Type 3 System

FIELD EVALUATION SHEET

PRELIMINARY EVALUATION DATE April 2, 2020, FIELD EVALUATION DATE April 2, 2020
PROPERTY OWNER: Jeff + Judy Peysar PHONE 218-821-5982
ADDRESS: 31786 - 280th Street CITY,STATE,ZIP: Aitkin, Mn. 56431
LEGAL DESCRIPTION:
PIN# 09-0-056601 SEC 33 T 46 R 25 TWP NAME Glen
FIRE# LAKE/RIVER Clear Lake LAKE CLASS Rec. OHWL FT

DESCRIPTION OF SOIL TREATMENT AREAS

	AREA #1	AREA #2
DISTURBED AREAS	YES NO X	YES NO
COMPACTED AREAS	YES NO X	YES NO
FLOODING	YES NO X	YES NO
RUN ON POTENTIAL	YES NO X	YES NO
SLOPE %	3	
DIRECTION OF SLOPE	N-S	
LANDSCAPE POSITION	N-S	
VEGETATION TYPES	Wooded	

REFERENCE BM ELEV. 100 FT
REFERENCE BM DESCRIPTION
Slab by house

DEPTH TO STANDING WATER OR MOTTLED SOIL: BORING# 1 86" (Pit was dug), 1A ____, 2 ____, 2A ____

BOTTOM ELEVATION--FIRST TRENCH OR BOTTOM OF ROCK BED: #1 104 FT., #2 ____ FT.

SOIL SIZING FACTOR: SITE # 1 1.27, SITE #2 ____

CONSTRUCTION RELATED ISSUES: Type 3 system. Too much rock in soil. Bed area must have the existing rocky soil dug out and replaced with 3 feet of washed sand below the rock bed area

LIC# L 2132 SITE EVALUATOR SIGNATURE: Tom O'Neil

SITE EVALUATOR NAME: Tom O'Neil TELEPHONE# 218-927-6070

UG REVIEW ____ DATE ____

Comments:

SOIL BORING LOGS ON REVERSE SIDE

Soil Pit

SOILS CHARTS FOR BOTH PROPOSED AND ALTERNATE SITES

1 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR
0-6	loam	10yr 3/2
6-14	loam	10yr 4/3
14-24	Sandy loam	10yr 4/4
24-48	Med. Sand gravel	10yr 4/4
48-86	Med Sand small rocks	10yr 4/6

no mottles found

Too rocky for a standard system

2 (PROPOSED) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

1 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

2 (ALTERNATE) SOILS DATA

DEPTH (INCHES)	TEXTURE	MUNSELL COLOR

ADDITIONAL SOIL BORINGS MAY BE REQUIRED

TRENCH AND BED WORKSHEET

1. AVERAGE DESIGN FLOW

A. Estimated 450 gpd *(see figure A-1)*
or measured ___ x 1.5 *(safety factor)* = ___ gpd

B. Septic tank capacity 1000 gal *(see figure C-1)*
Use 1820 combo

2. SOILS *(Site evaluation data)*

C. Depth to restricting layer = over 7 ft

D. Max depth of system Item 2C - 3 ft = 7 ft - 3 ft = 4 ft

E. Texture med Sand Percolation rate _____ MPI

F. Soil Sizing Factor (SSF) 1.27 sqft/gpd *(see figure D-15)*

G. % Land Slope 3 %

3. TRENCH or BED BOTTOM AREA

H. For trenches with 6 inches of rock below the pipe:
A x F = _____gpd x _____sqft/gpd = _____ sqft

I. For trenches with 12 inches of rock below the pipe:
A x F x 0.8 = _____gpd x _____sqft/gpd x 0.8 = _____ sqft

J. For trenches with 18 inches of rock below the pipe:
A x F x 0.66 = _____gpd x _____sqft/gpd x 0.66 = _____ sqft

K. For trenches with 24 inches of rock below the pipe:
A x F x 0.6 = _____gpd x _____sqft/gpd x 0.6 = _____ sqft

L. For gravity beds with 6 or 12 inches of rock below the pipe;
1.5 x A x F = 1.5 x ___gpd x ___sqft/gpd = ___ sqft
For pressure beds with 6 or 12 inches of rock below the pipe;
A x F = 450 gpd x 1.27 sqft/gpd = 572 sqft

4. DISTRIBUTION *(Check all that apply)*

X Bed (< 6% slope) ___ Drop boxes (any slope) X Rock
___ Trenches ___ Distribution box (< 3%) ___ Chamber
X Pressure ___ Gravity ___ Gravelless

5. SYSTEM WIDTH, LENGTH and VOLUME

M. Select trench width = 15 ft

N. If using rock, divide bottom area by width: (H, I, J,K or L) ÷ M =
572 sqft ÷ 15 ft = 38 lineal feet
Rock depth below distribution pipe plus 0.5 foot times bottom area:
Rock depth in feet + 0.5 feet x Area (H,I,J,K, or L)
(.5 ft + 0.5 ft) x 572 sqft = 572 cuft
Volume in cubic yards = cuft ÷27
572 cuft ÷ 27 = 22 cuyds
Weight of rock in tons = cubic yds x 1.4
22 cuyds x 1.4 = 30 tons

O. If using 10" Gravelless Pipe, Flow (A) x Gravelless SSF*(see figure D-9)*
_____gpd x ___lineal feet/gpd = _____ lineal feet

P. If using Chambers, H,I,J, or K(based on hieght of chamber slats) ÷ width of chamber in feet(M)
_____sqft ÷ _____ft= _____ lineal ft

6. LAWN AREA

Q. Select trench spacing, center to center = 15 feet

R. Multiply trench spacing by lineal feet R x Q = sqft of lawn area
15 ft x 38 ft = 572 sqft

7. Include a drawing with scale (one inch = _____ft). Show pertinent boundaries, right of way, easements, location of house, garage, driveway, all other imporvements, existing or proposed soil treatment system, well and dimensions of all elevations, setbacks and separation distances.

I hereby certify that I have completed this work in accordance with applicable ordinances, rules and laws.

Tom O'Neal (signature) L-2132 (license #) 10-19-2020 (date)

A-1: Estimated Sewage Flows in Gallons per Day

number of bedrooms	Class I	Class II	Class III	Class IV
2	300	225	180	60%
3	450	300	218	of the
4	600	375	256	values
5	750	450	294	in the
6	900	525	332	Class I,
7	1050	600	370	II, or III
8	1200	675	408	columns.

C-1: Septic Tank Capacities (in gallons)

Number of Bedrooms	Minimum Liquid Capacity	Liquid capacity with garbage disposal	Liquid capacity with disposal & lift inside
2 or less	750	1125	1500
3 or 4	1000	1500	2000
5 or 6	1500	2250	3000
7, 8 or 9	2000	3000	4000

D-15: Soil Characteristics and Soil:Sizing Factor (SSF) (> 3' separation)

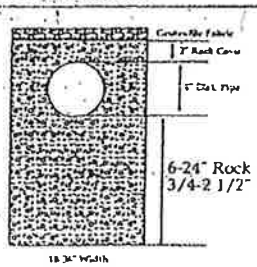
Percolation Rate minutes per inch (mpi)	Soil Texture	Soil Sizing Factor square feet/gallon per day(sqft/gpd)
faster than 0.1*	Coarse sand	0.83
0.1 to 5*	Medium sand Loamy sand	0.83
0.1 to 5**	Fine sand	1.67
6 to 15	Sandy loam	1.27
16 to 30	Loam	1.67
31 to 45	Silt loam Silt	2.00
46 to 60	Clay loam Sandy clay Silty clay	2.20
over 61 to 120***	Clay Sandy clay Silty clay	4.20
slower than 120****		

*Use systems for rapidly permeable soils: pressure distribution or serial distribution with no trench >25% of the total system.
**Soil having 50% or more fine sand plus very fine sand
***A inound must be used.
****An other or performance system must be used

D-9: Soil Characteristics and Soil sizing factors (SSF) for Gravelless Pipe

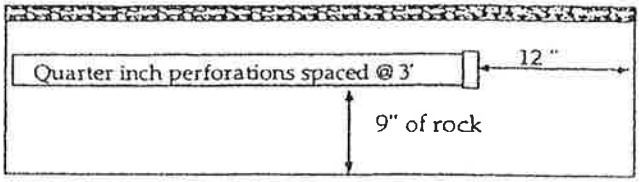
percolation rate (minutes/inch)	soil texture	lineal feet/ gallon/day
Faster than 0.1*	Coarse Sand	---
0.1 to 5	Medium Sand Loamy Sand	0.28
0.1 to 5	Fine Sand **	0.6
6 to 15	Sandy Loam	0.42
16 to 30	Loam	0.56
31 to 45	Silt Loam Silt	0.67
46 to 60	Clay Loam (CL) Sandy CL Silty CL	0.74
slower than 60***	Clay Sandy Clay Silty Clay	---

*Soil too coarse for sewage treatment. Use systems for rapidly permeable soils.
**Soil having 50% or more fine sand + very fine sand.
***Soil with too high a percentage of clay for installation of a standard inground system.



1. Select number of perforated laterals 4

2. Select perforation spacing = 2.5 ft



Perf Sizing 3/16" - 1/4"
Perf Spacing 1.5'- 5'

3. Since perforations should not be placed closer than 1 foot to the edge of the rock layer (see diagram), subtract 2 feet from the rock layer length.

$$\frac{38}{\text{Rock layer length}} - 2 \text{ ft} = 36 \text{ ft}$$

4. Determine the number of spaces between perforations. Divide the length (3) by perforation spacing (2) and round down to nearest whole number.

Perforation spacing = 38 ft ÷ 2.5 ft = 14 spaces

5. Number of perforations is equal to one plus the number of perforation spaces(4). *Check figure E-4 to assure the number of perforations per lateral guarantees <10% discharge variation.*

14 spaces + 1 = 15 perforations/lateral

E-4: Maximum allowable number of 1/4-inch perforations per lateral to guarantee <10% discharge variation

perforation spacing (feet)	1 inch	1.25 inch	1.5 inch	2.0 inch
2.5	8	14	18	28
3.0	8	13	17	26
3.3	7	12	16	25
4.0	7	11	15	23
5.0	6	10	14	22

6. A. Total number of perforations = perforations per lateral (5) times number of laterals (1)

15 perfs/lat x 4 lat = 60 perforations

B. Calculate the square footage per perforation.
Should be 6-10 sqft/perf. *Does not apply to at-grades.*
Rock bed area = rock width (ft) x rock length (ft)
15 ft x 38 ft = 572 sqft
Square foot per perforation = Rock bed area ÷ number of perfs (6)
572 sqft ÷ 60 perfs = 9 sqft/perf

E-6: Perforation Discharge in gpm

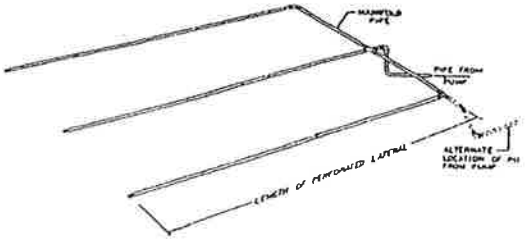
head (feet)	perforation diameter (inches) 1/8	3/16	7/32	1/4
1.0[a]	0.18	0.42	0.56	0.74
2.0[b]	0.26	0.59	0.80	1.04
5.0	0.41	0.94	1.26	1.65

[a] Use 1.0 foot for single-family homes.
[b] Use 2.0 feet for anything else.

7. Determine required flow rate by multiplying the total number of perforations (6A) by flow per perforation *(see figure E-6)*

60 perfs x .74 gpm/perfs = 4.5 gpm

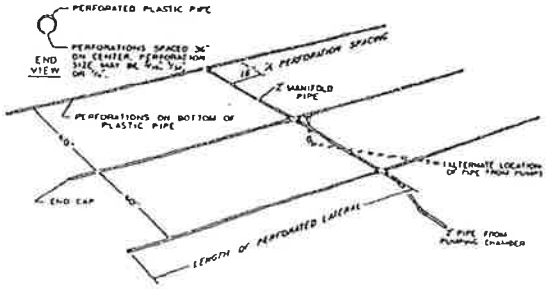
MANIFOLD LOCATED AT END OF PRESSURE DISTRIBUTION SYSTEM



LAYOUT OF PERFORATED PIPE LATERALS FOR PRESSURE DISTRIBUTION IN MOUND

8. If laterals are connected to header pipe as shown on upper example, to select minimum required lateral diameter; enter figure E-4 with perforation spacing (2) and number of perforations per lateral (5) Select minimum diameter for perforated lateral = 1.5 inches.

9. If perforated lateral system is attached to manifold pipe near the center, lower diagram, perforated lateral length (3) and number of perforations per lateral (5) will be approximately one half of that in step 8. Using these values, select minimum diameter for perforated lateral = 1 inches.



I hereby certify that I have completed this work in accordance with applicable ordinances, rules and laws.

Tom O'Neil (signature) L-2312 (license #) 10-19-2020 (date)

PUMP SELECTION PROCEDURE

1. Determine pump capacity:

A. Gravity distribution

1. Minimum required discharge is 10 gpm
2. Maximum suggested discharge is 45 gpm. For other establishments at least 10% greater than the water supply rate, but no faster than the rate at which effluent will flow out of the distribution device.

B. Pressure distribution

See pressure distribution work sheet

From A or B Selected pump capacity: 45 gpm

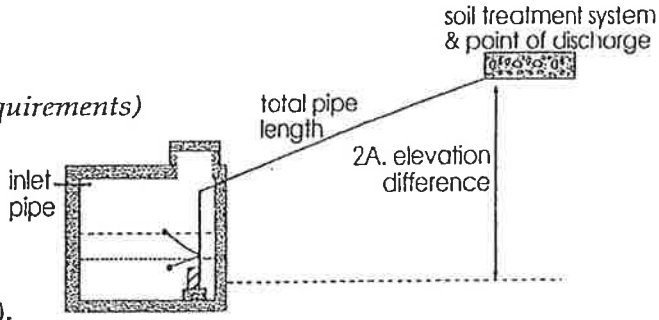
2. Determine pump head requirements:

A. Elevation difference between pump and point of discharge?

14 feet

B. Special head requirement? *(See Figure at right - Special Head Requirements)*

5 feet



Special Head Requirements	
Gravity Distribution	0 ft
Pressure Distribution	5 ft

C. Calculate Friction loss

1. Select pipe diameter 2 in
2. Enter *Figure E-9* with gpm (1A or B) and pipe diameter (C1).

   Read friction loss in feet per 100 feet from Figure E-9

   Friction Loss = 3.28 ft/100ft of pipe
3. Determine total pipe length from pump discharge to soil treatment discharge point. Estimate by adding 25 percent to pipe length for fitting loss. Total pipe length times 1.25 = equivalent pipe length

   72 feet x 1.25 = 100 feet
4. Calculate total friction loss by multiplying friction loss (C2) in ft/100 ft by the equivalent pipe length (C3) and divide by 100.

   = 3.28 ft/100ft x 100 ÷100 = 4 ft

D. Total head required is the sum of elevation difference (A), special head requirements (B), and total friction loss (C4)

14 ft + 5 ft+ 4 ft =

Total head: 23 feet

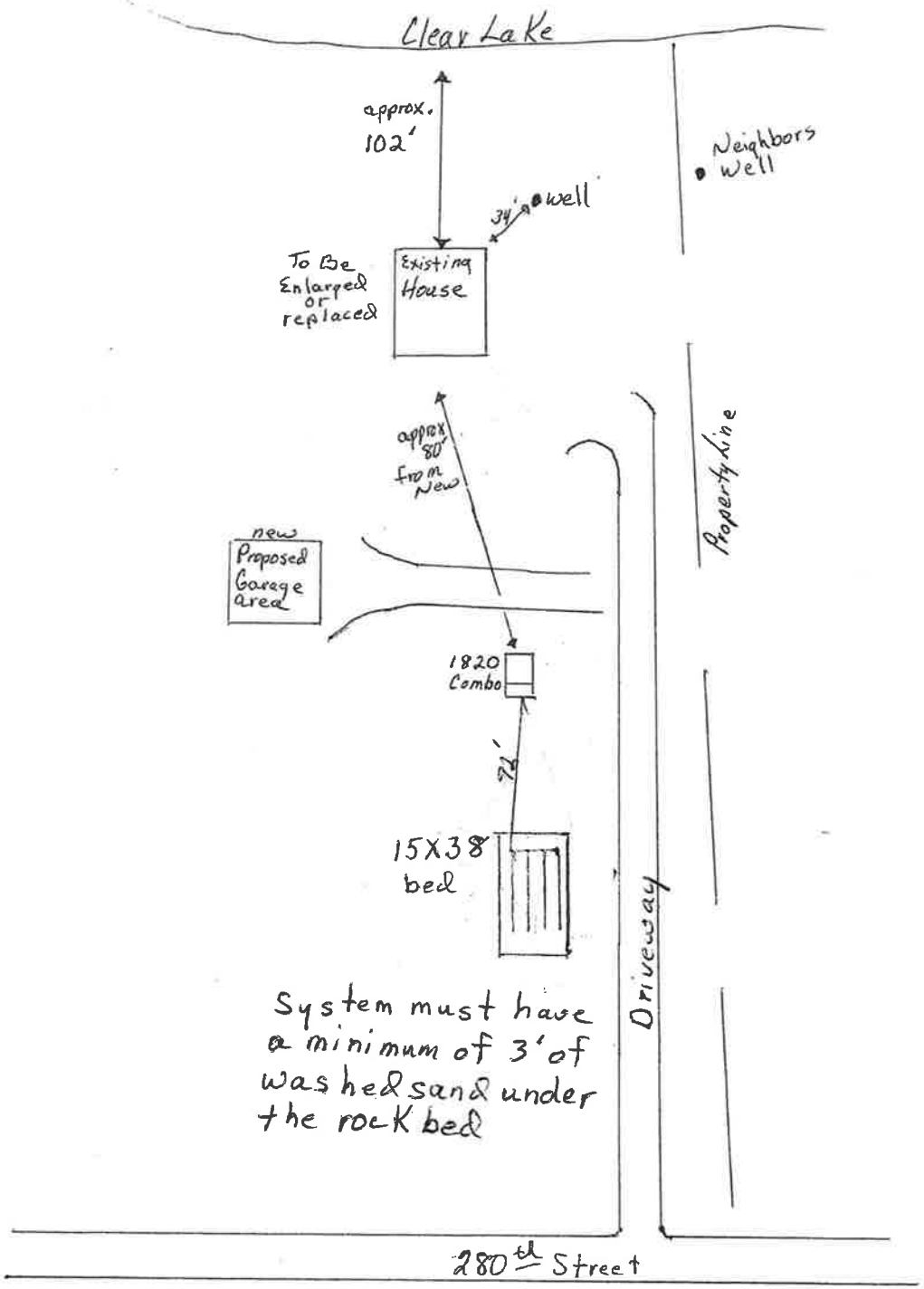
E-9: Friction Loss in Plastic Pipe Per 100 feet			
	nominal pipe diameter		
flow rate gpm	1.5"	2"	3"
20	2.47	0.73	0.11
25	3.73	1.11	0.16
30	5.23	1.55	0.23
35	6.96	2.06	0.30
40	8.91	2.64	0.39
45	11.07	3.28	0.48
50	13.46	3.99	0.58
55		4.76	0.70
60		5.60	0.82
65		6.48	0.95
70		7.44	1.09

3. Pump selection

A pump must be selected to deliver at least 45 gpm (1A or B) with at least 23 feet of total head (2D)

I hereby certify that I have completed this work in accordance with applicable ordinances, rules and laws.

Tom Oliver (signature) L-2132 (license #) 10-19-2020 (date)


Clear Lake
approx. 102'
Neighbors well
34'
well
To Be Enlarged or replaced
Existing House
approx 80' from New
Property Line
new Proposed Garage area
1820 Combo
24'
15X38 bed
Driveway
System must have a minimum of 3' of washed sand under the rock bed
280th Street

Pin # 09-0-056601 33-46-25

Glen Twsp

31786 280th Street

Clear Lake

AITKIN COUNTY ENVIRONMENTAL SERVICES

APPLICATION for an OPERATING PERMIT FOR WASTEWATER TREATMENT AND DISPERSAL

PERMITTEE Jeff & Judy Peysar PARCEL NUMBER 09-0-056601

ADDRESS 31786-280th Street Aitkin, Mn. 56431

LEGAL DESCRIPTION _____

TELEPHONE # 218-821-5982 GIS LOCATION _____

A. DESCRIPTION OF WASTEWATER TREATMENT AND DISPERSAL SYSTEM: (Attach ISTS site evaluation and design; estimated cost of system construction, operation, monitoring, service, component replacement, and management; anticipated system life, hydraulic and organic loading rates)

3 bedroom (Inground mound) Pressure bed with 3' of rocky soil dug out under rock bed & replaced with washed sand

B. MONITORING PLAN AND REPORTING FREQUENCY:

PARAMETER	COMPLIANCE LIMIT	SAMPLE LOCATION	SAMPLE FREQUENCY	SAMPLE TYPE	REPORTING FREQUENCY
FLOW	450gal	Counter			yearly
5-DAY BOD					
TOTAL NITROGEN					
TOTAL PHOSPHORUS					
TSS					
FATS,OILS AND GREASE					
FECAL COLIFORM					
SEPARATION DISTANCE					

Tom O'Neil will perform the monitoring of this septic system.

C. MAINTENANCE PLANS

PARAMETER	LOCATION	FREQUENCY

D. MITIGATION PLAN:

I hereby certify with my signature as the designer, that all data for the operating permit application is true and correct to the best of my knowledge. I agree to indemnify and hold Aitkin County harmless from loses, damages, costs and charges that may be incurred by the County because of the information submitted with this application.

Tom O'Neil
Signature

L-2132
License Number

10-27-2020
Date

Tom O'Neil
Name (please print)

37527 State Hwy. 47
Aitkin, Mn. 56431
Address

218-927-6070
Telephone #

MAINTENANCE SERVICE, MONITORING AND INSPECTION CONTRACT
FOR INDIVIDUAL SEWAGE TREATMENT SYSTEM

It is hereby agreed this 27 day of October, 2020 by and between Tom O'Neil (Inspector) and Jeff Peysar (client)

(Client) Name & Address
Jeff Peysar

Street Address 31786- 280th Street

City, State, Zip Aitkin, Minn. 56431

That in consideration of the payments provided herein, the Inspector shall provide services to perform Preventative Maintenance, Monitoring and Inspection of the Individual Sewage Treatment System (ISTS) located at the property described in the Aitkin County Operating Permit.

Each inspection includes an examination of the ISTS followed by a written report to the client. This inspection report shall contain recommendations for operation and maintenance for failure-preventative measures, if any are deemed appropriate by the inspector and a list of recommended corrective measures or replacement parts. The Inspector is authorized to submit a copy of the report to the Aitkin County Environmental Services Department.

This contract does not assume any responsibilities or obligations, which are normally the responsibilities of the Client, as related to parts or labor and does not extend to cover any costs that may be associated with any recommendations made under this contract.

The Inspector can only contract or subcontract for parts or labor after authorization. Billings for service calls shall be made on a case by case basis. This contract only covers maintenance, monitoring and inspection services per current Aitkin County Operating Permit and does not cover alarm calls of any kind.

The Inspector shall be provided access to the site and the system in order to perform the following services:

SEPTIC TANK AND LIFT STATIONS INSPECTION

(check the boxes needed to fill the requirements of the Operating Permit)

X Check septic tank and compartments for solids buildup and general appearance. If necessary, have tanks pumped (cost of pumping is the responsibility of the client).

X Check effluent filter for buildup and clean, if applicable.

____ Check pumping system, including control panel and floats.

____ Record and date the readings of the elapsed time meter and cycle counter(s), if applicable.

____ Check dosing settings (in the control panel, if applicable).

____ Other: _____

_____

**If the septic tank or lift stations need pumping to be in compliance with the operating permit the cost of the pumping is the responsibility of the Client.

TREATMENT DEVICE

____ Inspect pretreatment unit (aerobic tank, sand filter, etc.) per manufacturer's recommendations, if applicable.

____ Inspect and clean any parts per manufacturer's recommendations.

____ Inspect and clean laterals, if applicable.

____ Inspect the appearance of the wastewater inside the unit for color, turbidity and examination of odors.

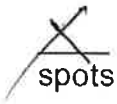
____ Sample effluent per Operating Permit monitoring requirements.

(Cost of sampling and analysis is the responsibility of the Client)

____ Other: _____

_____

DISPERSAL FIELD


X Inspect for visible signs of failure (surface discharge, soggy ground, wet spots, settling, etc.)

____ If liquid level monitors are installed, levels will be observed and recorded.

____ Flush filters and clean cartridges, if applicable.

____ Check field control unit solenoid operations or manual control, if applicable.

____ Other: _____

_____

In no event shall the Inspector be responsible for special or consequential damages, including but not limited to, loss of time, injury to personal property or any other consequential damages or incidental or economic loss due to equipment failure or for any other reason. This contract does not assume any responsibilities or obligations, which are normally, the responsibility of the Client or as, related to parts or labor and does not extend to cover any costs that may be associated with any recommendations made under this contract.

This contract shall be effective: Beginning Oct 27, 2020

and Ending Oct 27, 2025

Cost for Maintenance Service, Monitoring and Inspection Contract is:

$ No Charge **/yr. For _____ years totaling $_____**

The Inspector agrees to provide inspection, monitoring and routine maintenance service only under this contract. The Client remedies for breach of this contract shall be limited to refund of any of the amounts paid in advance for service. This contract may be renewed 30 days from the ending date.

Payment for all services shall be paid _____.

Client:	**Inspector:**
Sign: Jeff Peysar	Sign: Tom O'Neil
Print: Jeff Peysar	Print: Tom O'Neil
Date: Oct 27, 2020	Date: Oct 27, 2020