ALL AROUND THE SYSTEM.
  TOP ELEV: 103.0', BASE ELEV: 98.0'.
* CONSTRUCT A CONCRETE BLOCK RETAINING WALL ON ALL FOUR
  SIDES OF THE SYSTEM FOR FINISH GRADING PURPOSES.
  TOP ELEV: 103.5'.

* THE FOLLOWING LOCAL UPGRADES ARE REQUESTED UNDER TITLE 5,
  SECTION 15.405(1):
(a): TO ALLOW THE SEPTIC TANK TO BE 5' FROM THE CRAWLSPACE,
     INSTEAD OF THE REQUIRED 10'.
(b): TO ALLOW THE PUMP CHAMBER TO BE 5' FROM THE CRAWLSPACE,
     INSTEAD OF THE REQUIRED 10'.
(c): TO ALLOW THE S.A.S. TO BE 7' FROM THE SIDE PROPERTY LINE
     OF THE MANAGEMENT LLC, INSTEAD OF THE REQUIRED 10'.
(d): TO ALLOW THE S.A.S. TO BE 7' FROM THE REAR PROPERTY LINE
     OF SILVA, INSTEAD OF THE REQUIRED 10'.
(e): TO ALLOW A 21' REDUCTION IN THE AREA SIZE OF THE S.A.S.
(f): TO ALLOW THE S.A.S. TO BE 7' FROM THE ABUTTING MELL
     OF SILVA (15 FOURTH AVE.), INSTEAD OF THE REQUIRED 10'.
(g): TO ALLOW THE S.A.S. TO BE 7' FROM THE ABUTTING MELL
     OF LEDOUX (16 THIRD AVE.), INSTEAD OF THE REQUIRED 10'.
(h): TO ALLOW THE USE OF A SALE ANALYSIS, IN LIEU OF PERFORMING
     A PERCON TEST, TO DETERMINE THE SOIL CLASSIFICATION.
(i): TO ALLOW A REDUCTION OF THE REQUIREMENT OF A 12" SEPARATION
     BETWEEN THE INLET AND OUTLET TUBS AND HIGH POPULATION,
     PROVIDED THAT ALL BOOTS OR PIPE JOINTS ARE SEALED WITH
     HYDRAULIC CEMENT OR INSTALLED WITH WATERTIGHT SLEEVES,
     AND THE TANKS ARE PROVEN WATERTIGHT.

INSTALL 1-1/4" PVC CONDUIT TO
HOUSE. JOINTS TO BE WATERTIGHT.
WIRE PUMP TO ITS OWN CIRCUIT BREAKER.
WIRE CONTROL FLOAT TO HIGH WATER ALARM
INSIDE HOUSE.

SYSTEM P

1,000 GALLON MONOLITHIC
PRECAST CONC. PUMP CHAMBER
(MAX. 20,000 CAPABILITY)

TANKS & DIST. BOX FROM J & R PRE-CAST, INC.
16 COUNTY STREET BERKLEY, MA 02779
(508) 822-3311
**Board of Health Notes**

The 1500 gallon, two compartment septic tank shall be a monolithic tank. Each 1000 gallon pump chamber shall be a monolithic tank. The septic tank shall be installed within a zone 3 of a public water supply well. S.A.S. to be 320' from the well. A deed restriction shall be placed in the chain of title. A deed restriction must be recorded in the Plymouth County Registry of Deeds prior to the issuance of a certificate of compliance. See sheet 1 for the pump and buoyancy calculations.

**Design Calculations**

**Capacity Required - Residential Use:**

**Design Flow:**

- **Residence:** 110 Gal./Day
- **Bedroom:** 220 Gal./Day

**Capacity Provided:**

- **Septic Tank First Compartment:**
  - **Design Flow:** 220 Gal./Day
  - ** Required Size:** 440 Gal.
  - **Size Provided:** 1,000 Gal.

- **Septic Tank Second Compartment:**
  - **Design Flow:** 220 Gal./Day
  - ** Required Size:** 220 Gal.
  - **Size Provided:** 500 Gal.

**Leaching Facility:**

- **Design Percolation Rate:** 30 MPI
- **Soil Textural Class:** Class B
- **Long Term Acceptance Rate (LTR):** 0.33 GPD/SP
- **220 GPD/0.33 = 677 S.F. Required**
- **Request Local Upgrade to Reduce System Footprint by Up to 25%**
- **Using Infiltrator Quick4 Plus Standard Chambers:**
  - **677 S.F./.473 S.F./L. = 140.84 L.F. Required**
  - **140.84/4 = 35 Quick4 Plus Chambers Required**

**Use 4 Rows of 7 Quick4 Plus Chambers**

**Field Dimensions:** 11.33' x 31'

**28 Quick4 Plus Chambers Provides 174 Gal./Day**

174 Gal./Day / 220 Gal./Day = 21% Reduction

**System is Not Designed for a Garbage Grinder or Water Softener Backwash.**

**System PE**

- **24'' Dia. Wat. Pipe & Frame & Co.**
- **1,000 Gallon Monolithic Precast Conc. Pump Chamber**
  - **(H=20 Loading Capability)**
- **INSTALL 1-1/4'' PVC CONDUIT TO HOUSE. JOINTS TO BE WATERPROOF.**
- **Wire Pump & Own Circuit Breaker, Wire Control Float to High Water Alarm Inside House.**
- **NEMA 4 Junction Box, Corrosion Resistant & Liquid-Tight Cable Connectors Supported by 1-1/4'' PVC Conduit. Joints to Be Made Watertight To Be Installed in Watertight Riser Brought to Finish Grade.**
- **Board of Health Notes**

**1,500 Gallon Two Compartment Monolithic Precast Conc. Septic Tank**

- **(H=20 Loading Capability)**
- **Boots or Pipe Joints Must Be Sealed with Hydraulic Cement or Installed with Watertight Sleeves, and the Tanks Shall Be Connected to the Collector by Means of Watertight Connectors and Gaskets.**
- **Tanks & Dist. Box From J & R Pre-Cast, Inc. 15 County Street, Beverly, MA 02373**
- **See Sheet 1 for the Pump and Buoyancy Calculations.**
March 16, 2020

BOARD OF HEALTH

To abutters to 18 Third Avenue, Map 41, Block 10, Lot 8, Lakeville, MA:

Please be advised that a septic system repair site plan has been submitted to the Lakeville Board of Health for the above referenced property. The property owner is Paul Lynch.

As part of the filing, the following Local Upgrades are requested under Title 5, Section 15.405(1):
(a) to allow the septic tank to be 5’ from the crawl space, instead of the required 10’.
(a) to allow the pump chamber to be 5’ from the crawl space, instead of the required 10’.
(a) to allow the s.a.s. to be 7’ from the side property line of KJ Management LLC (20 Third Ave.), instead of the required 10’
(a) to allow the s.a.s. to be 7’ from the rear property line of Silva (15 Fourth Ave.), instead of the required 10’.
(c) to allow a 21% reduction in the size of the s.a.s.
(g) to allow the s.a.s. to be 74’ from the abutting well of Silva (15 Fourth Ave.), instead of the required 100’.
(g) to allow the s.a.s. to be 81’ from the abutting well of Ledoux (16 Third Ave.), instead of the required 100’.
(i) to allow the use of a sieve analysis, in lieu of performing a percolation test, to determine the soil classification.
(j) to allow a reduction of the requirement of a 12” separation between the inlet and outlet tees and high groundwater, provided that all boots or pipe joints are sealed with hydraulic cement or installed with watertight sleeves, and the tanks are proven watertight.

Further, a variance is requested to Title 5, Section 15.211(2) to allow the septic system to be installed within a Zone 1 of a public water supply well located on Second Avenue (Map 41, Block 15, Lot 18), owned by Clark Shores Water Corp.

A public hearing will be held by the Lakeville Board of Health regarding these requests on Wednesday, April 1, 2020 at 6:00 p.m. The hearing will be held at the Board of Health office in the Town Hall, 330 Bedford Street, Lakeville. For information regarding this hearing, please contact the Board of Health at (508) 946-3473, or this office at the address and telephone numbers listed above.
COMMONWEALTH OF MASSACHUSETTS

Board of Health, Lakeville, MA.

APPLICATION FOR DISPOSAL SYSTEM CONSTRUCTION PERMIT

Application for a Permit to Construct( ) Repair(✓) Upgrade( ) Abandon( ) - Complete System □ Individual Components

<table>
<thead>
<tr>
<th>Location</th>
<th>Owner's Name</th>
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<tbody>
<tr>
<td>18 Third Ave.</td>
<td>Paul Lynch</td>
</tr>
<tr>
<td>Map/Parcel# 41-10-8</td>
<td></td>
</tr>
<tr>
<td>Lot#</td>
<td>Address 164 Pleasant St., Attleboro, MA 02703</td>
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<tr>
<td>Installer's Name</td>
<td>Designer's Name</td>
</tr>
<tr>
<td>Address</td>
<td>SFE Assoc., Inc.</td>
</tr>
<tr>
<td>Telephone#</td>
<td>Telephone# (508) 946-5758</td>
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Type of Building Lot Size 5400 sq. ft.
Dwelling - No. of Bedrooms 2
Garbage grinder ( )
Other - Type of Building No. of persons Showers ( ), Cafeteria ( )
Other Fixtures
Design Flow (min. required) 250 gpd Calculated design flow 374 gpd
Design flow provided
Plan: Date 3-11-2020 Number of sheets 2 Revision Date
Title A Septic System Repair in Lakeville, MA for Paul Lynch
Description of Soil(s) Site plan
Soil Evaluator Form No. Name of Soil Evaluator Steve Gilbert Date of Evaluation 3-11-2020

DESCRIPTION OF REPAIRS OR ALTERATIONS Replace the existing cesspool with a Title 5 system with local upgrades and a variance.

The undersigned agrees to install the above described Individual Sewage Disposal System in accordance with the provisions of TITLE 5 and further agrees to not to place the system in operation until a Certificate of Compliance has been issued by the Board of Health.
Signed __________________________ Date ______________________

Inspections __________________________ __________________________


COMMONWEALTH OF MASSACHUSETTS

Board of Health, __________________________, MA.

CERTIFICATE OF COMPLIANCE

Description of Work: □ Individual Component(s) □ Complete System

The undersigned hereby certify that the Sewage Disposal System; Constructed ( ), Repaired ( ), Upgraded ( ), Abandoned ( )
by: __________________________
at __________________________
has been installed in accordance with the provisions of 310 CMR 15.00 (Title 5) and the approved design plans/as-built plans relating to application No. ____________, dated ____________. Approved Design Flow _________ gpd

Installer __________________________ Inspector: __________________________ Date: __________________________

The issuance of this permit shall not be construed as a guarantee that the system will function as designed.