

March 10, 2017

Via Federal Express/Electronic Mail

Todd Anthony Bianco, EFSB Coordinator
RI Energy Facilities Siting Board
89 Jefferson Blvd.
Warwick, RI 02888

Re: Invenergy Docket No. SB-2015-06

Dear Mr. Bianco:

Pursuant to R.I. Gen. Laws § 42-98-20, entitled "informational filings," on behalf of Invenergy Thermal Development LLC ("Invenergy"), enclosed please find an original and 10 copies of Invenergy's Onsite Wastewater Treatment System Permit Application that was filed with the Rhode Island Department of Environment on March 7, 2017.

Very truly yours,

ALAN M. SHOER
ashoer@apslaw.com

Enclosures

cc: Service List



8 Blackstone Valley Place
Lincoln, RI 02865

Tel: 401-334-4100
Fax: 401-334-4108

LETTER OF TRANSMITTAL

HAND DELIVERY

TO: RI Dept. Of Environmental Management
235 Promenade Street
Providence, RI 02908-5767

DATE: 3/7/2017	JOB NO: 15166.04
ATTENTION: Office of Water Resources	
RE: RIDEM OWTS New Construction Clear River Energy Center Wallum Lake Road, Burrillville, RI	

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items

- ☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ See Below

COPIES	DATE	NO.	DESCRIPTION
1	3/7/2017		OWTS Application
1	3/7/2017		OWTS Application Submission Checklist
1	2/22/2017	4	Soil Evaluation Forms
4	Mar 2017	6	OWTS Drawings
1	3/7/2017	9065	Check for \$400.00 OWTS Permit Fee

THESE ARE TRANSMITTED as checked below:

- ☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 20 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

Enclosed please find an application package for a New Construction OWTS at the proposed Clear River Energy Center. The application fee of \$400 has been included, which accounts for a Commercial OWTS (\$200.00) and the additional fee associated with an Advanced Treatment system.

COPY TO: J. Niland; B. Blanchard (Pare); L. Goyer (Pare); FILE SIGNED:

if enclosures are not as noted, kindly notify us at once.

Allison Viens
Allison Viens

Environmental Division Admin. Assistant



RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
ONSITE WASTEWATER TREATMENT SYSTEM CONSTRUCTION PERMIT



FOR RIDEM USE ONLY

APPLICATION NO. _____ DATE RECEIVED 1/1 AMOUNT RECEIVED \$ _____ CHECK # _____ NOTE _____

TYPE OF APPLICATION (CHECK ALL THAT APPLY) _____ CERTIFICATION _____

☒ NEW BUILDING CONSTRUCTION
☐ ALTERATION
☐ REPAIR
☐ TRANSFER
☒ A/E TECHNOLOGY
TYPE OF SYSTEM DRENCH AX-20
☐ VARIANCE
☐ REDESIGN

SITE INFORMATION
Route 100, Wallum Lake Road, Buxtonville CITY/TOWN Buxtonville POLE # 95
PLAT NUMBER 137 LOT NUMBER 002 SUBDIVISION LOT NUMBER 11A
LOT SIZE 67 SQUARE FEET ACRES
SUBDIVISION NAME 11A
SUBDIVISION SITE SUITABILITY CERTIFICATION # 11A

OWNER INFORMATION
LAST NAME Clear River Energy LLC FIRST NAME M.I.
One South Wacker Dr., Suite 1800 CITY/TOWN Chicago, IL ZIP CODE 60606

RIDEM APPLICATION HISTORY
PREVIOUS SITE TESTING ☒ YES ☐ NO APPLICATION # 17-03-1703-0050
DEPTH TO APPROVED WATER TABLE 18 in HOW DETERMINED Test holes
TEST HOLE # 02 DATE EXCAVATED 2/7/17 WETLANDS WITHIN 200' OF OWTS ☒ YES ☐ NO
WETLAND DETERMINATION ☒ YES ☐ NO RIDEM FILE # 15-0239 DATE 01/28/2016
LARGE SYSTEM ☐ YES ☒ NO

DESIGN INFORMATION
BUILDING USE: ☐ Residential ☒ Commercial ☐ Other Proposed Power Plant
WATER SUPPLY: ☐ public water ☐ public well ☒ private well
OF DESIGN UNITS 25 people
UNIT DESIGN FLOW 0.5 gallons per person (unit) TOTAL DAILY FLOW 625 gallons
TANK SIZE 1,500 gallons DESIGN LOADING RATE 1.5 square feet
MINIMUM REQUIRED LEACHFIELD AREA 417
LEACHFIELD TYPE Bottomless Sand Filter
TOTAL AREA OF LEACHFIELD PROVIDED 420 square feet

Signature of Designer Brandon Blanchard
Designer License Number D-3101 Phone # 401.334.4100
Business/Company Name PAPE CORPORATION
I certify that a) I am the owner of the property indicated under the site information on this application, b) I will hire a licensed OWTS installer to install the system proposed herein, c) the system will be installed in strict accordance with this application, d) I will hire and retain the licensed OWTS designer of record to witness and inspect the installation of the system, e) I assume all responsibility for the truth and accuracy of this application and all liability and responsibility for any improper installations of the system on this site and agree to hold the RIDEM harmless for any and all claims relating whatsoever to the system. In the case of a transfer application, I acknowledge that the permit application and plans previously approved and accompanying this application are the operative documents subject to certification.
Owner(s) Signature [Signature] Phone Number 312.224.1400

PERMIT APPROVAL SECTION: DO NOT WRITE BELOW THIS LINE
Based upon the representations of the owner and the owner's agents, including the representations of the owner's OWTS designer, and the truth and accuracy of all information submitted, this application for an OWTS is hereby approved. The RIDEM assumes no responsibility for the future safe operation or maintenance of the approved system, of the fitness or suitability of this system to this site, nor does it assume any responsibility for the accuracy and truth of the owner's or the owner's agent's representations. This approval is subject to future suspension or revocation in the event that subsequent examination reveals any data indicated on any application, form, submittal, plan or sketch to be incorrect, or not in compliance with the RIDEM or any conditions at the site are such that the approved design is not in accordance with the RIDEM, or in the event that the system discharges inadequately treated wastewater to waters of the State or fails to operate satisfactorily in any other manner.

IMPORTANT: Additional terms of approval as circled.
A. Bottom of leaching area excavation must be inspected by the RIDEM prior to placement of any gravel or stone.
B. System installation must be inspected by RIDEM prior to covering any component of the system with backfill.
C. Applicant shall comply with all requirements, conditions and stipulations of variance(s) approved on
D. A/E Technology: additional specific installation, operation, or maintenance requirements may apply (see RIDEM A/E Technology certification for this system type).
E. Copy of this form and Operation/Maintenance contract must be filed in land evidence records prior to construction.
F. Proposed construction falls within "Coastal Zone", Coastal Ridge Island Capital Resources Management Council.
G. Proper erosion and sedimentation controls must be installed prior to start of construction.
H. Transfer: See original permit for all applicable conditions.
I. Other

Signature of RIDEM Official _____ Date of Approval _____ Date of Expiration _____

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Office of Water Resources
Onsite Wastewater Treatment Systems (OWTS) Program

Application Submission Checklist

For Office Use

Owner Name: CLEAR RIVER ENERGY LLC

Designer Name: BLANCHARD D-3101

Application No. _____

Date _____

The following Submission Checklist is to be completed by the designer and submitted with all construction permit applications.

I. OWTS Submission Requirements (Check Appropriate Submission)

NEW CONSTRUCTION

- ☒ Application Form
- ☒ 4 Sets of Plans
- ☒ Proper Fee

REDESIGN

- ___ Application Form
- ___ 4 Sets of Plans
- ___ Proper Fee

ALTERATION

- ___ Application Form
- ___ 4 Sets of Plans
- ___ Proper Fee
- ___ Copy of Tax Card

REPAIR

- ___ Application Form
- ___ 4 Sets of Plans
- ___ Proper Fee
- ___ Copy of Tax Card

TRANSFER

- ___ Application Form
- ___ Copy of Approved Plan
- ___ Proper Fee
- ___ Copy of Deed

VARIANCE

- ___ Application Form
- ___ Variance Application Form & associated submittals
- ___ 4 Sets of Plans
- ___ Proper Fee
- ___ List of Abutters w/in 200' of System
- ___ Radius Map

II. Well Drilling Variance Submission Requirements

- ___ Variance Application Form
- ___ Affidavit
- ___ 1 Set of Plans



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment System Program



Site Evaluation Form

Part A - Soil Profile Description

Application Number 1703-0050

Property Owner: Invenergy Thermal Development, LLC

Property Location: Route 100, Wallum Lake Road, Burrillville, RI AP 137 Parcel 002

Date of Test Hole: 02-07-2017

Soil Evaluator: DiOrio, Alfred W.

License Number: D4004

Weather: Rain

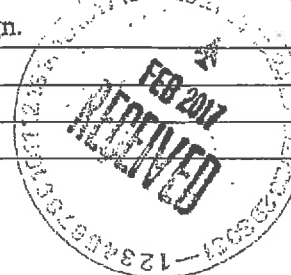
Shaded: Yes ☐ No ☒ Time: 08:30

TH 1 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
A	0-3"	a	s	2.5Y2.5/1	None	None		ls	gr	fr	3
E	3-7"	g	s	10YR4/1	None	None		ls	gr	fr	3
Bw1	7-12"	g	s	7.5YR2.5/2	None	None		sl	1 sbk	fr	3
Bw2	12-17"	a	s	10YR3/4	None	None		sl	1 sbk	fr	3
C	17"-96"	--	--	2.5Y7/2	None	None		f ls	0m	fr	6
TH 2 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
A	0-4"	a	s	7.5YR2.5/2	None	None		ls	gr	fr	3
Bw1	4-14"	g	s	10YR4/4	5YR4/4	C 2 P		f sl	1 sbk	fr	3
Bw2	14-23"	g	w	7.5YR4/4	5YR4/4	C 2 P		sl	1 sbk	fr	3
C	23"-96"	--	--	2.5Y7/2	Submerged	Submerged		f ls	0m	fr	6

TH 1 Soil Class B Total Depth 96" Impervious/Limiting Layer Depth None (og) GW Seepage Depth 18" SHWT 18" (og)

TH 2 Soil Class B Total Depth 96" Impervious/Limiting Layer Depth None (og) GW Seepage Depth 18" SHWT 18" (og)

Comments: Recommend the removal of all organic horizons [A and B] for OWTS design.



Part B

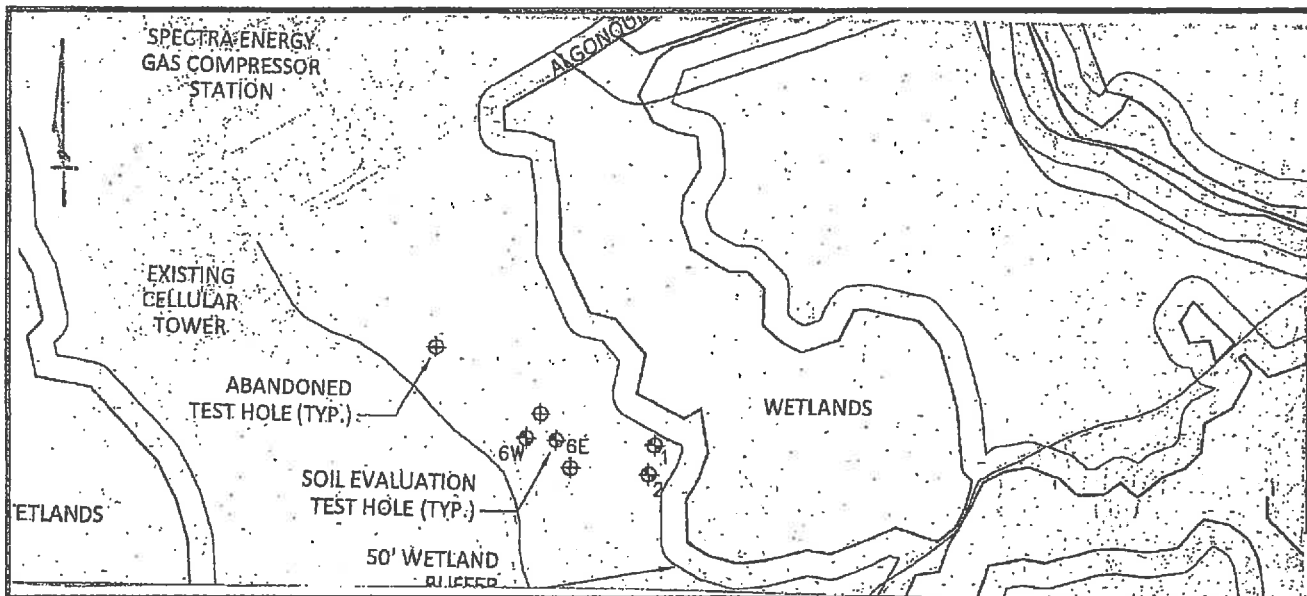
Site Evaluation - to be completed by Soil Evaluator or Class II or III Designer

Please use the area below to locate:

1. Test holes and bedrock test holes,
2. Approximate direction of due north,
3. Offsets from all test holes to fixed points such as street, utility pole, or other permanent, marked object.*
*OFFSETS MUST BE SHOWN

Key:

- Approximate location of test holes
- Approximate location of bedrock test holes
- Estimated gradient and direction of slope
- Approximate direction of due north



1. Relief and Slope: Elevation = 560+/- NAVD88 (Google) Slope 0-8%

2. Presence of any watercourse, wetlands or surface water bodies, within 200 feet of test holes? If yes, locate on above sketch. NO ☐ YES ☒
3. Restrictive Layer or Bedrock within 4' below original ground within 25 feet of test hole? Provide all test hole locations & depths above. NO ☒ YES ☐
4. Presence of existing or proposed private drinking water wells within 200 feet of test holes? If yes, locate on above sketch. NO ☒ YES ☐
5. Public drinking water wells within 500 feet of test holes? If yes, locate on above sketch. NO ☒ YES ☐
6. Is site within the watershed of a public drinking water reservoir or other critical area defined in Rule 38? NO ☒ YES ☐
7. Has soil been excavated from or fill deposited on site? If yes, locate on above sketch. NO ☒ YES ☐
8. Site's potential for flooding or ponding: NONE ☐ SLIGHT ☒ MODERATE ☐ SEVERE ☐
9. Landscape position: Back slope
10. Vegetation: Specimen vegetation with moderate understory
11. Indicate approximate location of property lines and roadways.
12. Additional comments, site constraints or additional information regarding site: For use with OWTS design only.

Certification

The undersigned hereby certifies that all information on this application and accompanying forms, submittals and sketches are true and accurate and that I have been authorized by the owner(s) to conduct these necessary field investigations and submit this request.

Part A prepared by: Alfred W. DiOnio D4004 Part B prepared by: Alfred W. DiOnio D4004
Signature License # Signature License #

DO NOT WRITE IN THIS SPACE

Witnessed Soil Evaluation Decision: Concur ☐ Inconclusive ☐ Disclaim ☐

Unwitnessed Soil Evaluations Decision: Accept ☐ Inconclusive ☐ Disclaim ☒

Wet Season Determination required ☐ Additional Field Review Required ☐

Explanation: less than 24"

Signature Authorized Agent: [Signature] Date: 2/16/17



SHEET 2 OF 2
STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
 Department of Environmental Management
 Office of Water Resources
 Onsite Wastewater Treatment System Program



Site Evaluation Form

Part A - Soil Profile Description

Application Number 1703-0050

Property Owner: Invenenergy Thermal Development, LLC

Property Location: Route 100, Wallum Lake Road, Burrillville, RI AP 137 Parcel 002

Date of Test Hole: 02-07-2017

Soil Evaluator: DiOrio, Alfred W.

License Number: D4004

Weather: Rain

Shaded: Yes ☐ No ☒ Time: 08:30

TH <u>6E</u> Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Ap	0-5"	a	s	10YR3/4	None		None	ls	1 sbk	fr	3
Bw1	5-24"	a	s	10YR4/6	None		None	ls	1 sbk	fr	3
Bw2	24-31"	g	w	2.5Y5/6	7.5YR4/6		C 2 P	sl	1 sbk	fr	3
C	31-96"	--	--	2.5Y6/2	7.5YR4/6		C 2 P	g sl	0m	fr	6m
TH _____ Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				

Environmental Management

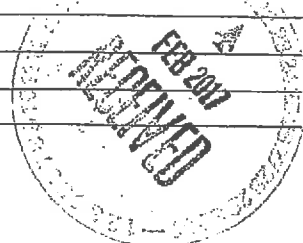
FEB 13 2017

Office of Water Resources

TH 6E Soil Class B Total Depth 96" Impervious/Limiting Layer Depth None (og) GW Seepage Depth 23" SHWT 23" (og)

TH _____ Soil Class _____ Total Depth _____ Impervious/Limiting Layer Depth _____ (og) GW Seepage Depth _____ SHWT _____ (og)

Comments: Recommend the removal of all organic horizons [A and B] for OWTS design.



Part B

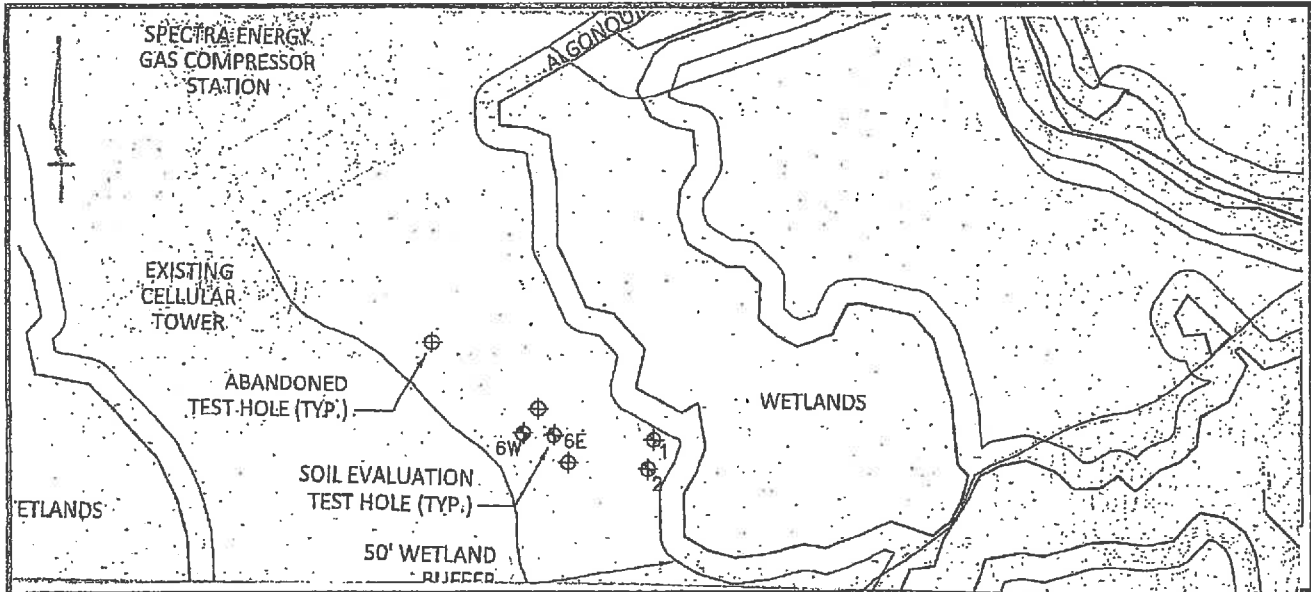
Site Evaluation -- to be completed by Soil Evaluator or Class II or III Designer

Please use the area below to locate:

1. Test holes and bedrock test holes,
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Key:	
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	Estimated gradient and direction of slope
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Part A prepared by: Alfred W. DiOnio D4004 Part B prepared by: Alfred W. DiOnio D4004

Signature License # Signature License #

DO NOT WRITE IN THIS SPACE			
Witnessed Soil Evaluation Decision:	Concur <input type="checkbox"/>	Inconclusive <input type="checkbox"/>	Disclaim <input checked="" type="checkbox"/>
Unwitnessed Soil Evaluations Decision:	Accept <input type="checkbox"/>	Inconclusive <input type="checkbox"/>	Disclaim <input type="checkbox"/>
Wet Season Determination required <input type="checkbox"/>	Additional Field Review Required <input type="checkbox"/>		
Explanation: Less than 24"			
Signature Authorized Agent		Date 2/16/17	

SB-2015-06 Invenergy CREC Service List as of 03/08/2017

Name/Address	E-mail	Phone/FAX
File an original and 10 copies with EFSB: Todd Bianco, Coordinator Energy Facility Siting Board 89 Jefferson Boulevard Warwick, RI 02888 Margaret Curran, Chairperson Janet Coit, Board Member Assoc. Dir., Div. of Planning Parag Agrawal Patti Lucarelli Esq., Board Counsel Susan Forcier Esq., Counsel Rayna Maguire, Asst. to the Director DEM Catherine Pitassi, Asst. to. Assoc. Dir. Plann. Margaret Hogan, Sr. Legal Counsel	Todd.Bianco@puc.ri.gov ;	401-780-2106
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	Patricia.lucarelli@puc.ri.gov ;	
	Margaret.Curran@puc.ri.gov ;	
	janet.coit@dem.ri.gov ;	
	Catherine.Pitassi@doa.ri.gov ;	
	Margaret.hogan@puc.ri.gov ;	
	susan.forcier@dem.ri.gov ;	
	rayna.maguire@dem.ri.gov ;	
	Parag.Agrawal@doa.ri.gov ;	
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	rberetta@apslaw.com ;	
	enoonan@apslaw.com ;	
	nverdi@apslaw.com ;	
	jniland@invenergyllc.com ;	312-224-1400
John Niland, Dir. Of Business Development Tyrone Thomas, Esq., Asst. General Counsel Invenergy Thermal Development LLC One South Wacker Drive, Suite 1900 Chicago, IL 60600	Tthomas@invenergyllc.com ;	
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	dimitrilaw@icloud.com ;	401-474-4370
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	Nicholas.Ucci@energy.ri.gov ;	401-574-9100
	Christopher.Kearns@energy.ri.gov ;	
	egc@levitan.com ;	
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	gmancinilaw@gmail.com ;	401-739-9690
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	kags8943@gmail.com ;	
Residents of Wallum Lake Road, Pascoag, RI Paul Bolduc and Mary Bolduc Joseph Keough Jr., Esq. 41 Mendon Avenue Pawtucket, RI 02861 Paul and Mary Bolduc 915 Wallum Lake Road Pascoag, RI 02859	jkeoughjr@keoughsweeney.com ;	401-724-3600
	oatyss1@verizon.net ;	401-529-0367
Abutter David B. Harris Michael Sendley, Esq. 600 Putnam Pike, St. 13 Greenville, RI 02828	mSENDLEY@cox.net ;	401-349-4405
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	jdx@sinapilaw.com ;	
Residents of 945 Wallum Lake Road, Pascoag, RI (Walkers) Nicholas Gorham, Esq. P.O. Box 46 North Scituate, RI 02857	nickgorham@gorhamlaw.com ;	401-647-1400
	edaigle4@gmail.com ;	

Peter Nightingale, member Fossil Free Rhode Island 52 Nichols Road Kingston, RI 02881	divest@fossilfreeri.org ;	401-789-7649
Sister Mary Pendergast, RSM 99 Fillmore Street Pawtucket, RI 02860	mpendergast@mercyne.org ;	401-724-2237
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Burrillville Land Trust Marc Gertsacov, Esq. Law Offices of Ronald C. Markoff 144 Medway Street Providence, RI 02906	marc@ronmarkoff.com ;	401-272-9330
Paul Roselli, President Burrillville Land Trust PO Box 506 Harrisville, RI 02830	proseli@cox.net ;	401-447-1560
Rhode Island Progressive Democrats of America Andrew Aleman, Esq. 168 Elmgrove Avenue Providence, RI 02906	andrew@andrewaleman.com ;	401-429-6779
Fighting Against Natural Gas and Burrillville Against Spectra Expansion Jillian Dubois, Esq. The Law Office of Jillian Dubois 91 Friendship Street, 4 th Floor Providence, RI 02903	jillian.dubois.esq@gmail.com ;	401-274-4591
Burrillville Town Council c/o Louise Phaneuf, Town Clerk 105 Harrisville Main Street Harrisville, RI 02830	lphaneuf@burrillville.org ;	401-568-4300
Christine Langlois, Deputy Planner Town of Burrillville 144 Harrisville Main Street Harrisville, RI 02830	clanglois@burrillville.org ;	401-568-4300
Joseph Raymond, Building Official	jraymond@burrillville.org ;	
Michael C. Wood, Town Manager Town of Burrillville 105 Harrisville Main Street Harrisville, RI 02830	mcwood@burrillville.org ;	401-568-4300 ext. 115

Mr. Leo Wold, Esq. Department of Attorney General 150 South Main Street Providence, RI 02903	LWold@riag.ri.gov ;	401-274-4400
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Division of Public Utilities and Carriers John J. Spirito, Esq., Chief of Legal Steve Scialabba, Chief Accountant Tom Kogut, Chief of Information	john.spirito@dpuc.ri.gov ; steve.scialabba@dpuc.ri.gov ; thomas.kogut@dpuc.ri.gov ;	401-941-4500
Matthew Jerzyk, Deputy Legal Counsel Office of the Speaker of the House State House, Room 302 Providence RI, 02903	mjerzyk@rilin.state.ri.us ;	401-222-2466
Hon. Cale Keable, Esq., Representative of Burrillville and Glocester	Cale.keable@gmail.com ;	401-222-2258
Nick Katkevich	nkatkevich@gmail.com ;	
Ambar Espinoza	aespinoza@ripr.org ;	
Joseph Bucci, Acting Administrator Highway and Bridge Maintenance Operations RI Department of Transportation	joseph.bucci@dot.ri.gov ;	
Jared Rhodes, Chief Statewide Planning Program Jennifer Sternick Chief of Legal Services RI Department of Administration	jared.rhodes@doa.ri.gov ; Jennifer.sternick@doa.ri.gov ;	
Doug Gablinske, Executive Director TEC-RI	doug@tec.ri.org ;	
Tim Faulkner ecoRI News 111 Hope Street Providence, RI 02906	tim@ecori.org ;	401-330-6276
Robert Tormey Conanicut Energy, LLC	rjtormey@conanicutenergy.com ;	617-306-1601
Sally Mendzela	salgalpal@hotmail.com ;	
Keep Burrillville Beautiful Paul LeFebvre	paul@acumenriskgroup.com ;	401-714-4493
Mark Baumer	everydayyeah@gmail.com ;	
Nisha Swinton Food & Water Watch New England	nswinton@fwwatch.org ;	
Kaitlin Kelliher	Kaitlin.kelliher@yahoo.com ;	

Joe Piconi, Jr.	jiggzy@hotmail.com ;	
Hon. Aaron Regunberg Representative of Providence, District 4	Aaron.regunberg@gmail.com ;	
Paul Ernest	paulwernest@gmail.com ;	
Skip Carlson	scarlson@metrocast.net ;	
Kathryn Scaramella	kscaramella@outlook.com ;	
Diana Razzano	Dlrazzano13@verizon.net ;	
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Claudia Gorman	corkyhg@gmail.com ;	
Curt Nordgaard	Curt.nordgaard@gmail.com ;	
Colleen Joubert	Colleenj1@cox.net ;	
Matt Smith Food & Water Watch	msmith@fwwatch.org ;	
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Steven Ahlquist, RIFuture	atomicsteve@gmail.com ;	
Pascoag Utility District William Bernstein, Esq. Michael Kirkwood, General Manager Robert Ferrari, Northeast Water Solutions, Inc.	mkirkwood@pud-ri.org ;	
	Wlblaw7@gmail.com ;	
	rferrari@nwsinc.net ;	
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CLEAR RIVER ENERGY CENTER ON-SITE WASTE WATER TREATMENT SYSTEM (OWTS) BURRILLVILLE, RHODE ISLAND



SCALE: 1"=800'



OWNER/APPLICANT:

Invenergy

INVENERGY
ONE SOUTH WACKER DRIVE
SUITE 1800
CHICAGO, IL 60606

CIVIL ENGINEER:



PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

March 2017

INDEX OF DRAWINGS

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GENERAL NOTES:

1.

ALL DESIGN, CONSTRUCTION, AND MAINTENANCE REQUIREMENTS TO BE IN CONFORMANCE WITH THE RHODE ISLAND "RULES ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS", LATEST EDITION (OWTS REGULATIONS), AND, GUIDELINES FOR THE DESIGN, USE, AND MAINTENANCE OF PRESSURIZED DRAINFIELDS, NOVEMBER 2013 ADDITION. CONSTRUCTION OF OWTS SHALL BE PERFORMED BY A LICENSED OWTS INSTALLER IN ACCORDANCE WITH THE OWTS REGULATIONS.
2.

THE WORK SHOWN ON THESE DRAWINGS IS FOR A "NEW CONSTRUCTION" ON-SITE WASTEWATER TREATMENT SYSTEM (OWTS) FOR THE PROPOSED CLEAR RIVER ENERGY CENTER. THE OWTS SHALL SERVE THE FACILITY'S PROPOSED ADMINISTRATION BUILDING. THE SITE OF THE CLEAR RIVER ENERGY CENTER WILL BE SUBDIVIDED FROM A.P. 137, LOT 002.
3.

PIPING LAYOUT SHOWN IS DIAGRAMMATIC ONLY. CONTRACTOR SHALL ALIGN PIPE TO AVOID CONFLICTS WITH TREES, STONE WALLS, STRUCTURES, UTILITIES, AND OTHER PERMANENT SITE FEATURES. NO TREES PROPOSED TO REMAIN SHALL BE DAMAGED OR REMOVED WITHOUT PRIOR APPROVAL FROM OWNER. CONTRACTOR SHALL PROVIDE ALL FITTINGS NECESSARY TO ACHIEVE PROPER PIPE ALIGNMENT MEETING THE GENERAL INTENT OF THESE DRAWINGS.
4.

PRIOR TO BEGINNING WORK CONTRACTOR SHALL VISIT THE SITE TO VERIFY FIELD CONDITIONS. NOTED DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
5.

THIS SITE IS NOT LOCATED WITHIN A RIDEM DESIGNATED CRITICAL RESOURCE AREA.
6.

ANY DAMAGE TO UTILITIES OR OTHER SITE CONSTRUCTION CAUSED BY THE CONTRACTOR SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND COSTS FOR REPAIRS OR REPLACEMENT OF SUCH DAMAGES SHALL BE BORNE BY THE CONTRACTOR.
7.

PRIOR TO THE START OF CONSTRUCTION, ALL NECESSARY EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AND MAINTAINED TO MITIGATE EROSION AND SEDIMENTATION OF DOWN GRADIENT AREAS, WETLANDS, WATER COURSES, ETC. EROSION CONTROLS SHALL BE MAINTAINED AND REPLACED AS NECESSARY UNTIL DISTURBED SURFACES ARE STABILIZED AND/OR RETURNED TO THEIR ORIGINAL CONDITION.
8.

CONTRACTOR SHALL PROVIDE ENGINEER WITH ELECTRONIC COPY OR FOUR (4) HARDCOPIES OF SUBMITTALS FOR REVIEW AND APPROVAL OF ALL MATERIALS AND EQUIPMENT PROPOSED TO BE USED FOR THE OWTS. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 10 BUSINESS DAYS TO REVIEW AND PROCESS SUBMITTALS, UNLESS OTHERWISE AGREED UPON BETWEEN ENGINEER AND CONTRACTOR. WORK PERFORMED BY CONTRACTOR PRIOR TO APPROVAL OF ALL REQUIRED SUBMITTALS IS DONE AT CONTRACTOR'S OWN RISK.
9.

MANHOLES ON TANKS SHALL BE BROUGHT TO FINISHED GRADE. FINISHED GRADE SHALL SLOPE AWAY FROM MANHOLE COVERS. TANK ACCESS COVERS SHALL BE TAMPER RESISTANT AND MECHANICALLY FASTENED AND SHALL BE AFFIXED WITH A LABEL INDICATING "ENTRANCE INTO THE TANK COULD BE FATAL".
10.

CLEAR ALL TREES AND STUMPS WITHIN 10' OF SYSTEM.
11.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY MEANS AND METHODS TO CONSTRUCT ALL EXCAVATIONS FOR THIS PROJECT IN ACCORDANCE WITH APPLICABLE OSHA SAFETY REQUIREMENTS. CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL MATTERS RELATED TO SITE SAFETY AND FOR COMPLYING WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL RULES AND REGULATIONS. OPEN EXCAVATIONS SHALL BE PROTECTED AT ALL TIMES AND NO EXCAVATIONS OR OPEN BELOW GRADE STRUCTURES SHALL BE LEFT OPEN OVERNIGHT.
12.

CONTRACTOR SHALL PROVIDE THE ENGINEER WITH THREE (3) COPIES OF THE MANUFACTURER'S OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT. THE OWNER SHALL BE PROVIDED WITH A COMPLETE SYSTEM OPERATION AND MAINTENANCE MANUAL IN ACCORDANCE WITH RIDEM REGULATIONS.
13.

CONTRACTOR SHALL MAINTAIN A RECORD DRAWING WHICH SHALL BE SUBMITTED TO THE ENGINEER AT THE COMPLETION OF THE PROJECT. ENGINEER SHALL PREPARE CERTIFICATE OF CONSTRUCTION FOR SUBMITTAL TO RIDEM.
14.

CONTRACTOR SHALL BE RESPONSIBLE TO RESTORE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION. THE LIMITS OF ALL DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. ALL AREAS DISTURBED OUTSIDE THE PROJECT LIMITS BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT NO EXTRA COST TO THE OWNER.
15.

CONTRACTOR SHALL RESTORE PAVED ROADS AND PARKING LOTS THAT HAVE BEEN DISTURBED AS PART OF THE WORK WITH PERMANENT PAVEMENT PATCHES. CONTRACTOR SHALL MINIMIZE DISTURBANCE OF ALL PAVED AREAS TO THE DEGREE FEASIBLE. ALL OTHER AREAS SHALL BE RESTORED TO MATCH EXISTING CONDITIONS.
16.

ONLY SANITARY WASTEWATER SHALL BE DISCHARGED TO THE PROPOSED SYSTEM. CHEMICALS AND ALL OTHER NON-SANITARY WASTEWATER SHALL NOT BE DISCHARGED INTO THE OWTS.
17.

PRESSURIZED SEWER PIPE SHALL BE INSTALLED WITH A MINIMUM OF 4' OF COVER UNLESS OTHERWISE INDICATED ON THESE DRAWINGS.
18.

EXCESS SOIL, CONSTRUCTION MATERIALS, AND DEBRIS SHALL NOT BE STOCKPILED OR DISPOSED OF WITHIN ANY RHODE ISLAND REGULATED WETLAND.
19.

GARBAGE GRINDERS ARE PROHIBITED FROM USE WITH THIS SYSTEM.
20.

NO WELLS, EXISTING OR PROPOSED, ARE LOCATED WITHIN 300' OF SYSTEM. SITE TO BE SERVED BY A NEW PRIVATE WELL PROPOSED 1500' FROM BSF.
21.

NO WATER COURSES ARE LOCATED WITHIN 50' OF SYSTEM.
22.

SEPARATION OF 25' BETWEEN DRAINS AND SEWER HAS BEEN MAINTAINED ACROSS THE SITE TO THE DEGREE FEASIBLE. WHERE THIS SETBACK CANNOT BE MET, THE GRAVITY OR PRESSURIZED SEWER PIPE SHALL BE SLEEVED WITHIN AN APPROPRIATELY SIZED PIPE UNTIL THE 25' SETBACK CAN BE MET. ALL TANKS ARE PROPOSED A MINIMUM OF 25' FROM DRAINS.
23.

NO VEHICULAR TRAVEL OR PAVEMENT OVER BSF WILL BE PERMITTED.
24.

NO PUBLIC WELLS (EXISTING OR PROPOSED) ARE LOCATED WITHIN 500' OF ANY COMPONENT OF PROPOSED SYSTEM.
25.

ELEVATIONS BASED ON A DATUM PLANE OF NAVD 88.
26.

CONTRACTOR SHALL CONTACT "DIG SAFE" (TEL. #1-888-DIG-SAFE) A MINIMUM OF 72-HOURS PRIOR TO STARTING WORK UNDERGROUND. ALSO, ALL OTHER UTILITY COMPANIES KNOWN TO HAVE UTILITIES IN THE AREA SHALL BE CONTACTED BY CONTRACTOR AT THIS TIME PRIOR TO CONSTRUCTION. UNDERGROUND TELEPHONE, WATER, ELECTRIC, GAS, AND DRAINAGE ARE KNOWN TO BE IN THE VICINITY OF THE PROJECT AREA.
27.

CONTRACTOR SHALL NOTIFY ENGINEER A MINIMUM OF 72-HOURS PRIOR TO STARTING WORK SO THAT ENGINEER CAN NOTIFY RIDEM THAT CONSTRUCTION ON THE OWTS IS STARTING.

BOTTOMLESS SAND FILTER (BSF) NOTES:

1.

THE PROPOSED BSF LOCATION SHALL BE STAKED OUT AND PROTECTED PRIOR TO ANY SITE PREPARATION ACTIVITIES.
2.

BSF SHALL NOT BE BURIED, COVERED BY TOPSOIL, OR COVERED WITH ANY OTHER MATERIAL SINCE THAT MAY LIMIT GAS/OXYGEN MOVEMENT INTO AND OUT OF THE FILTER OR INTERFERE WITH PROPER MAINTENANCE.
3.

PROVIDE A MINIMUM BUFFER OF TEN (10)-FEET BETWEEN THE BSF AND NEIGHBORING TREES AND SHRUBS. TREE CANOPY SHALL NOT EXTEND OVER ANY PART OF THE BSF.
4.

UNDER NO CIRCUMSTANCES SHOULD HEAVY EQUIPMENT, VEHICLES, OR IMPERMEABLE SURFACES/MATERIALS BE ALLOWED OVER THE FINISHED BSF.
5.

PROVIDE MINIMUM 3- FEET OF SEPARATION BETWEEN SEASONAL HIGH GROUNDWATER TABLE (SHGW) AND TOP OF SAND LAYER AT BSF.
6.

DURING THE CLEARING AND GRUBBING PROCESS IN THE AREA DESIGNATED FOR THE BSF THE "A" AND "B" HORIZON SOILS SHALL BE STRIPPED AND REMOVED. AT THE TIME OF THE BSF INSTALLATION THE "C" HORIZON SOIL SHALL BE SCARIFIED AND MIXED WITH BANK RUN GRAVEL 3-INCHES BELOW THE BOTTOM ELEVATION OF THE BSF.

BSF TREATMENT SYSTEM COMPONENT MAINTENANCE:

1.

LATERALS – TO REMOVE ACCUMULATED SOLIDS IN LATERALS, FIRST OPEN THE LATERAL END BALL VALVE OR THREADED END CAP, ENGAGE THE PUMP AND FLUSH OUT ANY SOLIDS. A BOTTLE BRUSH (APPROPRIATELY SIZED FOR THE LATERAL) ATTACHED TO A PLUMBERS SNAKE IS THEN PUSHED DOWN EACH LATERAL TO UNPLUG THE ORIFICES. WITH THE BOTTLE BRUSH REMOVED, THE PUMP SHOULD AGAIN BE MANUALLY ENGAGED AND EACH LATERAL LINE FLUSHED OUT THROUGH THE LATERAL END ONTO THE PEASTONE. (PARTICULARLY DIRTY OR MAINTENANCE-NEGLECTED LATERALS SHOULD BE FLUSHED DIRECTLY INTO A BUCKET BY USING A GARDEN HOSE AND THREADED FITTING ASSEMBLY. THIS WASTE MATERIAL IS THEN DUMPED INTO THE INLET END OF THE SYSTEM SEPTIC TANK). ALTERNATIVELY, A PRESSURE POWER WASHER WITH APPROPRIATELY SIZED TUBING CAN ALSO BE SENT DOWN EACH LATERAL TO FLUSH ACCUMULATED SOLIDS. USUALLY A BSF IN CONTINUOUS USE WILL REQUIRE LATERAL FLUSHING/ BOTTLE BRUSH TREATMENT ONCE PER YEAR. BSF'S OPERATING ABOVE THEIR DAILY DESIGN FLOW MAY REQUIRE MORE FREQUENT LATERAL FLUSHING. THIS FREQUENCY CAN BE BASED UPON THE RESULTS OF THE DISTAL LATERAL HEAD PRESSURE TEST. SEASONALLY-USED BSF'S MAY NOT NEED YEARLY LATERAL FLUSHING, BUT THEIR LATERAL HEAD (PRESSURE) SHOULD BE CHECKED ONCE PER YEAR, AND MAINTENANCE PERFORMED AS NEEDED.
2.

FILTER SURFACE – THE PEASTONE SURFACE OF ALL BSF'S SHOULD BE KEPT FREE OF DEBRIS, WEEDS, AND GRASSES. THIS SURFACE CAN BE LIGHTLY RAKED TO REMOVE ANY LEAVES. WEEDS AND GRASSES SHOULD BE REMOVED WHEN THEY FIRST APPEAR.
3.

ELECTRICAL COMPONENTS – ONCE A YEAR ALL ELECTRICAL COMPONENTS SHOULD BE CHECKED FOR FUNCTIONALITY. ALL FLOAT SWITCHES SHOULD BE ACTIVATED AND PUMP RUN TIMERS SHOULD BE CHECKED FOR CONSISTENT OPERATION. ALL FLOAT SWITCHES SHOULD BE HOSED DOWN TO PREVENT SCUM ACCUMULATION. ALL WIRING SHOULD BE NEATLY BUNDLED AND PLACED OUT OF THE OPERATING PATH OF THE FLOAT SWITCHES.
4.

TANK AND CHAMBER MAINTENANCE – TANKS AND PUMP CHAMBERS SHOULD BE CHECKED ANNUALLY AND MEASURED FOR SLUDGE AND SCUM ACCUMULATION NO LESS THAN EVERY 3 YEARS. THIS CAN EASILY BE DONE AS PART OF THE ANNUAL MAINTENANCE. IF SLUDGE AND SCUM LEVELS WARRANT, TANKS SHALL BE PUMPED AND ACCUMULATIONS REMOVED.
5.

IF FIBERGLASS OR POLYETHYLENE TANKS ARE USED, IT IS IMPORTANT TO MONITOR GROUND WATER LEVELS BEFORE PUMPING SEPTAGE OR TO SCHEDULE PUMPING OF TANKS FOR LATE SUMMER OR EARLY FALL TO AVOID TANKS FLOATING (THIS TIME PERIOD MAY DIFFER DEPENDING UPON WEATHER CONDITIONS). PUMPING CONCRETE TANKS DURING PERIODS OF HIGH GROUNDWATER MAY ALSO CAUSE TANK FLOATION PROBLEMS. THE YEARLY INSPECTION PROCESS WILL FACILITATE THE SCHEDULING OF TANK PUMPING TO AVOID EMERGENCY PUMPING SITUATIONS. ALL TANKS SHOULD BE FILLED WITH TAP WATER IMMEDIATELY AFTER SEPTAGE PUMPING IS COMPLETED.
6.

SEPTIC TANK EFFLUENT FILTER SHALL BE REMOVED AND HOSED OFF BACK INTO TANK AT TIME OF ANNUAL TANK INSPECTION. OWNER MAY CLEAN OFF EFFLUENT FILTER MORE FREQUENTLY IF CONDITIONS WARRANT.
7.

FOR PROPER PERFORMANCE, TANKS SHOULD BE INSPECTED AT LEAST ONCE PER YEAR OR AT A GREATER FREQUENCY IN ACCORDANCE WITH THE SYSTEM OPERATION AND MAINTENANCE MANUAL. TANKS SHOULD BE PUMPED WHEN THE TOTAL DEPTH OF SCUM AND/OR SOLIDS EXCEEDS ⅓ LIQUID DEPTH OF THE TANK.
8.

ENTRY INTO ANY TANK COULD BE FATAL AND SHALL NEVER BE PERFORMED. ALL INSPECTION AND MAINTENANCE SHALL BE PERFORMED FROM GROUND SURFACE.

CONCRETE STRUCTURE SPECIFICATIONS:

CONCRETE: CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 5,000 PSI IN 28 DAYS.

REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM DESIGNATION A615, GRADE 60.

BITUMINOUS COATING: ALL STRUCTURES SHALL BE PROVIDED WITH A BITUMINOUS WATERPROOF COATING.

PIPE PENETRATIONS: PIPE PENETRATIONS AND OTHER OPENINGS SHALL BE AS SHOWN ON THE DRAWINGS AND AS REQUIRED. CONNECTIONS OF PIPES TO STRUCTURES SHALL BE MADE BY THE USE OF A FLEXIBLE WATERTIGHT SEAL. SEAL SHALL CONSIST OF NEOPRENE BOOT INSTALLED IN THE STRUCTURE OPENING USING A STAINLESS STEEL EXPANSION SLEEVE AND STAINLESS STEEL CLAMP FOR CONNECTION TO PIPE. SEALS SHALL BE MANUFACTURED BY KOR-N-SEAL OR APPROVED EQUAL FOR GRAVITY CONNECTIONS. MECHANICAL SEALS SHALL BE LINKSEALS AS MANUFACTURED BY THUNDERLINE, INC. FOR PRESSURE CONNECTIONS.

SEWER MANHOLES: SEWER MANHOLES SHALL BE 4" INSIDE DIAMETER WITH 30" DIAMETER HEAVY DUTY CAST IRON STRUCTURAL COVER SET TO GRADE. MANHOLES SHALL MEET THE REQUIREMENTS OF RIDOT STANDARD 4.2.0.

ACCESS MANHOLES: EACH SEPTIC TANK SHALL BE FURNISHED WITH TWO (2) 24-INCH DIAMETER MANHOLE OPENINGS AS SHOWN ON THE DRAWINGS. ALL ACCESS MANHOLES SHALL BE SET TO GRADE AS SHOWN ON THE DRAWINGS.

BUOYANCY: ANTI-FLOTATION BUOYANCY PROTECTION SHALL BE PROVIDED WHERE REQUIRED AS SHOWN ON THESE DRAWINGS.

CONCRETE STRUCTURE INSTALLATION NOTES:

LOCATION: ALL TANKS AND MANHOLES SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON THE DRAWINGS, BUT NO LESS THAN 5' FROM ANY BUILDING. TANKS SHALL BE H-20 RATED IF INSTALLED IN LOCATIONS SUBJECT TO VEHICLE TRAFFIC. TANK INVERT ELEVATION SHALL BE MAINTAINED WITHIN 10' OF SEPTIC TANK.

BASE PREPARATION: BASE PREPARATION SHALL BE AS SHOWN ON THE DRAWINGS AND SHALL CONFORM TO THE SPECIFICATIONS OF THE PRECAST STRUCTURE MANUFACTURER.

PIPING: ALL INFLUENT AND EFFLUENT PIPING SHALL BE INSTALLED AT THE LOCATION AND TO THE ELEVATION SHOWN ON THE DRAWINGS, AND ALL PENETRATIONS SHALL BE MADE WATERTIGHT.

BACKFILL: THE FINISH GRADE SHALL BE SLOPED TO DIVERT SURFACE WATER AWAY FROM MANHOLE COVERS.

TESTING: EXCEPT AS OTHERWISE DIRECTED, ALL TANKS SHALL BE SUBJECT TO AN INFILTRATION AND EXFILTRATION TEST TO PROVE THAT THEY ARE WATERTIGHT. ALL TESTING SHALL BE SCHEDULED WITH THE ENGINEER TO ALLOW FOR ENGINEER TO WITNESS TEST.

INFILTRATION TEST: TANK INTERIOR SHALL BE VISUALLY INSPECTED. THE TANK SHALL BE CONSIDERED ACCEPTABLE WHEN NO INFILTRATION OF GROUNDWATER IS OBSERVED ON THE INTERIOR OF THE TANK OVER A 24-HOUR PERIOD.

EXFILTRATION TEST: EACH TANK SHALL BE FILLED TO A LEVEL ONE (1) FOOT ABOVE THE HIGHEST JOINT AND WILL BE CONSIDERED ACCEPTABLE IF WATER LEVEL IN TANK HAS NOT DROPPED OVER A 24-HOUR PERIOD. ALTERNATIVELY, TANKS MAY BE VACUUM TESTED AT 10-INCHES OF MERCURY FOR A PERIOD OF 2-MINUTES.

SPECIFICATIONS OF SEWER PIPE:

GRAVITY SEWER PIPE: GRAVITY SEWER PIPE BETWEEN BUILDING AND TANKS SHALL BE 4" DIAMETER, SOLVENT WELDED SDR 35 PVC, AS NOTED ON THE DRAWINGS.

PRESSURE SEWER PIPE: PRESSURIZED SEWER PIPE SHALL BE SDR 21 PVC W/ RUBBER GASKETS OR POLYETHYLENE 200 PSI CTS. SEWER FORCE MAIN SHALL BE 1-¹/₂" NOMINAL DIMENSION. FITTINGS SHALL BE SDR 21 PVC W/ RUBBER GASKETS OR BRASS WITH APPROPRIATE ADAPTERS.

INSTALLATION: CONTRACTOR SHALL BEND PIPE TO ALLOWABLE RADIUS RECOMMENDED BY MANUFACTURER, OR INSTALL BEND (45 DEGREES OR LESS). PIPE SHALL BE LAID ON COMPACTED BEDDING AND COVERED WITH BEDDING MATERIAL AS SHOWN ON DETAILS.

BACKFILL: BACKFILL OF EXCAVATION SHALL BE PERFORMED WITH SUITABLE MATERIAL OR REFILLS FROM SITE EXCAVATION WITH NO PARTICLE LARGER THAN 6 INCHES, AND COMPACTED IN ACCORDANCE WITH AASHTO T 180 METHOD D TO A MINIMUM DRY DENSITY OF 90% IN 12 INCH LIFTS, UNLESS MORE STRINGENT COMPACTION STANDARDS ARE STIPULATED ELSEWHERE FOR OTHER WORK PROPOSED AT THE SITE. UNSUITABLE MATERIALS (I.E. PEAT, CLAY, ORGANIC MATTER, DEBRIS) SHALL BE REMOVED OFF SITE FOR DISPOSAL.

WATER & DRAIN CROSSINGS: SEWER PIPE SHALL CROSS 18" BENEATH WATER AND DRAIN LINES WHEN POSSIBLE, OR SHALL BE SLEEVED INSIDE AN AWWA C-900 PVC PIPE OF APPROPRIATE DIAMETER FOR SEWER PIPE TO BE INSERTED, FOR A DISTANCE OF 10' ON EACH SIDE OF WATER LINE CROSSINGS AND 25' EACH SIDE OF DRAIN CROSSINGS. EACH END OF SLEEVE SHALL BE SEALED WATERTIGHT WITH RUBBER COUPLING WITH STAINLESS STEEL CLAMPS. CONTRACTOR MAY ALSO ELECT TO ENCASE PIPE IN CONCRETE 10 FEET TO EACH SIDE OF A CROSSING.

TESTING: CONTRACTOR SHALL PERFORM A CLEAR WATER TEST ON SEWER FORCE MAIN AT 30 PSI FOR 1-HOUR.

DESIGN DATA:

THE PROPOSED FACILITY WILL HAVE A TOTAL OF 25 EMPLOYEES. IT WILL OPERATE 24 HOURS/DAY BUT TYPICALLY THERE WILL NEVER BE ANY MORE THAN 15 EMPLOYEES AT THE FACILITY AT A GIVEN TIME. DESIGN FLOW TO BE BASED ON A TOTAL OF 25 PEOPLE PER DAY.

DESIGN FLOW:

DAILY FLOW TO BE BASED ON THE FOLLOWING:

- FACILITY/INDUSTRIAL PLANT (WITHOUT CAFETERIA): 15 GPD/PERSON
- SHOWERS: 10 GPD/PERSON
- TOTAL: 25 GPD/PERSON

TOTAL DAILY DESIGN FLOW = 25 PEOPLE x 25 GPD/PERSON = 625 GPD

TEST PITS 1 & 2

WATER TABLE DEPTH: 18 INCHES

SOIL CATEGORY: 6

BOTTOMLESS SAND FILTER SIZING REQUIREMENTS

USE BSF TREATMENT CATEGORY 2 FOR BSF SIZING

LOADING RATE: 1.5 GAL/SQ. FT./DAY

MINIMUM BSF AREA REQUIRED: 625 GPD/1.5 = 417 SQ. FT.

BSF AREA PROPOSED: 30-FT (L) x 14-FT (W) = 420 SQ. FT

BSF: NUMBER OF ORIFICES & DOSING VOLUME

USE 7 LATERALS SPACED 2-FT APART ON CENTER. ORIFICES TO BE SPACED EVERY 2-FT ALONG 28'

LONG LATERALS (BSF SHALL EXTEND 1 FOOT TO ALL SIDES OF LATERALS). THERE WILL BE 15

ORIFICES PER LATERAL.

15 ORIFICES/LATERAL x 7 LATERALS = 105 TOTAL ORIFICES

PUMP DESIGN POINT : 57.8 GPM AT 36.0 FT TDH

SET MAXIMUM DOSE/ORIFICE TO 0.20 GAL/ORIFICE

DOSE VOLUME = 105 ORIFICES x 0.20 GAL/ORIFICE = 21 GAL/DOSE

625 GPD / 21 GAL/DOSE = 30 DOSES/DAY AT DESIGN FLOW RATE

PUMP CHAMBER DESIGN:

SET TIME DOSING FOR 30 DOSES/DAY

24 HOURS/DAY / 30 DOSES/DAY = 0.8 HRS/DOSE (48 MINUTES BETWEEN DOSES)

DOSE TIME: [21 GALLONS (DOSE) + 11.7 GALLONS (PIPE VOLUME)] / 57.8 GPM = 0.57 MINUTES/DOSE (34 SECONDS PER DOSE)

SEPTIC TANK CAPACITY:

SEPTIC TANK SHALL BE SIZED FOR MINIMUM 48-HOUR DETENTION TIME FOR COMMERCIAL USE.

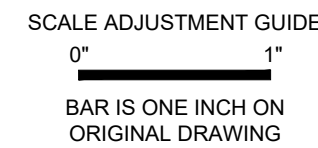
REQUIRED TANK VOLUME: 625 GPD x 2 DAYS = 1,250 GALLONS

USE 1,500 GALLON TWO COMPARTMENT PRECAST CONCRETE SEPTIC TANK

TREATMENT SYSTEM:

TWO AX-20 ADVANTEX PODS TO BE USED WITH 1,000 GALLON SINGLE COMPARTMENT PRECAST CONCRETE RECIRCULATION TANK. RECIRCULATION PUMPS TO BE TIME DOSED ACCORDING TO MANUFACTURER'S REQUIREMENTS.

TREATMENT SYSTEM SELECTION BASED ON RESIDENTIAL STRENGTH WASTEWATER, AVERAGE DAY FLOW UP TO 1,000 GPD, AND PEAK DAILY FLOW UP TO 2,000 GPD. DESIGN FLOW FOR SYSTEM IS 625 GPD.



CLEAR RIVER ENERGY CENTER
ON-SITE WASTE WATER TREATMENT SYSTEM (OWTS)
BURRILLVILLE, RHODE ISLAND



REVISIONS:	
PROJECT NO.:	15166.04
DATE:	MARCH 2017
SCALE:	AS SHOWN
DESIGNED BY:	TCJ/BMB
CHECKED BY:	BMB
DRAWN BY:	TCJ
APPROVED BY:	BMB
DRAWING TITLE:	
GENERAL NOTES	
DRAWING NO.:	
C1.0	
SHEET NO.	2 OF 6



BRANDON M. BLANCHARD

No. 8965

Brandon M. Blanchard

**REGISTERED
PROFESSIONAL ENGINEER
(CIVIL)**


3.7.17

SUBJECT NO.:	15166.0
DATE:	MARCH 20 1968
FILE:	AS NOTE
DESIGNED BY:	TCJ/BM
CHECKED BY:	BM
OWN BY:	TC
APPROVED BY:	BM
WORKING TITLE:	

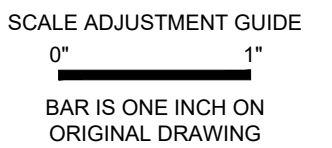
C2.0




Scale: 1"=20'



A horizontal scale bar with alternating black and white segments. It is marked with 0, 10', 20', and 40'.



BRANDON M. BLANCHARD

The seal of the State of Michigan is centered. It features a shield with an anchor, surrounded by a banner at the top and bottom. The banner at the top reads "STATE OF MICHIGAN" and the banner at the bottom reads "1820".

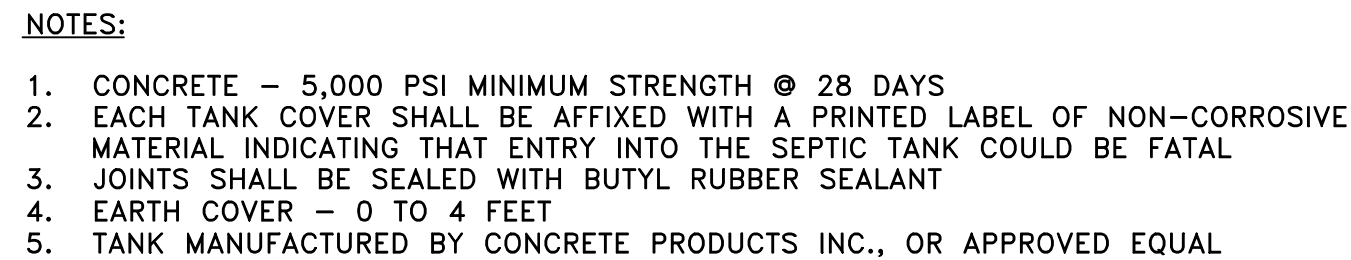
No. *Brandon M. Blanchard* 8965
3.7.17

**REGISTERED
PROFESSIONAL ENGINEER
(CIVIL)**

SUBJECT NO.:	15166.0
DATE:	MARCH 20 1968
FILE:	AS NOTE
DESIGNED BY:	TCJ/BM
CHECKED BY:	BM
OWN BY:	TC
APPROVED BY:	BM
WORKING TITLE:	

C3 1

ET NO. 4 OF 6

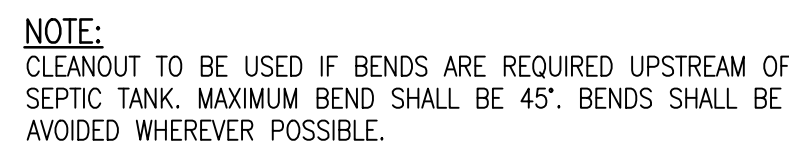


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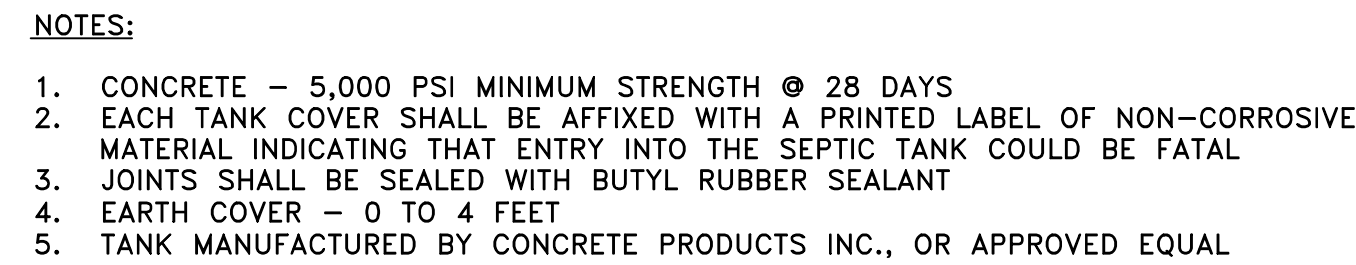


NOTE:
LeBARON FOUNDRY, INC. MODEL #LA326-1
OR APPROVED EQUIVALENT

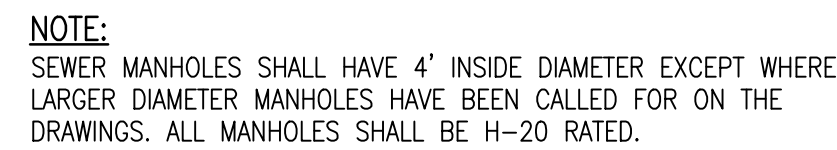
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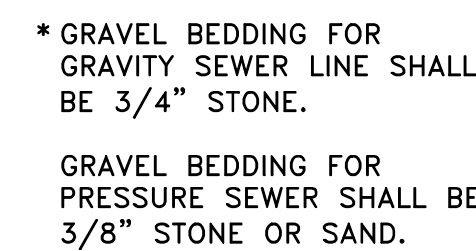
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NOT TO SCALE

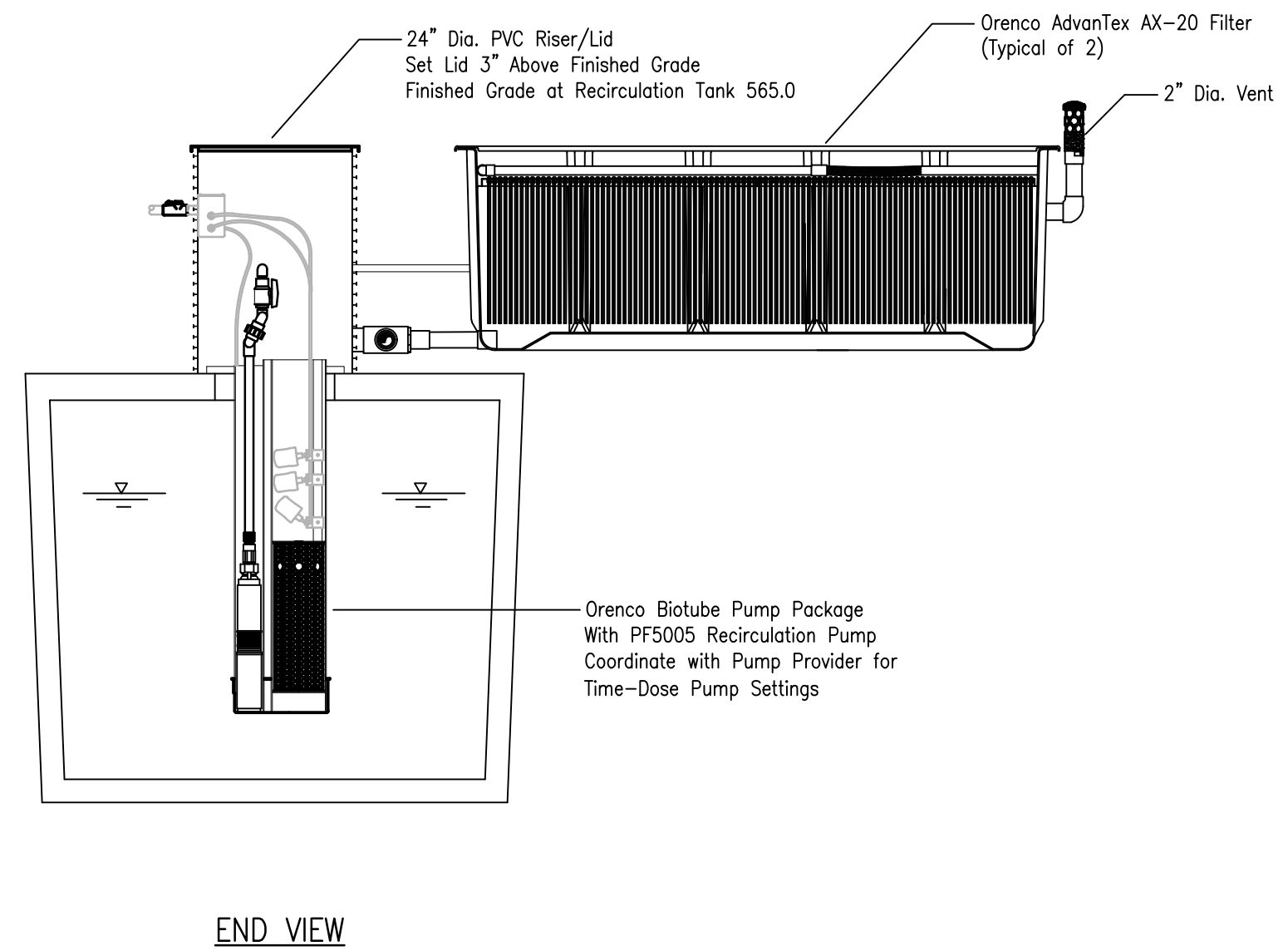
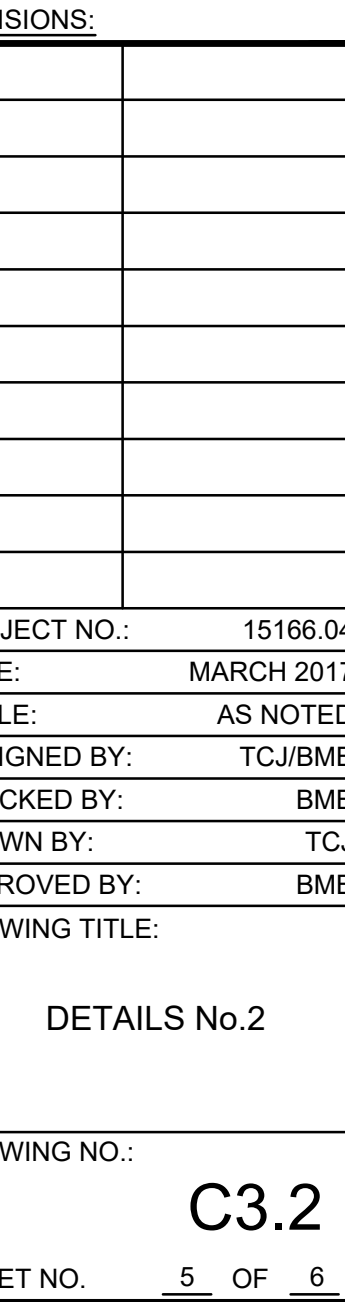
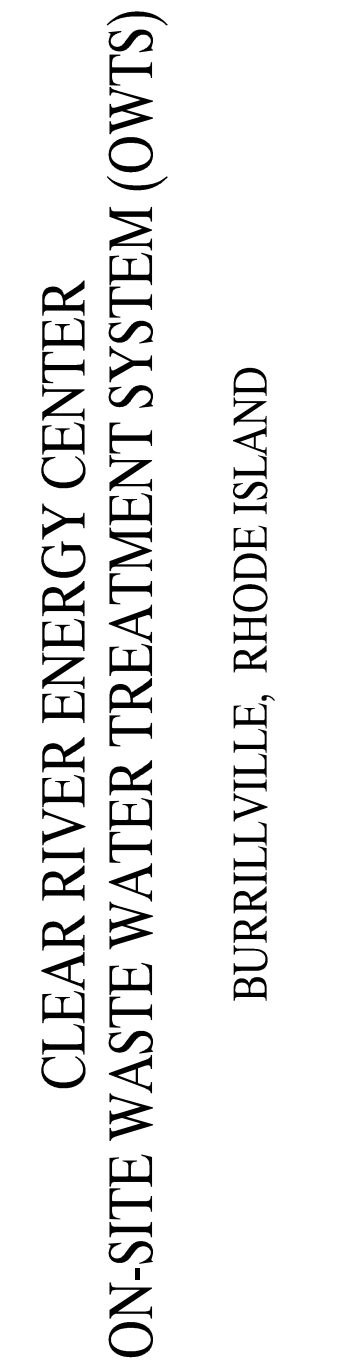


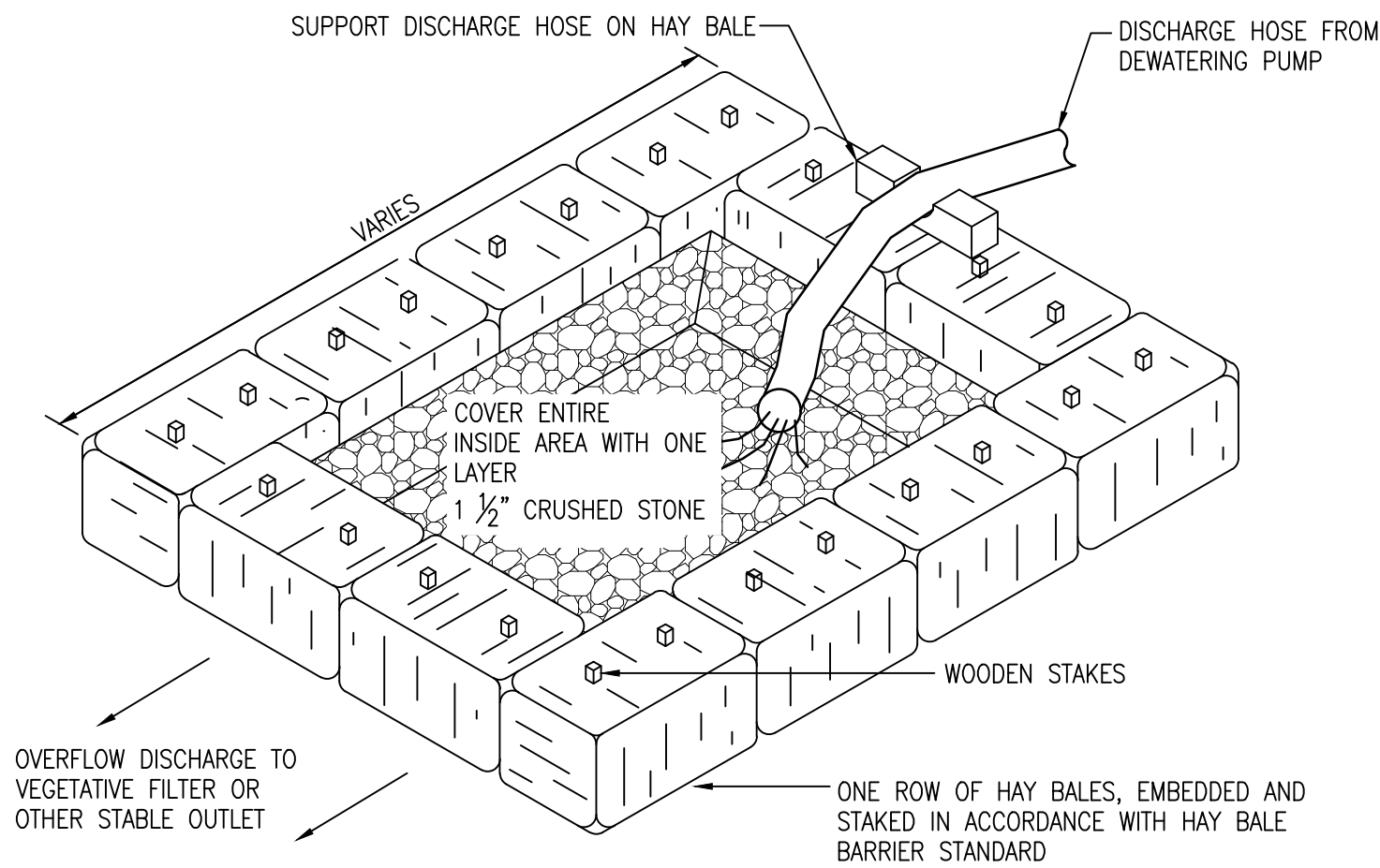
NOT TO SCALE



SOIL UNDER GRAVEL BEDDING SHALL BE
UNDISTURBED OR COMPACTED W/ SEVERAL
PASSES OF A VIBRATORY COMPACTOR _____

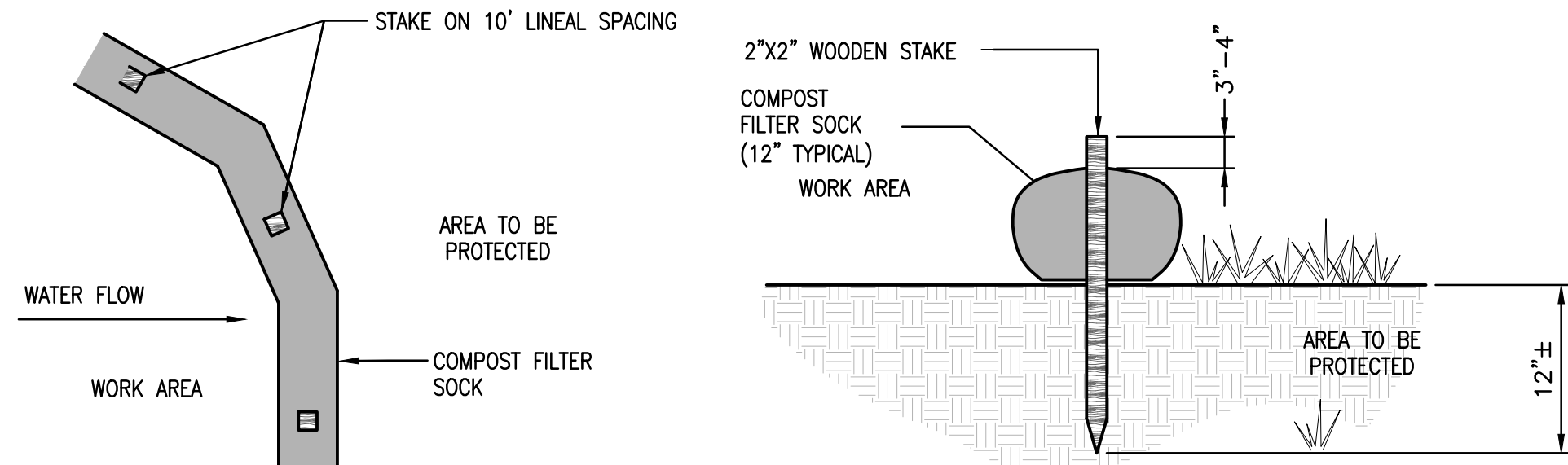
NOT TO SCALE





- NOTES:
- REQUIRED SIZE OF FILTER BASIN TO BE DETERMINED BY CONTRACTOR TO ENSURE DISCHARGE IS CLEAR OF SEDIMENT.
 - FILTER FABRIC SHALL BE USED TO LINE THE INSIDE OF THE HAY BALE BASIN AND ANCHORED BY THE WOODEN STAKES.

TYPE 1 PUMPING SETTLING BASIN
NOT TO SCALE



- NOTES:
- COMPOST/ SOIL/ ROCK/ SEED FILL TO MEET APPLICATION REQUIREMENTS.
 - COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE AS DETERMINED BY ENGINEER.

COMPOST FILTER SOCK DETAIL
NOT TO SCALE

SHEET 1 OF 2

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment System Program

Site Evaluation Form
Part A - Soil Profile Description
Application Number: 1703-0050

Property Owner: Invenergy Thermal Development, LLC
Property Location: Route 100, Wallum Lake Road, Burrillville, RI AP 137 Parcel 002
Date of Test Hole: 02-07-2017
Soil Evaluator: DiOrto, Alfred W.
Weather: Rain
Shaded: Yes ☐ No ☒ Time: 08:30

TH 1 Horizon	Depth	Horizon Boundaries	Soil Colors	Re-Dox	Texture	Structure	Consistence	Soil Category
Horizon	Dist.	Topo	Matrix	Re-Dox Features	Ab. S. Contr.			
A	0-3"	a s	2.5Y2.5/1	None	None	ls	gr	fr 3
E	3-7"	g s	10YR4/1	None	None	ls	gr	fr 3
Bw1	7-12"	g s	7.5YR2.5/2	None	None	sl	1 sbk	fr 3
Bw2	12-17"	a s	10YR3/4	None	None	sl	1 sbk	fr 3
C	17"-96"	--	2.5Y7/2	None	None	f ls	0m	fr 6

TH 2 Horizon	Depth	Horizon Boundaries	Soil Colors	Re-Dox	Texture	Structure	Consistence	Soil Category
Horizon	Dist.	Topo	Matrix	Re-Dox Features	Ab. S. Contr.			
A	0-4"	a s	7.5YR2.5/2	None	None	ls	gr	fr 3
Bw1	4-14"	g s	10YR4/4	5YR4/4	C 2 P	f sl	1 sbk	fr 3
Bw2	14-23"	g w	7.5YR4/4	5YR4/4	C 2 P	sl	1 sbk	fr 3
C	23"-96"	--	2.5Y7/2	Submerged	Submerged	f ls	0m	fr 6

TH 1 Soil Class: B Total Depth: 96" Impervious/Limiting Layer Depth: None (cg) GW Seepage Depth: 18" SHWT: 18" (cg)

TH 2 Soil Class: B Total Depth: 96" Impervious/Limiting Layer Depth: None (cg) GW Seepage Depth: 18" SHWT: 18" (cg)

Comments: Recommend the removal of all organic horizons [A and B] for OWTS design.

Revised 1/31/14

Part B

Site Evaluation - to be completed by Soil Evaluator or Class II or III Designee
Please use the area below to locate:
1. Test holes and bedrock test holes.
2. Approximate direction of due north.
3. Offsets from all test holes to fixed points such as street, utility pole, or other permanent, marked object.
*OFFSETS MUST BE SHOWN

Key:
Approximate location of test holes
Approximate location of bedrock test holes
Estimated gradient and direction of slope
Approximate direction of due north

Elevation = 560 +/- NAVD88 (Google) Slope 0-8%

- Relief and Slope: Elevation = 560 +/- NAVD88 (Google) Slope 0-8%
- Presence of any watercourse, wetlands or surface water bodies, within 200 feet of test holes? If yes, locate on above sketch.
- Restrictive Layer or Bedrock within 4' below original ground within 25 feet of test hole? Provide all test hole locations & depths above.
- Presence of existing or proposed private drinking water wells within 200 feet of test holes? If yes, locate on above sketch.
- Public drinking water wells within 500 feet of test holes? If yes, locate on above sketch.
- Is site within the watershed of a public drinking water reservoir or other critical area defined in Rule 38?
- Has soil been excavated from or fill deposited on site? If yes, locate on above sketch.
- Site's potential for flooding or ponding: NONE ☐ SLIGHT ☒ MODERATE ☐ SEVERE ☐
- Landscape position: Back slope
- Vegetation: Specimen vegetation with moderate understorey
- Indicate approximate location of property lines and roadways.
- Additional comments, site constraints or additional information regarding site: For use with OWTS design only.

Certification
The undersigned hereby certifies that all information on this application and accompanying forms, submittals and sketches are true and accurate and that I have been authorized by the owner(s) to conduct the necessary field investigations and submit this request.

Part A prepared by: Alfred W. DiOrto License # D4004
Part B prepared by: Alfred W. DiOrto License # D4004

Witnessed Soil Evaluation Decision: Concur ☐ Inconclusive ☐ Disclaim ☐
Unwitnessed Soil Evaluations Decision: Accept ☐ Inconclusive ☐ Disclaim ☐
Wet Season Determination required ☐ Additional Field Review Required ☐
Explanation:
Signature Authorized Agent: _____ Date: _____

Revised 1/31/14

Pump Selection for a Pressurized System - Commerical Project

Clear River Energy Center / New OWTS

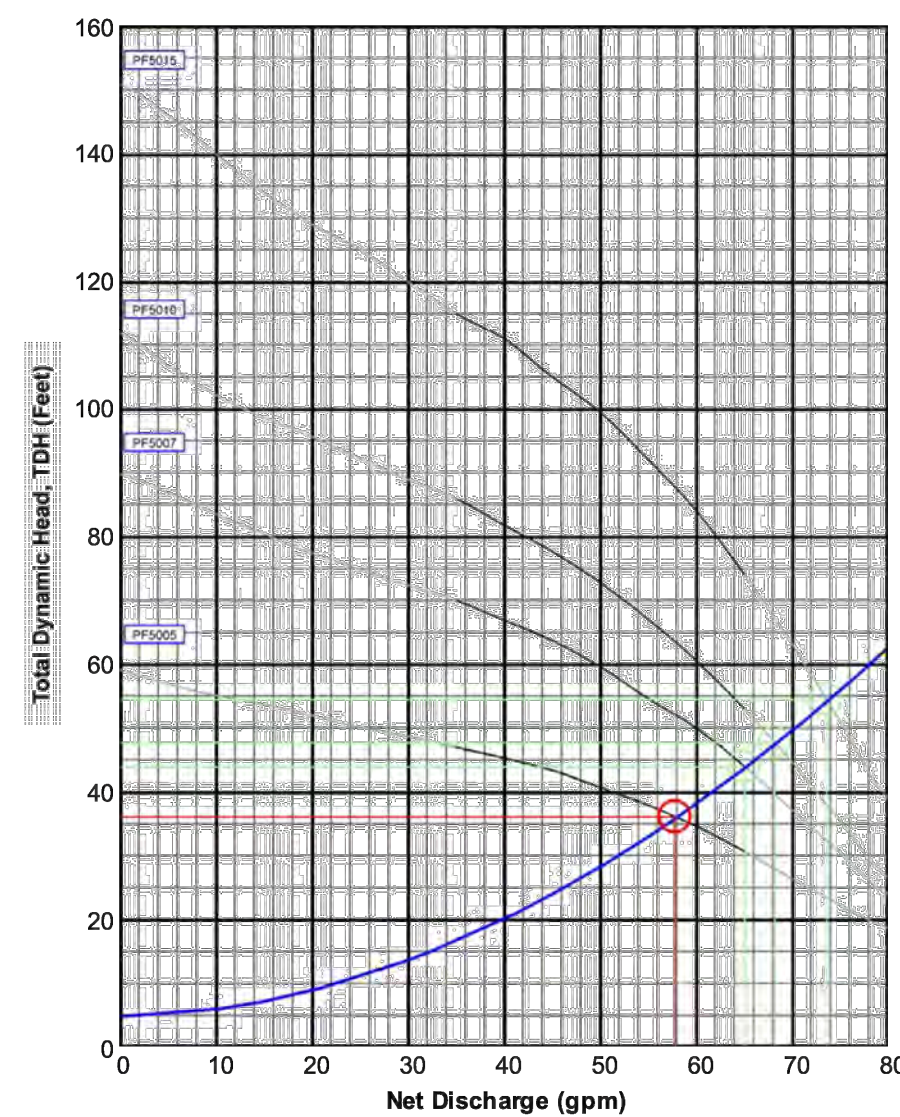
Parameters	
Discharge Assembly Size	2.00 inches
Transport Length	30 feet
Transport Pipe Class	40
Transport Line Size	1.25 inches
Distributing Valve Model	None
Max Elevation Lift	5 feet
Manifold Length	12 feet
Manifold Pipe Class	40
Manifold Pipe Size	1.00 inches
Number of Laterals per Cell	7
Lateral Length	28 feet
Lateral Pipe Class	40
Lateral Pipe Size	1.00 inches
Office Size	1/8 inches
Office Spacing	2 feet
Residual Head	6 feet
Flow Meter	None
Add-on Friction Losses	0 feet

Calculations	
Minimum Flow Rate per Office	0.55 gpm
Number of Offices per Zone	105
Total Flow Rate per Zone	57.8 gpm
Number of Laterals per Zone	7
% Flow Differential 1st/Last Office	2.3 %
Transport Velocity	12.5 fps

Frictional Head Losses	
Loss through Discharge	6.7 feet
Loss in Transport	11.2 feet
Loss through Valve	0.0 feet
Loss in Manifold	4.7 feet
Loss in Laterals	0.4 feet
Loss through Flowmeter	0.0 feet
Add-on Friction Losses	0.0 feet

Pipe Volumes	
Vol of Transport Line	2.3 gals
Vol of Manifold	0.5 gals
Vol of Laterals per Zone	8.8 gals
Total Volume	11.7 gals

Minimum Pump Requirements	
Design Flow Rate	57.8 gpm
Total Dynamic Head	36.0 feet



PumpData	
PF5005 High Head Effluent Pump	50 GPM, 1/2HP, 115/230V 1/2 60Hz, 200/230V 3/8 60Hz
PF5007 High Head Effluent Pump	50 GPM, 3/4HP, 230V 1/2 60Hz, 200/230/460V 3/8 60Hz
PF5010 High Head Effluent Pump	50 GPM, 1HP, 230V 1/2 60Hz, 200/460V 3/8 60Hz
PF5015 High Head Effluent Pump	50 GPM, 1 1/2HP, 230V 1/2 60Hz, 200V 3/8 60Hz

Legend	
System Curve	Blue line
Pump Curve	Red line
Pump Optimal Range	Green shaded area
Operating Point	Red circle
Design Point	Red circle

REVISIONS:

PROJECT NO.: 15166.04
DATE: MARCH 2017
SCALE: AS NOTED
DESIGNED BY: TCJ/BMB
CHECKED BY: BMB
DRAWN BY: TCJ
APPROVED BY: BMB
DRAWING TITLE:

DETAILS No.3