

RECEIVED
OCT 03 2019
MAURICE RIVER TWP



Division of Land Use Regulation

Division of Land Use Regulation
501-02A
PO Box 420
Trenton, NJ 08625-0420
Phone: (609) 777- 0454
Fax: (609) 777- 3656

Permit #: 0609-19-0011.1 - LGP190001
RSP Service ID#: 990874
Payment Arrangement: Exempt
Paid Online: N/A
Paid On: N/A
Paid Amt: N/A

This Authorization form is requested to be located at the regulated construction site at all times and be available for inspection by any authorized representative of the New Jersey Department of Environmental Protection. If you have designated an agent, it is your responsibility to notify your agent about this General Permit by Certification and its requirements.

**AUTHORIZATION TO CONSTRUCT
GP24 - Malfunctioning Septic**

Property Owner

Jason Honaker
Us Bank Trust C/O Resicap
3630 Peachtree Rd Ne
Suite 1500
ATLANTA, GA 30326

Applicant

Lynn Perryman
Perrymans Excavating
7117 Millville Mays Landing Rd
Milmay, NJ 08340

Project Name & Location

Lynn Perryman
15 Mackeys Lane
Maurice River Twp, NJ 08327

Maurice River Twp / Cumberland

<u>County</u>	<u>Municipality</u>	<u>Block</u>	<u>Lot</u>
Cumberland	Maurice River Twp	289.01	15

Electronically certified online by the responsible party LISA M ROMEO on 10/07/2019.

Issuance Date	Effective Date of Authorization	Expiration Date
10/07/2019	10/07/2019	10/06/2024

Your Request for Authorization under Land Use Regulation General Permit by Certification No. 0609-19-0011.1 - LGP190001 has been approved by the New Jersey Department of Environmental Protection (Department).

Diane Dow, Director
Division of Land Use Regulation
New Jersey Department of Environmental Protection

Date: 10/07/2019

General Permit by Certification (GPBC) Conditions

- . The Department will monitor and require strict compliance with the terms of this permit. Any noncompliance with this authorization constitutes a violation of this chapter and is grounds for enforcement action under N.J.A.C. 7:7A-22.
- . If the permittee undertakes any regulated activity authorized under this permit, such action shall constitute the permittee's acceptance of the permit in its entirety, as well as the permittee's agreement to abide by the permit and all conditions therein. [N.J.A.C. 7:7A-20.2(b)]
- A. Conditions that apply to this permit:
 - 1. The issuance of a permit shall in no way expose the State of New Jersey or the Department to liability for the sufficiency or correctness of the design of any construction or structure(s). Neither the State nor the Department shall, in any way, be liable for any loss of life or property that may occur by virtue of the activity or development conducted as authorized under this permit. [N.J.A.C. 7:7A-20.2(c)1]
 - 2. The issuance of this permit does not convey any property rights or any exclusive privilege. [N.J.A.C. 7:7A-20.2(c)2]
 - 3. The permittee shall obtain all applicable Federal, State, and local approvals prior to commencement of regulated activities authorized under this permit. [N.J.A.C. 7:7A-20.2(c)3]
 - 4. If the permittee is proposing permittee proposing soil disturbance, the creation of drainage structures, or changes in natural contours, the permittee shall obtain any required approvals from the Soil Conservation District or designee having jurisdiction over the site. [N.J.A.C. 7:7A-20.2(c)4]
 - 5. If the permittee is proposing excavation or dredging, the permittee shall use an acceptable disposal site for the excavated or dredged material. No material shall be deposited or dewatered in freshwater wetlands, transition areas, State open waters or other environmentally sensitive areas. The Department may require testing of dredged material if there is reason to suspect that the material is contaminated. If any dredged material is contaminated with toxic substances, the dredged material shall be removed and disposed of in accordance with Department-approved procedures. [N.J.A.C. 7:7A-5.7(b)10]
 - 6. The permittee shall take all reasonable steps to prevent, minimize, or correct any adverse impact on the environment resulting from activities conducted pursuant to the permit, or from noncompliance with the permit. [N.J.A.C. 7:7A-20.2(c)5]
 - 7. The permittee shall immediately inform the Department of any unanticipated adverse effects on the environment not described in the application or in the conditions of the permit. The Department may, upon discovery of such unanticipated adverse effects, and upon the failure of the permittee to submit a report thereon, notify the permittee of its intent to suspend the permit, pursuant to N.J.A.C. 7:7A-20.8. [N.J.A.C. 7:7A-20.2(c)6]
 - 8. The permittee shall immediately inform the Department by phone at (877)927-6337 (Warn DEP Hotline) of any noncompliance that may endanger public health, safety, and welfare, or the environment. The permittee shall inform the Div. of Land Use Regulation by phone at (609)292-

0060 of any other noncompliance within 2 working days of the time the permittee becomes aware of the noncompliance, and in writing within 5 working days of the time the permittee becomes aware of the noncompliance. Such notice shall not serve as a defense to enforcement action if the project is found to be in violation. The written notice shall include: (i) a description of the noncompliance and its cause; (ii) the period of noncompliance, including exact dates and times; (iii) if the noncompliance has not been corrected, the anticipated length of time it is expected to continue; and (iv) the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. [N.J.A.C. 7:7A-20.2(c)7]

9. Any noncompliance with this permit constitutes a violation and is grounds for enforcement action under N.J.A.C. 7:7A-22, as well as, in the appropriate case suspension and/or termination if the permit. [N.J.A.C. 7:7A-20.2(c)8]
10. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the authorized activity in order to maintain compliance with the conditions of this permit. [N.J.A.C. 7:7A-20.2(c)9]
11. The permittee shall employ appropriate measures to minimize noise where necessary during construction, as specified in N.J.S.A. 13:1G-1 et seq., and N.J.A.C. 7:29. [N.J.A.C. 7:7A-20.2(c)10]
12. The issuance of this permit does not relinquish the State's tidelands ownership or claim to any portion of the subject property or adjacent properties. [N.J.A.C. 7:7A-20.2(c)11]
13. The issuance of a permit does not relinquish public rights to access and use tidal waterways and their shores. [N.J.A.C. 7:7A-20.2(c)12]
14. The permittee shall allow an authorized representative of the Department, upon the presentation of credentials, to: (i) enter upon the permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of the permit; (ii) have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit; and (iii) inspect, at reasonable times, any facilities, equipment, practices, or operations regulated or required under the permit. Failure to allow reasonable access shall be considered a violation and subject the permittee to enforcement action under N.J.A.C. 7:7A-22. [N.J.A.C. 7:7A-20.2(c)13]
15. The permittee shall not cause or allow any unreasonable interference with the free flow of a regulated water by placing or dumping any materials, equipment, debris or structures within or adjacent to the channel while the regulated activity(ies) is being undertaken. Upon completion of the regulated activity(ies), the permittee shall remove and dispose of in a lawful manner all excess materials, debris, equipment, and silt fences and other temporary soil erosion and sediment control devices from all regulated areas. [N.J.A.C. 7:7A-20.2(c)14]
16. The permittee and its contractors and subcontractors shall comply with all conditions, site plans, and supporting documents associated with this permit. [N.J.A.C. 7:7A-20.2(c)15]
17. All conditions, site plans, and supporting documents approved by this permit shall remain in full force and effect so long as the proposed development or any portion thereof is in existence, unless the permit is modified pursuant to N.J.A.C. 7:7A-20.6. [N.J.A.C. 7:7A-20.2(c)16]
18. The permittee shall record the permit, including all conditions listed herein, with the Office of the County Clerk (the Registrar of Deeds and Mortgages, if applicable) of the county in which the site

Division of Land Use Regulation

is located. The permit shall be recorded within 30 calendar days of receipt by the permittee. Upon completion of all recording, a copy of the recorded permit shall be forwarded to the Div. of Land Use Regulation at the address set forth at N.J.A.C. 7:7A-1.4. [N.J.A.C. 7:7A-20.2(c)17]

19. If the permit by certification or any condition or permit is determined to be legally unenforceable, modifications and additional conditions may be imposed by the Department as necessary to protect public health, safety, and welfare, or the environment. [N.J.A.C. 7:7A-20.2(c)19]
20. A copy of the permit, all site plans, and supporting documents shall be maintained at the site at all times and made available to Department representatives or their designated agents immediately upon request. [N.J.A.C. 7:7A-20.2(c)21]
21. This permit can be suspended or terminated by the Department for cause. [N.J.A.C. 7:7A-20.2(c)24]
22. Where the permittee becomes aware that they failed to submit any relevant facts in the application, or submitted incorrect information in the application or in any report to the Department, the permittee shall promptly submit such facts or information. [N.J.A.C. 7:7A-20.2(c)26]
23. The permittee shall submit written notification to the Bureau of Coastal and Land Use Compliance and Enforcement, 401 East State Street, 4th Floor, P.O. Box 420, Mail Code 401-04C, Trenton, NJ 08625, at least three working days prior to the commencement of site preparation or of regulated activities, whichever comes first. [N.J.A.C. 7:7A-20.2(c)27]
24. Any person aggrieved by this decision may, in accordance with N.J.A.C. 7:7A-21. request an adjudicatory hearing within 30 calendar days after public notice of the decision is published in the DEP Bulletin. If a person submits the request after this time, the request will be denied. [N.J.A.C. 7:7A-21.1(b)]
25. This permit is valid for five years from the date of issuance and cannot be extended. If the permittee wishes to commence or continue the regulated activities after the expiration date of the authorization, the permittee must apply for and obtain a new authorization or permit. [N.J.A.C. 7:7A-5.5]

Permit Details

The authorized GPBC24 activity allows for the filling of 0 acres of freshwater wetlands and 0.1190 of transition area for the repair or modification of a malfunctioning septic.

Certifications

The permittee certified that in accordance with N.J.A.C. 7:7A 17 that they have provided all necessary notices to the public that they are applying for a Division of Land Use Permit. Permittee will maintain and upon request provide a copy of this proof of notice.

The permittee certified that they have written permission from the property owner that they can make this application with the Department of Environmental Protection. Permittee will maintain and provide upon request a copy of this written permission.

The permittee certified that in accordance with N.J.A.C. 7:7A-6.2(b), that the project is necessary for the repair or modification of a malfunctioning individual subsurface sewage disposal system in a freshwater wetland and/or transition area. Per N.J.A.C. 7:7A-5.25(b), for the purpose of the freshwater wetland General Permit by Certification 24.

The permittee certified that the project will not disturb State open waters. Per N.J.A.C. 7:7A-6.2(a) and (a)2, a freshwater wetland General Permit by Certification 24 does not authorize activities in State open waters.

The permittee certified that all activities under General Permit by Certification 24 will result in no more than one-quarter acre of overall disturbance including freshwater wetlands, transition areas and "non-regulated" areas. For this purpose, "disturbance" includes all temporary and permanent activities including but not limited to grading, filling, removal of vegetation, excavating, placement of structures or any other regulated activities specified at N.J.A.C. 7:7A-2.2 and N.J.A.C. 7:7A-2.3.

The permittee certified that the proposed septic system will be located on the same property where the malfunctioning system is currently located in accordance with N.J.A.C. 7:7A-6.2(a)1.

The permittee certified that in accordance with N.J.A.C. 7:7A-6.2(a)4ii, that the proposed repairs and modifications are not directly or indirectly caused by an expansion or change in use of the facility that the septic system serves and that the repairs and modifications are limited to serve only the volumes of sewage that were approved prior to the malfunction. Per N.J.A.C. 7:7A-6.2(a)4ii, the Department shall not authorize activities under GPBC 24 if the need for repair or modification is directly or indirectly caused by an expansion of the facility the individual subsurface sewage disposal system serves, or by a change in its use, including a change from disuse or abandonment to any type of use. The addition of a bedroom, bathroom, new living quarters or a change from residential to commercial are some examples of activities that constitute a change in use. Any repair or modification of the system shall be limited to serve only those volumes of sanitary sewage, estimated in accordance with N.J.A.C. 7:9A-7.4, that were approved prior to the malfunction in accordance with N.J.A.C. 7:7A-6.2(a)3.

The permittee certified that the malfunctioning septic system services a structure that is currently habitable. Per N.J.A.C. 7:7A-6.2, the Department shall not authorize activities under General Permit-by-Certification 24 if the need for repair or modification to the septic system is a result of the change from disuse or abandonment to any type of use.

The permittee certified that in accordance with N.J.A.C. 7:7A-6.2(a)4, he/she has obtained and will retain a letter, from the local board of health that has jurisdiction over the septic system of concern, that states all of the following:

1. The proposed activities are authorized under, and comply with, the Department's Standards for Individual Subsurface Sewage Disposal Systems at N.J.A.C. 7:9A; and
2. The proposed activities are not directly or indirectly caused by an expansion of the facility the individual subsurface sewage disposal system serves, or a change in its use including a change from disuse or abandonment to any type of use; and
3. There is no alternative location on the site that:
 - a. Has a seasonal high-water table deeper than one and one-half feet below the existing ground surface; and
 - b. Can be used for a subsurface sewage disposal system.

The permittee certified that the project site is not under the jurisdiction of the NJ Sports and Exposition Authority (formerly Hackensack Meadowlands Development Commission) pursuant to N.J.S.A. 13:17.1 et seq.

The permittee certified that the project will not alter land cover or topography in a flood hazard area, or result in the clearing, cutting and/or removing vegetation within a riparian zone, both of which are regulated by the Flood Hazard Area Control Act rules, in accordance with N.J.A.C. 7:13-2.4a and may be prohibited or restricted in some cases. A flood hazard area permit is required prior to undertaking any regulated activity within a flood hazard area or riparian zone described at N.J.A.C. 7:13-2.3. Some projects may qualify for a permit-by-rule at N.J.A.C. 7:13-7. All other projects must receive an authorization under a general permit under N.J.A.C. 7:13-8 or an individual permit under N.J.A.C. 7:13-9. Projects situated entirely outside both the flood hazard area and riparian zone do not require a flood hazard area approval.

The permittee certified that if the proposed project area is disturbed and/or filled as a result of obtaining this GPBC, that the authorized project will also be constructed. This is required in order to ensure that regulated areas are not filled to eliminate a natural resource or to avoid regulation as required pursuant to N.J.A.C. 7:7A-5.7(b)1.

The permittee certified certify that the proposed project is not in the proximity of a public water supply intake in accordance with N.J.A.C.7:7A-5.7(b)2.

The permittee certified that the proposed project will not destroy, jeopardize, or adversely modify a present or documented habitat for threatened or endangered species in accordance with N.J.A.C.7:7A-5.7(b)3.

The permittee certified that the proposed project will not occur in a component of either the Federal or State Wild and Scenic River System or within a river that has been officially designated by Congress or the State Legislature as a "study river" in accordance with N.J.A.C.7:7A-5.7(b)4.

The permittee certified that the proposed project will not adversely affect properties that are listed or are eligible for listing on the New Jersey or National Register of Historic Places in accordance with N.J.A.C.7:7A-5.7(b)5.

The permittee certified that the proposed project will not take place within in a vernal habitat, as defined at N.J.A.C. 7:7A-1.4, or in a transition area adjacent to a vernal habitat in accordance with N.J.A.C.7:7A-5.7(b)16.

The permittee certified that no part of the project area is within an existing Conservation Easement or area subject to any deed restriction.

The permittee certified that the total combined area of wetlands, State open waters and transition areas disturbed or modified on site under any previously issued freshwater wetland general permits (including this approval) specified in N.J.A.C. 7:7A-5.4(a)2 will not exceed one acre. N.J.A.C. 7:7A-5.4(a)2 states that the total combined area of wetlands, State open waters and transition area disturbed or modified on the site under general permits 2, 6, 6A, 7, 8, 10A, 10B, 11, 12, 13, 14, 17, 17A, 18, 19, 21, 23, 24, 25, and GPBC 8 and 24 cannot exceed one acre. Limited exceptions to this are listed at N.J.A.C. 7:7A-5.4(a)2i-iv.

Re: US Bank Trust
c/o RESICAP
3630 Peachtree Road NE, Suite 1500
Atlanta, GA 30326

Dear Interested Party:

This letter is to provide you with legal notification that an application for an authorization under freshwater wetlands general permit 24 has been submitted to the New Jersey Department of Environmental Protection, Division of Land Use Regulation for the development shown on the enclosed plan. A brief description of the proposed project follows:

**REPLACE MALFUNCTIONING SEPTIC SYSTEM AT:
15 MACKEYS LANE, MAURICE RIVER TOWNSHIP**

The complete permit application package can be reviewed at either the municipal clerk's office in the municipality in which the site subject to the application is located, or by appointment at the Department's Trenton Office. The Department of Environmental Protection welcomes comments and any information that you may provide concerning the proposed development and site. Please submit your written comments within 30 calendar days of the date to the Department publishes notice of the application in the DEP Bulletin (<http://www.nj.gov/dep/bulletin/>) :

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, New Jersey 08625
Attn: Cumberland Supervisor

If you have questions about my application, you can contact me or my agent, address(es) below.

Sincerely,

US Bank Trust
c/o RESICAP
3630 Peachtree Road NE, Suite 1500
Atlanta, GA 30326

Agent:
Eric Johnson
Johnson Design Associates, Inc.
722 Wood Street
Vineland, NJ 08360
(856) 691-9623

NAME	LAST	FIRST	MIDDLE
 JOHNSON ENGINEERING & DESIGN • SOIL TESTING GEOTECHNICAL • FOUNDATION ANALYSIS 1730 WEST 10TH AVE. • SUITE 100 WEST LINCOLN, MISSOURI			
REPO DESIGN PERMANENT EROSION CONTROL LOT 15, BLOCK 399 D MAINTENANCE TOWNSHIP CLATSOP COUNTY, OREGON			
BRIAN N. MYERS PROJECT MANAGER 1000 1/2 N. 10TH AVE. TULSA, OKLA. 74103 (918) 438-1111			
DATE	SCALE	PROJECT	DATE
10/27/93	AS SHOWN	9301	10/27/93
DESIGNED	240		
19382-E		11/5/93 11/13	11/13

Sep. 30. 2019 4:46PM

No. 2076 P. 1

**Cumberland County Department of Health**

309 Buck Street • Millville, NJ 08332

(856) 327-7602 • www.ccdoh.org

September 30, 2019

RECEIVED

Johnson Design Associates
722 Wood Street
Vineland, NJ 08360

OCT - 1 2019

Initial: _____

Re: ISDS alteration for 15 Mackeys Lane, Maurice River Township
Block 289.01, Lot 15

Dear Engineer:

An official review of the above application to construct an individual subsurface sewage disposal system (ISDS) for an alteration to a malfunction was performed by this office. As such, the following comments are provided in compliance with NJAC 7:7A-6.2(a)4.:

1. The proposed activities under NJAC 7:9A-3.3(d) are approved pending receipt of the New Jersey Department Environmental Protections GP24 Wetland Permit.
2. The proposed alteration is authorized under and comply with the Departments Standards for ISDS systems, NJAC 7:9A
3. The alteration is proposed to correct the malfunction of the existing ISDS. The proposed activities are not directly or indirectly caused by an expansion of the facility the ISDS serves or a change in use.
4. Due to site constraints, there is no alternative location on the site that has a seasonal high water table deeper then one and one half feet below the existing ground surface or can be used for a subsurface sewage disposal system.

Please submit the approved GP24 permit to this office upon receipt so that we may expedite the approval documents. Please contact me as soon as possible if you have any questions regarding this request.

Thank you for your cooperation,

A handwritten signature in black ink, appearing to read 'Crystal L. Brown'.

Crystal L. Brown
Registered Environmental Health Specialist

C: Perrymans Excavating



Cumberland County Department of Health

309 Buck Street • Millville, NJ 08332

(856) 327-7602 • www.cshealth.org

APPLICATION FOR PERMIT TO CONSTRUCT/ALTER/REPAIR AN INDIVIDUAL SUBSURFACE SEWAGE DISPOSAL SYSTEM

Form 1—General Information

1. Type of Permit Needed (Check and Fill-in applicable categories):

- ☐ a. New Construction
- ☐ b. Alteration/ No Expansion or Change in Use
- ☐ c. Alteration/Expansion or Change in Use
- ☐ d. Alteration/Malfunctioning System
- ☐ e. Repair (in-kind replacement)/ Malfunctioning system
- ☐ f. Repair (in-kind replacement)/ System is not malfunctioning
- ☐ g. Deviation from Standards
- ☒ h. New system installed (existing structure)

2. Location of Project:

Municipality Maurice River Township Block No. 289.01 Lot No. 15
Street Address 15 Mackeys Lane Zip

3. Name of Applicant (print): Perrymans Excavating

4. Applicant's Present Address: 7117 Millville Mays Landing Road, Millmay, NJ 08340

5. Applicant's Phone Number: (856) 825-2810

6. Type of Facility:

- ☒ Residential
- ☐ Commercial/Institutional
- ☐ Specify Type of Establishment:

7. Type of Wastes to be Discharged:

- ☒ Sanitary Sewage
- ☐ Industrial Wastes
- ☐ Other-Specify Type:

8. If (d) or (e) in #1 above are checked, indicate the type of malfunction and its cause
(check all that apply):

- ☐ Contamination of nearby well/surface water bodies by sanitary sewage/effluent
- ☐ Ponding/breakout of sanitary sewage/effluent onto the surface of the ground
- ☐ Seepage of sanitary sewage/effluent into portions of building below ground
- ☐ Back-up of sanitary sewage into the building served, which is not caused by a physical blockage of the internal plumbing
- ☐ Any manner of leakage observed from components that are not designed to emit sanitary sewage/effluent.
- ☐ Direct discharges to ground water (no zone of treatment)

Describe the cause of the malfunction: _____

9. Please expand on Question #1, above, by checking if any of the following apply:
- ☐ A privy, outhouse, latrine or pit toilet is present, a system must be installed
 - ☐ A system must be upgraded as part of a real property transfer
 - ☐ A cesspool has been identified during a real property transfer and a conforming system must be installed
 - ☐ A malfunctioning cesspool has been identified and a conforming system must be installed.

10. Other Approvals/Certification/Waivers/Exemptions (Attach to Application):

- ☐ Pinelands Commission
- ☐ Highlands Water Protection and Planning Act
- ☐ U.S. Army Corps of Engineers
- ☐ NJDEP-Bureau of Flood Plain Management
- ☐ Septic System Designer (NJ Engineer) Certification
- ☐ Other-Specify: _____

11. I hereby certify that the information furnished on Form 1 of this application is true. I am aware that false swearing is a crime in this State and subject to prosecution.

Signature of Applicant

Eric Brown *frappe* Date *10/7/19*

FOR AGENCY USE ONLY

☐ Application Denied—Reason for Denial/Citation of Rules Violated: _____

☐ Application Approved

☐ Application Approved Subject to Approval by NJDEP

Date of Action _____ Signature of Authorized Agent _____

Name and Title _____



Cumberland County
Public Health

Cumberland County Department of Health
309 Buck Street • Millville, NJ 08332
(856) 327-7602 • www.cshealth.org

APPLICATION FOR PERMIT TO CONSTRUCT/ALTER/REPAIR AN INDIVIDUAL
SUBSURFACE SEWAGE DISPOSAL SYSTEM MAURICE

Form 2a-General Site Evaluation Data for Municipality RIVER Block 289.01 Lot 15

1. Name of Site Evaluator (print): Eric W. Johnson

2. Business Address of Site Evaluator: 722 Wood Street, Vineland, NJ 08360

3. Business Phone Number of Site Evaluator: 856-691-9623

4. Special Site Limitations Identified (Check appropriate Categories):
☐ Flood Plains ☐ Bedrock Outcrops ☐ Wetlands
☐ Excessively Stony ☐ Disturbed Ground ☐ Sink Holes
☐ Sand Dunes ☐ Steep Slopes
☐ Other—Specify _____

5. Soil Logs—Enter on Form 2b—Use one sheet for each soil log.

6. Considerations Relating to Disturbed Ground:
a) Type of Disturbance (Check appropriate categories):
☐ Filled Area ☐ Excavated Area ☐ Re-graded Area
☐ Subsurface Drains ☐ Other—Specify _____
b) Existing Ground Surface
Elevation Relative to Ground Surface _____
Method of Identification _____
c) Suitability of Disturbed Ground
☐ Unsuitable: Objects Subject to Disintegration or Change in Volume
☐ Excessively Coarse
☐ Proctor Test performed: % Standard Proctor Density = _____

7. Hydraulic Head Test:
a) Hydraulically Restrictive Horizon: Depth Top to Bottom _____
b) Piezometer A: Depth to Bottom _____ Depth of Water Level (24 hrs) _____
c) Piezometer B: Depth to Bottom _____ Depth of Water Level (24 hrs) _____
d) Witnessed by _____ Signature _____ Date _____

8. Attachments (Check items included):
☒ Site Plan
☒ Key Map: Location of Site on U.S.G.S. Quadrangle or Other Accurate Map
☒ Key Map: Location of Site on U.S.D.A. Soil Survey Map
☒ Other-Specify FILTER SPEC'S, PUMP SPEC'S, BUOYANCY CALC'S

9. I hereby certify that the information furnished on Form 2a of this application (and the attachments thereto) is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Soil Evaluator Eric W. Johnson Date _____

Signature of Professional Engineer B. Bulm License # 24GE04375300



Cumberland County Department of Health
309 Buck Street • Millville, NJ 08332
(856) 327-7602 • www.cshealth.org

APPLICATION FOR PERMIT TO CONSTRUCT/ALTER/REPAIR AN INDIVIDUAL
SUBSURFACE SEWAGE DISPOSAL SYSTEM

Form 2b-Soil Log and Interpretation for Municipality MAURICE RIVER Block 287.01 Lot 15

1. Log Number 1 Method (Check One): ☒ Profile Pit ☐ Boring

2. Soil Log:

Depth (inches) Top-Bottom

Munsell Color, Name and Symbol; Estimated Textural Class; Estimated Volume

% Coarse Fragment (if present); Structure; Moist or Dry Consistence;

Mottling-Abundance, Size and Contrast (if present)

SEE DWG.

3. Ground Water Observations:

☒ Seepage-Indicate Depth 48"
☐ Pit/Boring Flooded-Depth after Hours:

4. Soil Limiting Zones (Check Appropriate Categories):

☐ Fractured Rock Substratum-Depth to Top
☐ Massive Rock Substratum-Depth to Top
☐ Excessively Coarse Horizon-Depth Top to Bottom
☒ Excessively Coarse Substratum-Depth to Top 72"
☐ Hydraulically Restrictive Horizon-Depth Top to Bottom
☐ Hydraulically Restrictive Substratum-Depth to Top
☐ Perched Zone of Saturation-Depth Top to Bottom
☒ Regional Zone of Saturation-Depth to Top 25"

5. Soil Suitability Classification: II W

6. I hereby certify that the information furnished on Form 2b of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator Eugene Bulmer Date

Signature of Professional Engineer Eugene Bulmer License # 24GE04375300



Cumberland County
Public Health

Cumberland County Department of Health
309 Buck Street • Millville, NJ 08332
(856) 327-7602 • www.cshealth.org

APPLICATION FOR PERMIT TO CONSTRUCT/ALTER/REPAIR AN INDIVIDUAL
SUBSURFACE SEWAGE DISPOSAL SYSTEM

Form 2b-Soil Log and Interpretation for Municipality MAURICE RIVER Block 289.01 Lot 15

1. Log Number 2 Method (Check One): ☒ Profile Pit ☐ Boring
2. Soil Log:

Depth (inches) Top-Bottom
Munsell Color, Name and Symbol; Estimated Textural Class; Estimated Volume
% Coarse Fragment (if present); Structure; Moist or Dry Consistence;
Mottling-Abundance, Size and Contrast (if present)

SEE DWG.

3. Ground Water Observations:

☒ Seepage-Indicate Depth 48"
☐ Pit/Boring Flooded-Depth after Hours:

4. Soil Limiting Zones (Check Appropriate Categories):

☐ Fractured Rock Substratum-Depth to Top
☐ Massive Rock Substratum-Depth to Top
☐ Excessively Coarse Horizon-Depth Top to Bottom
☒ Excessively Coarse Substratum-Depth to Top 71"
☐ Hydraulically Restrictive Horizon-Depth Top to Bottom
☐ Hydraulically Restrictive Substratum-Depth to Top
☐ Perched Zone of Saturation-Depth Top to Bottom
☒ Regional Zone of Saturation-Depth to Top 27"

5. Soil Suitability Classification: II Wt

6. I hereby certify that the information furnished on Form 2b of this application is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator Eugene Bahr Date

Signature of Professional Engineer Eugene Bahr License # 24GE04375300



Cumberland County Department of Health
309 Buck Street • Millville, NJ 08332
(856) 327-7602 • www.cshealth.org

APPLICATION FOR PERMIT TO CONSTRUCT/ALTER/REPAIR AN INDIVIDUAL
SUBSURFACE SEWAGE DISPOSAL SYSTEM

Form 3a: Soil Permeability Data for Municipality MAURICE RIVER Block 289.01 Lot 15

Assign a number for each test and a letter for each test replicate. Show test data and calculations on Form 3b, 3c, 3d, 3e, 3f or 3g. Use one sheet for each separate test or test replicate.

1. Summary of Data—Enter data for each test replicate on a separate line.

Type of Test	Test (number)	Replicate (letter)	Depth (inches)	Result*
<i>SELECT FILL</i>	<i>(TO BE TESTED)</i>			

* For tube permeameter, pit-bailing and piezometer tests report results in inches/hour. For soil permeability class rating give soil permeability class number. For percolation test report result in minutes/inch. For basin flooding test report result as positive if basin drains completely within 24 hours after second filing, negative otherwise.

2. Design Permeability/Percolation Rate: Specify Test Number _____

☐ Average of Test Replicates ☐ Single Replicate ☐ Slowest of Replicates

Type of Limiting Zone Identified	Test Number

4. Attachments (Check items included):

- ☐ Form 3b-Tube Permeameter Test Data-Number of Sheets _____
- ☐ Form 3c-Soil Permeability Class Rating Test Data-Number of Sheets _____
- ☐ Form 3d-Percolation Test Data-Number of Sheets _____
- ☐ Form 3e-Pit-Bailing Test Data-Number of Sheets _____
- ☐ Form 3f-Piezometer Test Data-Number of Sheets _____
- ☐ Form 3g-Basin Flooding Test Data-Number of Sheets _____

5. I hereby certify that the information furnished on Form 3a of this application (and the attachments thereto) is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Soil Evaluator *Eugene Butler* Date _____
Signature of Professional Engineer *Butler* License # 24GE04375300



Cumberland County Department of Health
309 Buck Street • Millville, NJ 08332
(856) 327-7602 • www.ccdoh.org

APPLICATION FOR PERMIT TO CONSTRUCT/ALTER/REPAIR AN INDIVIDUAL
SUBSURFACE SEWAGE DISPOSAL SYSTEM

Form 4: General Design Data for Municipality MAURICE RIVER Block 289.01 Lot 15

1. Volume of Sanitary Sewage, gal. 500

☒ Residential: No. of Dwelling Units 1 Total No. of Bedrooms 3
☐ Commercial/Institutional-Indicate type of establishment and show method of calculation. If estimate is based on water meter data, indicate source of data, frequency of readings, average daily flow, and maximum recorded daily reading _____

2. Alterations or Repairs

a) Reason for Alteration or Repair (Check appropriate categories):
☐ Expansion or Change in Use ☒ Upgrade Existing Facilities
☐ Correct Malfunctioning System
☐ Other-Specify _____

b) Describe Nature of Alteration or Repairs: BUILD NEW GRAVITY DOSE SYSTEM

3. System Components:

a) Grease Trap Capacity, gals _____
Show Calculation Used: _____

b) Septic Tank Capacities, gals: 1,000
First (Single) Compartment: _____ Second Compartment: _____
Third Compartment: _____

c) Effluent Distribution
Method: ☐ Gravity Flow ☒ Gravity Dosing ☐ Pressure Dosing
Dosing Device: ☒ Pump ☐ Siphon

d) Dosing Tank Capacities, gals:
Total Capacity 1,000 Dose Volume 125 Reserve Capacity 646

e) Laterals: Number 7 Total Length 242' Pipe Size 4" Spacing 3'

f) Connecting Pipe: Size 2" Length 16.3'

g) Manifold: Size _____ Length _____

h) Disposal Field: Type of Installation MOUND SOIL REPLACEMENT
Design Permeability (Percolation Rate) SUITABLE FILL
Trenches: Width _____ Total Length _____ Bed: Area 816 S.F.

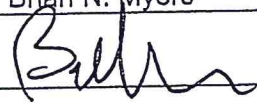
i) Seepage Pits: Design Percolation Rate _____
Number of Pits _____ Total Percolating Area Provided _____

4. Attachments (Check applicable items):

- ☒ General Plan of Property and System Showing Location of All System Components
- ☒ X-Sections of Each System Component Including Grease Trap, Septic Tank, Dosing Tank, Disposal Field, Seepage Pits and Interceptor Drains
- ☒ Pump Performance Curve
- ☒ Other-Specify FILTER SPEC'S, BUOYANCY CALC'S

5. I hereby certify that the information furnished on Form 4 of this application (and attachments thereto) is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Professional Engineer or ~~Installer~~ Name (print) Brian N. Myers

Signature of Professional Engineer or Installer  Date _____

License # 24GE04375300



LOT 15 BLOCK 289.01
MAURICE RIVER TWP.
CUMBERLAND COUNTY, NJ
Date: 9/3/2019

BOUYANCY CALCULATION SHEET:

Total Weight of Empty 1,000 Gallon tank: 11,000 #
Size of 1,000 Gallon tank: 8.50 (L) 6 (W)
Weight of Water: 62.4#/CF
Weight of Fill: 100#/CF
Weight of Concrete: 150#/CF

SEPTIC TANK BOUYANCY CALCULATION:

Tank submerged in water (FT): 3.77 (H)
Height of Fill above Tank (FT) 0.90 (F)
Bouyant Force = $L \times W \times H \times 62.4 =$ 11,998 #

Weight of Fill = $L \times W \times F \times 100 =$ 4,590 #

Weight of Tank + Weight of Fill = 15,590 #

11,998 < 15,590 Therefore additional anchoring is NOT required

DOSING TANK BOUYANCY CALCULATION:

Tank submerged in water (FT): 4.11 (H)
Height of Fill above Tank (FT) 1.50 (F)
Bouyant Force = $L \times W \times H \times 62.4 =$ 13,080 #

Weight of Fill = $L \times W \times F \times 100 =$ 7,650 #

Weight of Tank + Weight of Fill = 18,650 #

13,080 < 18,650 Therefore additional anchoring is NOT required

BRIAN N. MYERS
N.J. PROFESSIONAL ENGINEER
LIC. NO. 24GE04375300

Calculating Pressure Loss - Equivalent Pipe Length Method

Project: PERRYMAN'S EXCAVATING
Lot / Block: 15 / 289.01
Municipality: MAURICE RIVER TWP
Date: 9/3/2019
Piping Material: PVC

Imperial Units

Section	Pipe Size (inches)	Flow (gal/min)	Pressure Loss (ft/100ft)	System Components	Equivalent Length of Component (ft)	No. Components	Equivalent Length (ft)	Section Pressure Loss (ftH2O)	Total Pressure Loss - Path 1 (ftH2O)
1	2	80.0		90 deg Elbows	3.1	3.0	9.3		
				45 deg Elbows	1.7	0.0	0.0		
							0.0		
							0.0		
				Straight Pipe	7.0	1.0	7.0		
SUM 80				Length of Delivery	16.30	1.0	16.3		
			9.90				32.60	STATIC	32.60
								TDH	11.09
1	2	90.0		90 deg Elbows	3.1	3.0	9.3		
				45 deg Elbows	1.7	0.0	0.0		
							0.0		
							0.0		
				Straight Pipe	7.0	1.0	7.0		
SUM 90				Length of Delivery	16.30	1.0	16.3		
			12.40				32.60	STATIC	32.60
								TDH	11.09
Static Head	101.78	93.92	7.86						

SELECTION GUIDE

1. Integral float operated mechanical switch, no external control required.
2. For automatic use, single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM1228 for correct model of simplex control panel.
4. See FM0712 for correct model of duplex control panel or FM1653 for a residential alternator system.

SPECIAL MODEL FEATURES

- Model 266 features a plastic base.
- Models 267 and 268 feature a cast iron base.
- Model 267 is available with a cast iron impeller, which is standard on all 3 Ph units.
- Model 268 includes a 2" NPT female and 3" NPT male discharge.
- BN and BE models include a variable level pump switch.
- Additional cord lengths are available in 15' (5 m), 35' (11 m) and 50' (15 m).

CONSULT FACTORY FOR SPECIAL APPLICATIONS

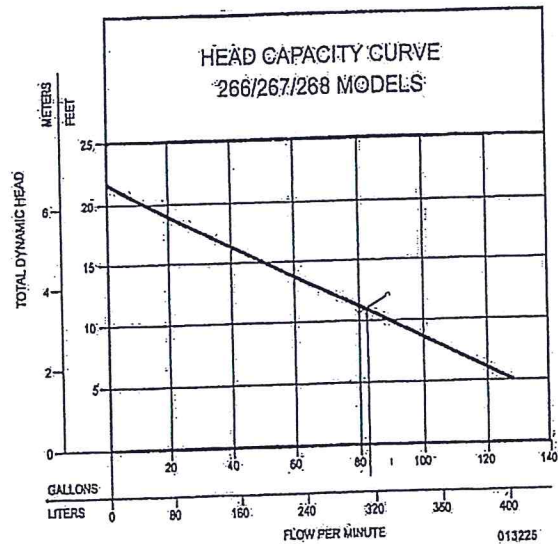
- Minimum recommended basin size (Small load applications)
Simplex - 18" x 30" (45.7 x 76.2 cm)
Duplex - 30" x 36" (76.2 x 91.4 cm)
- High water alarms available

Standard All Models:

266 - Weight 41 lbs. (18.6 kg)
267 - Weight 47.5 lbs. (21.5 kg)
268 - Weight 51 lbs. (23.1 kg)

For "M" and "D" models, the approximate volume pumped out per cycle are:

Tank Diameter	Volume Pumped
18" Simplex	8 Gal (30.2 L)
24" Simplex	15 Gal (56.8 L)
30" Duplex	22 Gal (83.3 L)
36" Duplex	33 Gal (124.9 L)
48" Duplex	60 Gal (227.1 L)



MODEL		266/267/268	
Feet	Meters	Gal.	Liters
5	1.5	128	484
10	3.0	89	337
15	4.6	50	189
20	6.1	10	38
Shut-off Head:		21.5 ft. (6.6 m)	

CAUTION Maximum temperature of sewage or dewatering must be limited to 130°F (54°C). For over 130°F (54°C), special quotation required.

For over 130°F (54°C), special quotation required.

Model	MODEL COMPARISON										CERTIFICATIONS		
	Seal	Mode	Volts	Ph	Amps	HP	HZ	Lbs	Kg	Simplex	Duplex	CCSA US	UL
M266/BN266	Single	Auto	115	1	10.4	1/2	60	41.0	19	1	4	Y	Y
N266	Single	Non	115	1	10.4	1/2	60	41.0	19	2 or 3	2 or 4	Y	Y
D266/BE266	Single	Auto	230	1	5.5	1/2	60	41.0	19	1	—	Y	Y
E266	Single	Non	230	1	5.5	1/2	60	41.0	19	2 or 3	4	Y	Y
H266	Single	Auto	200-208	1	6.2	1/2	60	41.0	19	1	—	Y	N
I266	Single	Non	200-208	1	6.2	1/2	60	41.0	19	3	4	Y	N
J266	Single	Non	200-208	3	2.6	1/2	60	41.0	19	3	4	Y	Y
F266	Single	Non	230	3	2.6	1/2	60	40.0	18	3	4	Y	Y
G266	Single	Non	460	3	1.5	1/2	60	40.0	18	3	4	Y	Y
M267/BN267	Single	Auto	115	1	10.4	1/2	60	47.5	22	1	4	Y	Y
N267	Single	Non	115	1	10.4	1/2	60	47.5	22	2 or 3	4	Y	Y
D267/BE267	Single	Auto	230	1	5.5	1/2	60	47.5	22	1	—	Y	Y
E267	Single	Non	230	1	5.5	1/2	60	47.5	22	2 or 3	4	Y	Y
H267	Single	Auto	200-208	1	6.2	1/2	60	47.5	22	1	—	Y	N
I267	Single	Non	200-208	1	6.2	1/2	60	47.5	22	3	4	Y	N
J267	Single	Non	200-208	3	2.6	1/2	60	47.5	22	3	4	Y	Y
F267	Single	Non	230	3	2.6	1/2	60	47.5	22	3	4	Y	Y
G267	Single	Non	460	3	1.5	1/2	60	47.5	22	3	4	Y	Y
M268/BN268	Single	Auto	115	1	10.4	1/2	60	51.0	23	1	4	Y	Y
N268	Single	Non	115	1	10.4	1/2	60	51.0	23	2 or 3	4	Y	Y
D268/BE268	Single	Auto	230	1	5.5	1/2	60	51.0	23	1	—	Y	Y
E268	Single	Non	230	1	5.5	1/2	60	51.0	23	2 or 3	4	Y	Y
H268	Single	Auto	200-208	1	6.2	1/2	60	51.0	23	1	—	Y	N
I268	Single	Non	200-208	1	6.2	1/2	60	51.0	23	3	4	Y	N
J268	Single	Non	200-208	3	2.6	1/2	60	51.0	23	3	4	Y	Y
F268	Single	Non	230	3	2.6	1/2	60	51.0	23	3	4	Y	Y
G268	Single	Non	460	3	1.5	1/2	60	51.0	23	3	4	Y	Y

CAUTION All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

© Copyright 2014 Zoeller Co. All rights reserved.

502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | www.zoeller.com

Your Peace of Mind Is Our Top Priority®

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



PUMP COMPANY

Zoeller Family of Water Solutions™

SECTION: 2/20.030

FM2789

0814

Supersedes

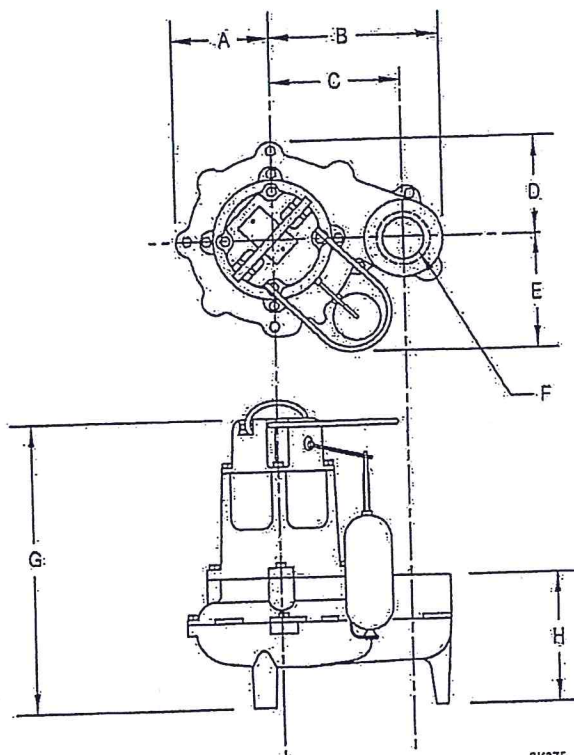
0214

TECHNICAL DATA SHEET WASTE-MATE SERIES

Models 266, 267, 268 Sewage/*Effluent or Dewatering Pumps

PRODUCT SPECIFICATIONS

MOTOR	Horse Power	1/2
	Voltage	115 - 480
	Phase	1 or 3-Ph
	Hertz	60 Hz
	RPM	1725
	Type	Split phase or 3-Ph
	Insulation	Class A or B
	Amps	1.5 - 10.4
	Operation	Automatic or nonautomatic
PUMP	Auto On/Off Points	12" (30 cm) - 74" (10 cm)
	Discharge Size	2" female or 3" NPT male
	Solids Handling	2" (50 mm) spherical solids
	Cord Length	10' (3 m) automatic or 15' (5 m) nonautomatic
	Cord Type	UL listed neoprene cord and plug
	Max. Head	21.5' (6.6 m)
	Max. Flow Rate	128 GPM (484 LPM)
	Max. Operating Temp.	130° F (54° C)
	Cooling	Oil filled
MATERIALS	Motor Protection	Auto reset thermal overload (1-Ph)
	Cap	Cast iron
	Motor Housing	Cast iron
	Pump Housing	Cast iron
	Base	Cast iron or engineered plastic
	Upper Bearing	Sleeve bearing
	Lower Bearing	Sleeve bearing
	Mechanical Seals	Carbon and ceramic
	Impeller Type	Non-clogging vortex
	Impeller	Engineered plastic w/ metal insert
	Hardware	Stainless steel
	Motor Shaft	AISI 1215 cold rolled steel
	Gasket	Neoprene
	Min. Basin Size	Simplex: 18" x 30" (45.7 x 76.2 cm) Duplex: 30" x 36" (76.2 x 91.4 cm)



SK375

NOTE: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps. See model comparison chart for specific details.

* May be used in those states where codes do not restrict solids size in effluent systems.

MODEL DIMENSIONS

MODEL	A	B	C	D	E	F	G	H
266	4 3/4" [12.1 cm]	8 5/16" [21.1 cm]	6 13/32" [16.3 cm]	4 3/4" [12.1 cm]	6 15/32" [16.4 cm]	2" NPT	14 1/32" [35.6 cm]	6 3/32" [15.5 cm]
267	4 3/4" [12.1 cm]	8 5/16" [21.1 cm]	6 13/32" [16.3 cm]	4 3/4" [12.1 cm]	6 15/32" [16.4 cm]	2" NPT	14 5/8" [37.2 cm]	6 3/4" [17.1 cm]
268	4 3/4" [12.1 cm]	8 13/32" [21.4 cm]	6 13/32" [16.3 cm]	4 3/4" [12.1 cm]	6 15/32" [16.4 cm]	2 1/3" NPT	14 5/8" [37.2 cm]	9 1/16" [23.0 cm]



Tested to Standard UL778 and
Certified to CSA
Standard C22.2 No. 108



© Copyright 2014 Zoeller® Co. All rights reserved.

502-778-2731 | 800-928-7867 | 3649 Caney Run Road | Louisville, KY 40211-1961 | www.zoeller.com



www.EngineeringToolBox.com

Resources, Tools and Basic Information for Engineering and Design of Technical Applications! - adapts seamlessly to phones, pads and desktops!

[Home](#)
[HOPE Pipe](#)
[Flow Calculator](#)
[PVC Pipe Fittings](#)
[Pipe Calculator](#)
[Home](#)
[Acoustics](#)
[Air Psychrometrics](#)
[Basics](#)
[Combustion](#)
[Drawing Tools](#)
[Dynamics](#)
[Economics](#)
[Electrical](#)
[Environment](#)
[Fluid Mechanics](#)
[Gases and Compressed Air](#)
[HVAC Systems](#)
[Hydraulics and Pneumatics](#)
[Insulation](#)
[Material Properties](#)
[Mathematics](#)
[Mechanics](#)
[Miscellaneous](#)
[Physiology](#)
[Piping Systems](#)
[Process Control](#)
[Pumps](#)
[Standard Organizations](#)
[Statics](#)
[Steam and Condensate](#)
[Thermodynamics](#)
[Water Systems](#)
[Home](#)
[Pipe Bends](#)
[Tube Fittings](#)
[Pressure Pipe](#)

Unit Converter

Temperature

 0.0

☒ °C

☐ °F

 Convert!

Length

 1.0

☒ m

☐ km

☐ in

☐ ft

☐ yards

☐ miles

☐ nautical miles

 Convert!

Volume

 1.0

☒ m³
☐ liters

☐ in³
☐ ft³
☐ us gal

 Convert!

Weight

 1.0

☒ kgf

☐ N

☐ lbf

 Convert!

Velocity

 1.0

☒ m/s

☐ km/h

ToolBox!

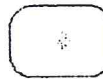
Resistance and Equivalent Length of Fittings

Equivalent length of fittings like bends, returns, tees and valves in hot water heating systems - equivalent length in feet and meter

Sponsored Links

Pipe Marking Wall Chart

Free wall chart - Pipe color coding standards set by ANSI & ASME.



Equivalent lengths of fittings like

- elbows - regular 90°, long radius 90°, regular 45°
- tees - line flow and branch flow
- return bends - regular and long radius
- valves - globe, gate, angle and swing check
- strainers

In hot water piping systems are indicated in the tables below.

Screwed Fittings - equivalent length in feet

Equivalent length (in feet) of straight pipe for fittings like bends, returns, tees and valves. (Pipe size in inches)

Equivalent Length of Straight Pipe for Valves and Fittings (feet)												
		Pipe Size										
Screwed Fittings		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
Elbows	Regular 90 deg	2.3	3.1	3.6	4.4	5.2	6.6	7.4	8.5	9.3	11.0	13.0
	Long radius 90 deg	1.5	2.0	2.2	2.3	2.7	3.2	3.4	3.6	3.6	4.0	4.6
	Regular 45 deg	0.3	0.5	0.7	0.9	1.3	1.7	2.1	2.7	3.2	4.0	5.5
Tees	Line flow	0.8	1.2	1.7	2.4	3.2	4.6	5.6	7.7	9.3	12.0	17.0
	Branch flow	2.4	3.5	4.2	5.3	6.6	8.7	9.9	12.0	13.0	17.0	21.0
Return Bends	Regular 180 deg	2.3	3.1	3.6	4.4	5.2	6.6	7.4	8.5	9.3	11.0	13.0
	Globe	21.0	22.0	22.0	24.0	29.0	37.0	42.0	54.0	62.0	79.0	110.0
Valves	Gate	0.3	0.5	0.6	0.7	0.8	1.1	1.2	1.5	1.7	1.9	2.5
	Angle	12.8	15.0	15.0	17.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
	Swing Check	7.2	7.3	8.0	8.8	11.0	13.0	15.0	19.0	22.0	27.0	38.0
Strainer			4.6	5.0	6.6	7.7	18.0	20.0	27.0	29.0	34.0	42.0

engineeringtoolbox.com

Screwed Fittings - equivalent length in meter

Equivalent length (in meters) of straight pipe for fittings like bends, returns, tees and valves.

Equivalent Length of Straight Pipe for Valves and Fittings (m)												
		Pipe Size										
Screwed Fittings		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
Elbows	Regular 90 deg	0.7	0.9	1.1	1.3	1.6	2.0	2.3	2.6	2.8	3.4	4.0
	Long radius 90 deg	0.5	0.6	0.7	0.7	0.8	1.0	1.0	1.1	1.1	1.2	1.4
	Regular 45 deg	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.7
Tees	Line flow	0.2	0.4	0.5	0.7	1.0	1.4	1.7	2.3	2.8	3.7	5.2
	Branch flow	0.7	1.1	1.3	1.6	2.0	2.7	3.0	3.7	4.0	5.2	6.4
Return Bends	Regular 180 deg	0.7	0.9	1.1	1.3	1.6	2.0	2.3	2.6	2.8	3.4	4.0
	Globe	6.4	6.7	6.7	7.3	8.8	11.3	12.8	16.5	18.9	24.1	33.8
Valves	Gate	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.8
	Angle	3.9	4.6	4.6	4.8	5.2	5.5	5.5	5.5	5.5	5.5	5.5
	Swing Check	2.2	2.2	2.4	2.7	3.4	4.0	4.6	5.8	6.7	8.2	11.6
Strainer			1.4	1.5	2.0	2.3	5.5	6.1	8.2	8.8	10.4	12.8

engineeringtoolbox.com

Flanged Fittings - equivalent length in feet

Equivalent length (in feet) of straight pipe for fittings like bends, returns, tees and valves.

Equivalent Length of Straight Pipe for Valves and Fittings (feet)												
		Pipe Size										
Flanged Fittings		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8
Elbows	Regular 90 deg	0.9	1.2	1.6	2.1	2.4	3.1	3.6	4.4	5.9	7.3	12
	Long radius 90 deg	1.1	1.3	1.6	2.0	2.3	2.7	2.9	3.4	4.2	5	5.7
	Regular 45 deg	0.5	0.6	0.8	1.1	1.3	1.7	2.0	2.6	3.5	4.5	7.7
Tees	Line flow	0.7	0.8	1.0	1.3	1.5	1.8	1.9	2.2	2.8	3.3	4.7
	Branch flow	2.0	2.6	3.3	4.4	5.2	6.6	7.5	9.4	12.0	15	24
Return Bends	Regular 180 deg	0.9	1.2	1.6	2.1	2.4	3.1	3.6	4.4	5.9	7.3	12
	Long radius 180 deg	1.1	1.3	1.6	2.0	2.3	2.7	2.9	3.4	4.2	5	5.7
Valves	Globe	38.0	40.0	45.0	54.0	58.0	70.0	77.0	94.0	120.0	150	260
	Gate											
	Angle	15.0	15.0	17.0	18.0	18.0	21.0	22.0	28.0	38.0	50	63

engineeringtoolbox.com

Share this Page!



25

1

38

[Shortcut to Home Screen?](#)
[The Engineering ToolBox](#)
[bimSystems](#)
[- organizing design and development of technical systems!](#)
[meetickets](#)
[- summarize meetings and keep track of tasks to be done - with tickets!](#)
[the Traveler](#)
[- tracking and sharing expenses between participants!](#)

☐ ft/min
☐ ft/s
☐ mph
☐ knots

Pressure

☒ Pa (N/m²)
☐ bar
☐ mm H₂O
☐ kg/cm²
☐ psi
☐ Inches H₂O

Flow

☒ m³/s
☐ m³/h
☐ US gpm
☐ cfm

[Free Industry Magazines](#)
[Vision Systems Design](#)

[Automotive Engineering International](#)

[SNAP](#)

[Scientific Online Calculator](#)


8 24

Flanged Fittings - equivalent length in meter

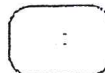
Equivalent length (in meters) of straight pipe for fittings like bends, returns, tees and valves.

Equivalent Length of Straight Pipe for Valves and Fittings (meter)												
Flanged Fittings		Pipe Size										
		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6
Elbows	Regular 90 deg	0.3	0.4	0.5	0.6	0.7	0.8	1.1	1.3	1.6	2.2	2.7
	Long radius 90 deg	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.3	1.6	2.1
Tees	Regular 45 deg	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.1	1.4	1.7	2.3
	Line flow	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.1	1.4	1.7	2.3
Return Bends	Branch flow	0.6	0.8	1.0	1.3	1.6	2.0	2.3	2.9	3.7	4.6	5.5
	Regular 180 deg	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.3	1.6	2.1
Valves	Long radius 180 deg	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.3	1.6	2.1
	Globe	11.8	12.2	13.7	16.6	18.0	21.4	23.5	28.7	36.6	45.8	58.0
	Gate	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.9	0.9	1.0	1.0
	Angle	4.6	4.6	5.2	5.5	5.5	6.4	6.7	8.6	11.6	15.3	19.2

engineeringtoolbox.com
[Sponsored Links](#)

Pipe Marking Wall Chart

Free wall chart - Pipe color coding standards set by ANSI & ASME.



Related Topics

- [Heating](#) - Heating systems - capacity and design of boilers, pipelines, heat exchangers, expansion systems and more
- [Fluid Flow and Pressure Drop](#) - Pipe lines - fluid flow and pressure loss - water, sewer, steel pipes, pvc pipes, copper tubes and more

Related Documents

- [Equivalent Pipe Length Method - Calculating Minor Pressure Loss in Piping Systems](#) - Calculating pressure loss in piping systems with the Equivalent Pipe Length Method
- [PVC - Friction Loss in Fittings and Equivalent Length](#) - Minor loss in PVC and CPVC fittings as equivalent length of straight pipe
- [Copper Tubes - Fittings and Equivalent Lengths](#) - Copper tube fittings and equivalent lengths - In feet of straight tube
- [Resistance and Equivalent Length of Fittings](#) - Equivalent length of fittings like bends, returns, tees and valves in hot water heating systems - equivalent length in feet and meter
- [Major loss in Ducts, Tubes and Pipes](#) - Major loss - head loss or pressure loss - due to friction in ducts, pipes and tubes
- [Comparing Friction Loss in Steel, Copper and Plastic Pipes](#) - Water flow and friction head loss (ft/100 ft) in steel, copper and PVC plastic pipes
- [Hazen-Williams Equation - calculate Head Loss in Water Pipes](#) - Friction head loss (ft/100 ft pipe) in water pipes can be estimated with the empirical Hazen-Williams equation
- [Pressure to Head Unit Converter](#) - Convert between pressure and head units - lb/in², atm, Inches mercury, bars, Pa and more ..
- [Plastic Pipes - Friction Head Loss](#) - Friction head loss (ft/100 ft) in plastic pipes - PVC, PP, PE, PEH
- [PVC Pipes - Friction Loss and Flow Velocities Schedule 40](#) - Water flow in thermoplastic PVC and CPVC pipes Schedule 40 - friction loss (ft/100 ft, psi/100 ft) and flow velocities at dimensions ranging 1/2 to 16 inches
- [PVC Pipes - Friction Loss and Flow Velocities Schedule 80](#) - Water flow in thermoplastic PVC and CPVC pipes Schedule 80 - friction loss (ft/100 ft, psi/100 ft) and flow velocities at dimensions ranging 1/2 to 16 inches

Tag Search

Need some Expert Advice?

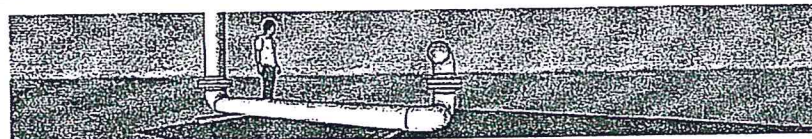
[JustAnswer](#) can help you! Talk with a verified expert until your satisfied, 100% money-back guarantee.

Search the Engineering ToolBox

- "Search is the most efficient way to navigate the Engineering ToolBox!"

[18 Choices](#)
[Pipe Valve](#)
[Air Valve](#)
[Pipe Bends](#)
[Tube Fittings](#)

Engineering ToolBox - SketchUp Extension - Online 3D modelling!



Add standard and customized parametric components - like flange beams, lumbers, piping, stairs and more - to your SketchUp model with the [Engineering ToolBox - SketchUp Extension/Plugin](#) - enabled for use with the amazing, fun and free [SketchUp Make](#) and [SketchUp Pro](#). Add the Engineering ToolBox extension to your SketchUp from the [SketchUp Extension Warehouse](#)!

Share this Page!



<25

<1

<38

[Shortcut to Home Screen?](#)
[The Engineering ToolBox](#)
[bimSystems](#)
 - organizing design and development of technical systems!

[meetickets](#)
 - summarize meetings and keep track of tasks to be done - with tickets!

[the Travlet](#)
 - tracking and sharing expenses between participants!

Translate the ToolBox

[Arabic](#) - [Chinese \(Simplified\)](#) - [Chinese \(Traditional\)](#) - [Dutch](#) - [French](#) - [German](#) - [Italian](#) - [Japanese](#) - [Korean](#) - [Portuguese](#) - [Russian](#) - [Spanish](#) - - [Select Your own language](#) . .

About the ToolBox

We appreciate any comments and tips on how to make The Engineering ToolBox a better Information source. Please contact us by email

- editor.engineeringtoolbox@gmail.com

If You find any faults, inaccuracies, or otherwise unacceptable Information.

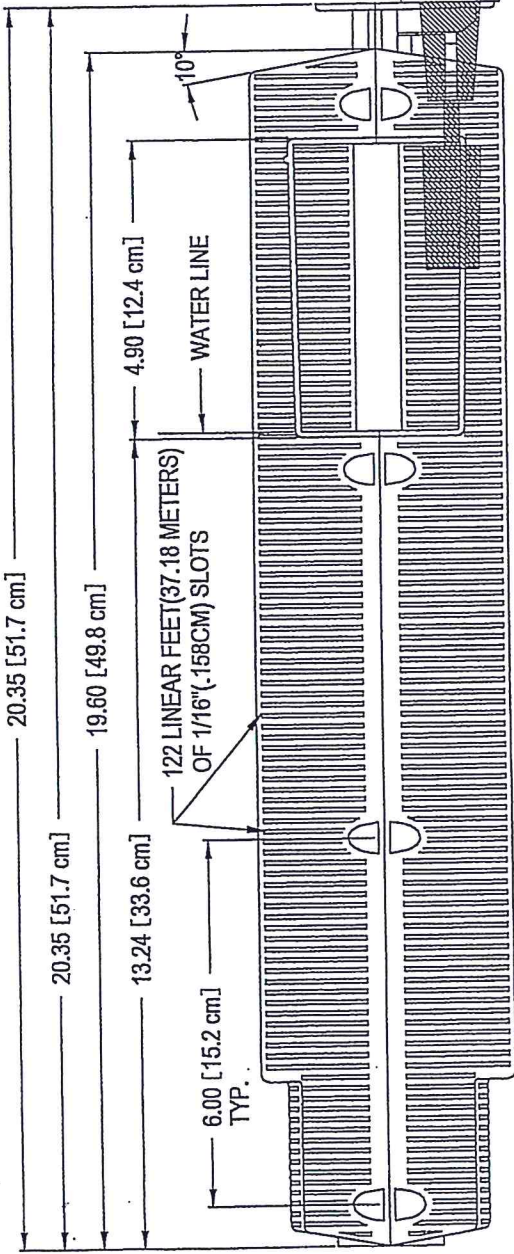
The content in The Engineering ToolBox is copyrighted but can be used with **NO WARRANTY or LIABILITY**. Important information should always be double checked with alternative sources. All applicable national and local regulations and practices concerning this aspects must be strictly followed and adhered to.

This site use third-party cookies. More info [here](#).

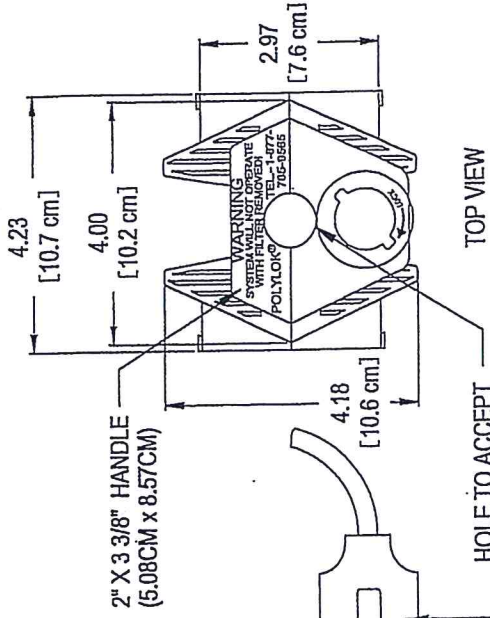
Advertise in the ToolBox

If you want to promote your products or services in the Engineering ToolBox - please use [Google Adwords](#).

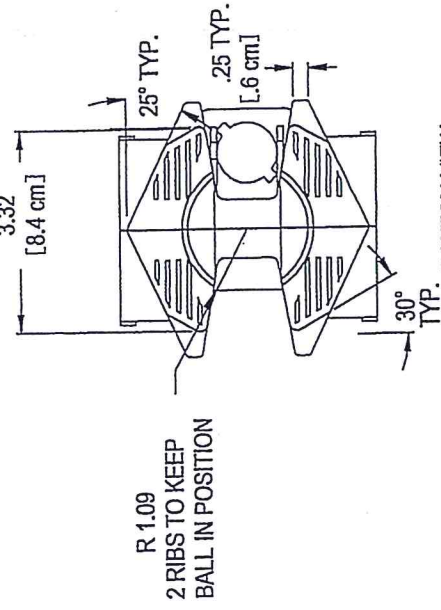
2 Inches				
Volume Flow (gal/min)	Volume Flow (gal/hr)	Velocity (ft/sec)	Friction Head (ft/100 ft)	Friction Loss (psi/100 ft)
5	300	0.5	0.07	0.03
7	420	0.7	0.1	0.05
10	600	1.0	0.2	0.09
15	900	1.5	0.5	0.2
20	1200	2.0	0.8	0.3
25	1500	2.4	1.2	0.5
30	1800	2.9	1.6	0.7
35	2100	3.4	2.2	0.9
40	2400	3.9	2.8	1.2
45	2700	4.4	3.4	1.5
50	3000	4.9	4.2	1.8
60	3600	5.9	5.8	2.5
70	4200	6.8	7.8	3.4
75	4500	7.3	8.8	3.8
80	4800	7.8	9.9	4.3
90	5400	8.8	12.4	5.4
100	6000	9.8	15.0	6.5



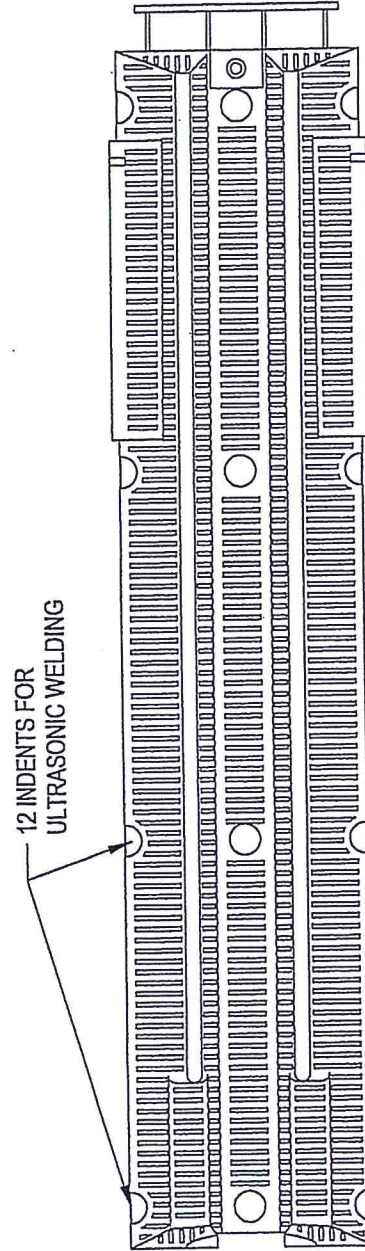
FRONT VIEW



TOP VIEW



BOTTOM VIEW



SIDE VIEW

TOTAL FILTER AREA - 2.52 SQ. FT.

(2341 SQ CM)

LINEAR FT. OF 1/16" SLOT - 122 FT

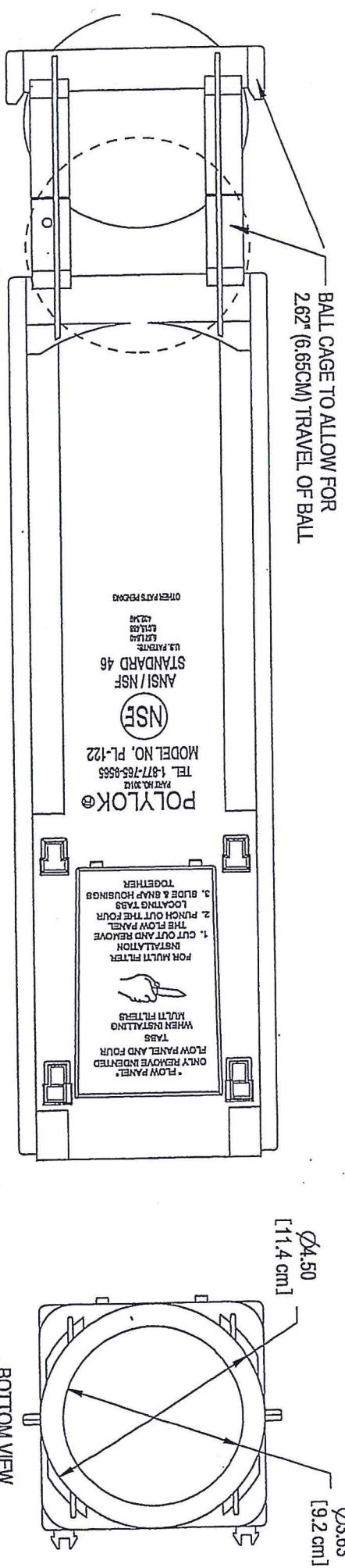
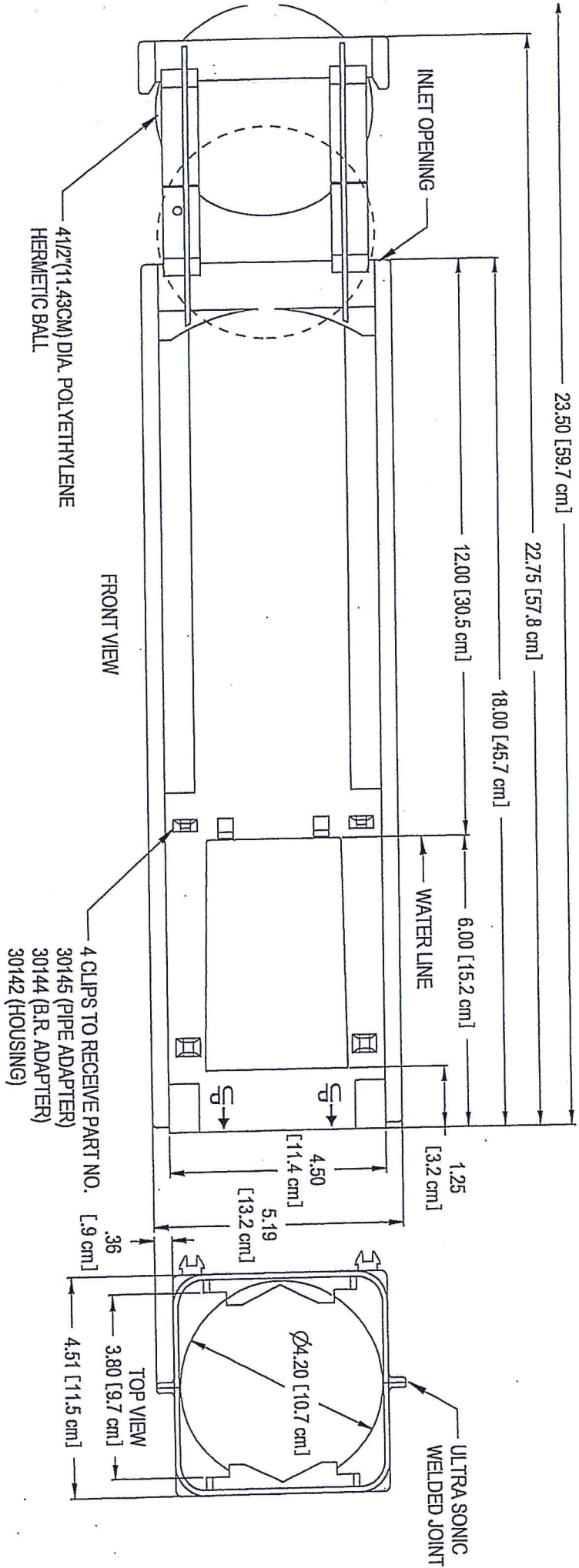
LINEAR METERS OF .158 CM SLOTS - 37.18 METERS

PL-122 FILTER CARTRIDGE

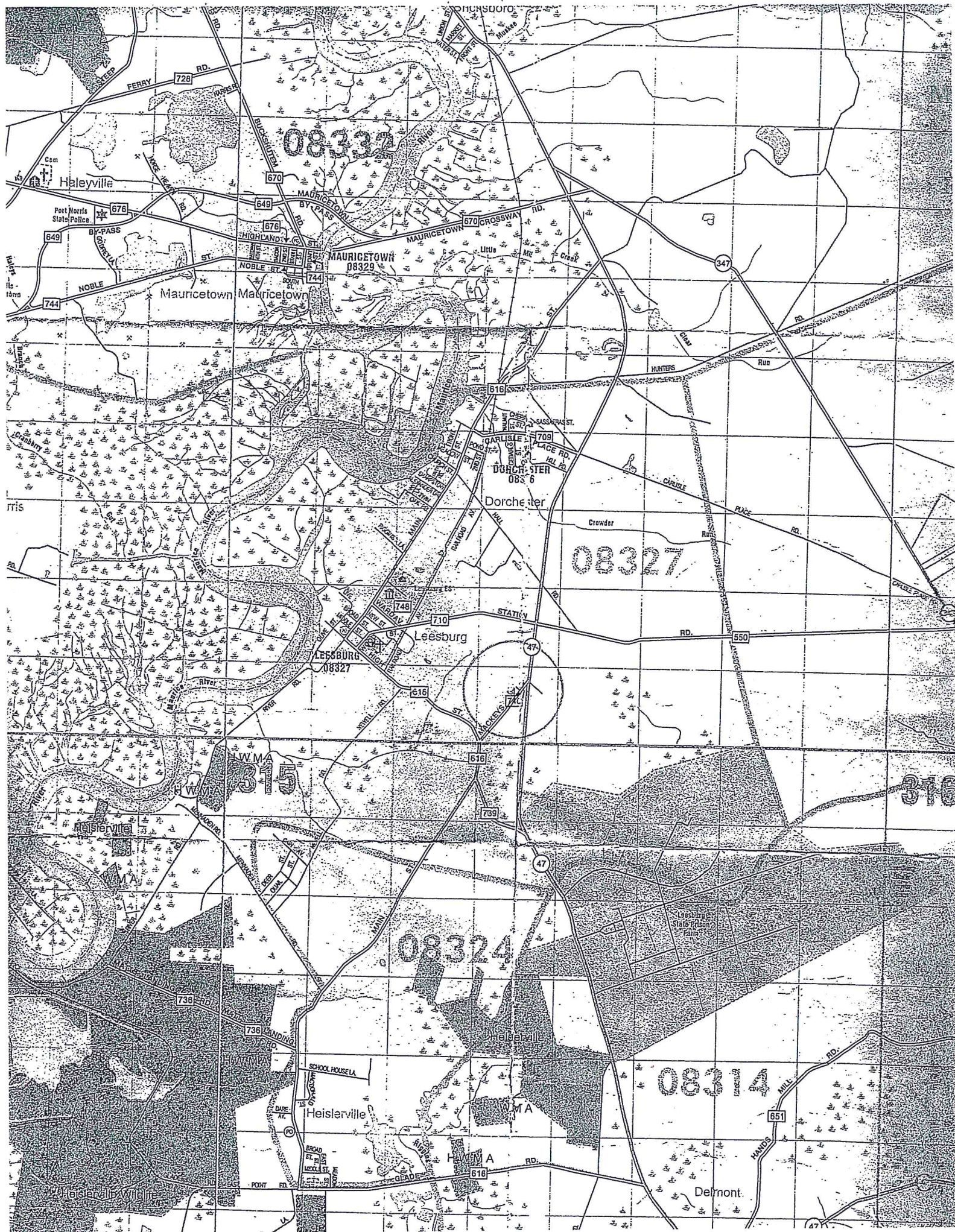
PART NO. - 30141

MATERIAL - POLYPROPYLENE

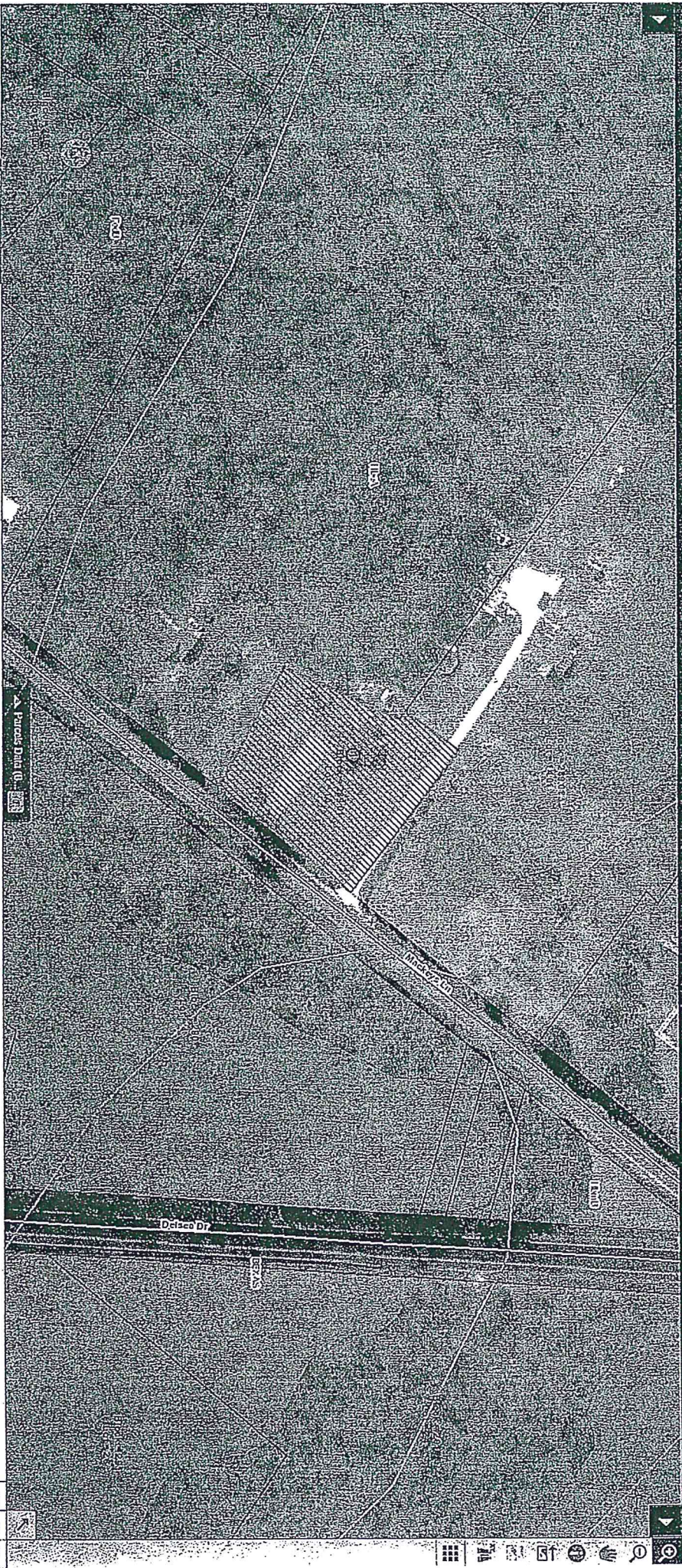
COLOR - BLUE

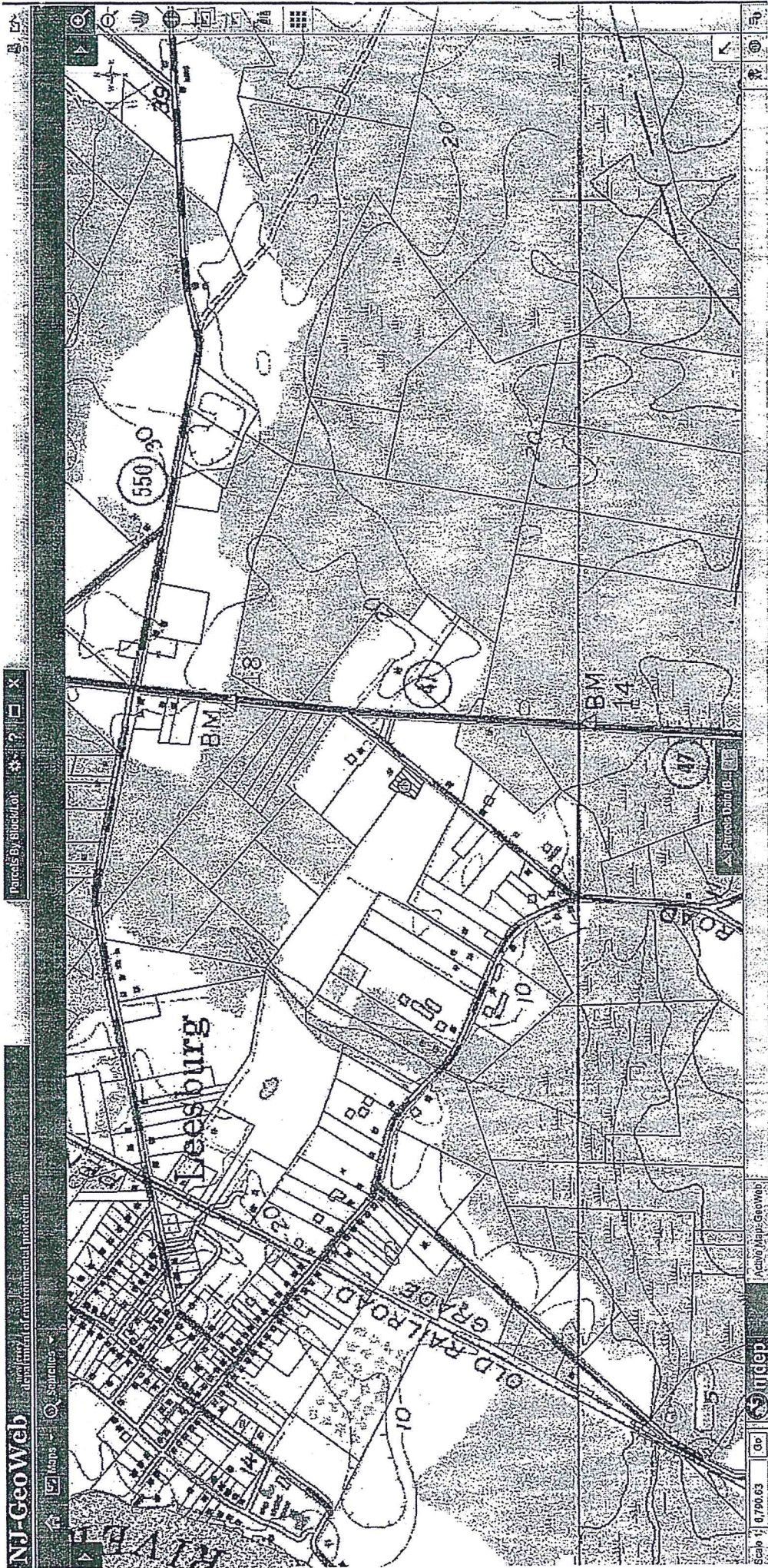


PL-122 HOUSING
PART NO. - 30142
MATERIAL - POLYPROPYLENE
COLOR - WHITE



Map navigation icons: Home, Previous, Next, Full Screen, Print, etc.





NJ-GeoWeb

Search for environmental protection

Parcels By Blocklot

Scale 1: 67,966.63

Home Maps Search

Layers

Scale 1: 67,966.63

550

Leesburg

BM 13

BM 14

47

Scale 1: 67,966.63

Active Map: GeoWeb

Layers

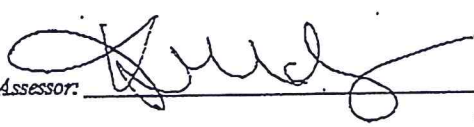
Scale 1: 67,966.63



CERTIFICATION of TAX ASSESSOR

The undersigned Tax Assessor of Maurice River Township does hereby certify that the following list represents all of the property owners and their last known addresses for the property within two hundred (200) feet of Block 289.01, Lot 15 on the tax map of Maurice River Township as requested by Lisa Romeo.

<u>Block</u>	<u>Lot</u>	<u>Property Owner</u>
289.01	14.01	Cox, Sharon PO Box 413 Leesburg, NJ 08327-0413
289.01	16	Robinson, Donald & Kay PO Box 299 Leesburg, NJ 08327-0299
289.01	16.01	Hershberger, Paul 81 Main Street Roebbing, NJ 08554
290	4	Wood, Joseph c/o Deborah Medwick 31 Phipps Court Flemington, NJ 08822

Kevin Maloney, Tax Assessor: Date: 9/12/19

NOTE: The original of this form shall be sent to the applicant and a copy to the Secretary of the MRT Land Use Board by the Assessor.

APPLICANT: Please be advised Atlantic City Electric must be notified of all hearings on subdivisions and site plans.
Send notification to: Atlantic City Electric Real Estate Department, 5100 Harding Hwy, Suite 399, Mays Landing NJ 08330.
If property is located on a county road, also notify: Cumberland County Planning Board, 164 W. Broad St, Bridgeton NJ 0830