

# **Town of Yadkinville**

## **GREASE CONTROL POLICY**

### **I. PURPOSE:**

- A. It is the duty and responsibility of the Town of Yadkinville to prevent the excessive introduction of grease into the sewer system and the wastewater treatment plant. This policy is designed to implement and enforce the grease discharge rules of the “Sewer Use Ordinance”.
- B. The intent of this policy is to ensure compliance with the Town of Yadkinville’s pretreatment program, as contained in the “Sewer Use Ordinance”; the rules and regulations of the United States Environmental Protection Agency and the North Carolina Department of Environmental and Natural Resources; and to protect the Town’s infrastructure as it relates to the sanitary sewer collection and treatment system.
- C. The accumulation of grease within the sewer lines increase the potential to cause sewer blockages, which in turn can cause overflows, which potentially degrade the quality of local surface waters. Blockages may also cause sewer to back-up into business establishments, or homes, and can cause extensive damage. The Town of Yadkinville will not be responsible for such damages. Grease can be discharged to the sewer system from several sources, including Food Service Establishments. In order to reduce sewer blockages, Food Services Establishments in Yadkinville that discharge wastewater that contains grease must install and maintain a grease trap or interceptor. These establishments include any institutional food service or business that serves food or is involved in food preparation services.

### **II. AUTHORITY: Town of Yadkinville Sewerage System Policy Resolution:**

#### **Prohibited Discharge Standards:**

##### **A. *General Prohibitions:***

No user shall contribute or cause to be contributed into the POTW directly or indirectly, any pollutant or wastewater which causes interference or pass through. These general prohibitions apply to all users of POTW.

*B. Specific Prohibitions:*

No user shall contribute or cause to be contributed into the POTW. The following pollutants, substances, or wastewater”

- Solid or viscous substances in amounts which may cause obstruction to the flow in a sewer or other interference with the operation of the POTW.
- Any substance which may cause the POTW’s effluent or any other product of the POTW such as residuals, sludges, or scums, to be suitable for reclamation and reuse or to interfere with the reclamation process. IN NO CASE, shall a substance discharged to the POTW cause the POTW to be in non-compliance with sludge use of disposal regulation or permits issued under Section 405 of the Act; the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substance Control Act, or State criteria applicable to the sludge management method being used.

**III. PRETREATMENT OF WASTEWATER:**

- A. All food service establishments shall install and maintain a grease interceptor in accordance with the “Grease Control Policy”, set forth by the Town of Yadkinville, and on file at the Town of Yadkinville’s Main Office and Public Works Facility.
- B. The transportation and/or disposal of sludge’s generated by pretreatment shall be subject to applicable federal, state, and local regulations. The user shall be responsible for documenting the transportation and/or disposal of all pretreatment sludge’s. Manifest and other documentation shall be kept for a minimum of three (3) years and shall be made available to the Operator in Responsible Charge (ORC).

**IV. REPORTS FROM USERS:**

All users not required to obtain an industrial or commercial user permit shall provide appropriate reports to the Operator in Responsible Charge (ORC) upon request.

**V. INSPECTION AND SAMPLING:**

The Town has the right to enter and inspect the facilities of any user to ascertain whether the purpose of this resolution is being met and all requirements are being complied with. Persons or occupants of premises where wastewater is created, discharged or suspected to be discharged, shall allow Town personnel ready access at all times to all parts of the premises for the purposes of inspection, sampling, records examination

and copying or the performance of any of their duties. The Town shall have the right to set up on the user's property such devices as are necessary to conduct sampling, inspection, compliance monitoring and/or metering operations. Denial of the Town's access to the user's premises shall be a violation of this resolution. Unreasonable delays may constitute denial of access.

## **VI. DEFINITIONS:**

- A. **Town:** The Town of Yadkinville in Yadkinville, North Carolina, or any duly authorized agent(s) or official(s) acting on its behalf.
- B. **Operator in Responsible Charge (ORC):** The Operator in Responsible Charge (ORC) for the grease trap maintenance program for the Town of Yadkinville, or his authorized representative(s).
- C. **Public Works Director:** The Public Works Director of Utilities for Public Works for the Town of Yadkinville.
- D. **Food Service Establishments:** Any commercial facility discharging kitchen or food preparation wastewater including, but not limited to the following: restaurants, motels, hotels, cafeterias, hospitals, schools, nightclubs, delicatessen, meat cutting-preparation, bakeries, bagel shops, grocery stores, gas stations, and any other facility that the Operator in Responsible Charge (ORC) determines to need a grease interceptor by virtue of its operation.
- E. **Grease:** The accumulation of oils (animal or vegetable), fats, cellulose, starch, proteins, wax, lipids, or grease, whether emulsified or not, in the sanitary sewer system. These are substances that may solidify or become viscous at temperatures between thirty-two (32) degrees Fahrenheit and one-hundred fifty (150) degrees Fahrenheit.
- F. **Grease Interceptor/Grease Trap:** A device utilized to effect the separation of grease and oils in wastewater effluent from a Food Service Establishment. Such traps or interceptors may be of the "outdoor" or underground type normally of a 1,000-gallon capacity or more, or the "under-the-counter" package units, which are typically less than 100-gallon capacity. For the purpose of this definition, the words "trap" and "interceptor" are used interchangeable.
- G. **Owner:** An individual, person, firm, company, association, society, corporation, or group upon whose property the building or structure containing the Food Service Establishment is located or will be constructed. "Owner" shall also include the owner of a food Service Establishment who may lease the building, structure, or a portion thereof, containing the Food Service Establishment.

- H. **Physical Property Restrictions:** A physical property restriction does not include restrictions arising from a new building owner's decision not to provide a stub-out for grease installation before a Food Service Establishment occupies the premises.
- I. **Plumbing Code:** The current edition of the North Carolina Plumbing Code.
- J. **POTW (Publicly Owned Treatment Works):** A treatment works as defined by Section 212 of the Act, (33 U.S.C. 1292), which is owned by the Town of Yadkinville. This definition includes any devices or system used in the collection, storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid or solid nature. It also includes sewers, pipes, and other conveyances only if they convey wastewater to the POTW treatment plant. For the purposes of this resolution, "POTW" shall also include any sewers that convey wastewater to the POTW from person(s) outside the Town who are, by contract or agreement with the Town, or in any other way, users of the POTW.
- K. **Users:** Any person, establishment, or facility, whether inside or outside the city limits, who contributes, causes, or permits the contribution of wastewater into the POTW.

**Section 1: Design, Installation and Maintenance of Grease Interceptors:**

- A. All new grease interceptors shall be designed as instructed by the Town of Yadkinville, unless otherwise approved by the Operator in Responsible Charge (ORC), but in no case may be less than the North Carolina State Plumbing Code. All grease interceptor plans and specifications shall be submitted and approved by the Town prior to installation.
- B. All grease interceptors shall be installed by a licensed North Carolina Plumbing Contractor and maintained by the User at the User's expense so as to be in continuously effective operation. Maintenance shall include the complete removal of all contents, including floatable materials, wastewater, sludge, and solids. Separation, decanting or back flushing of the grease interceptor or its wastes is prohibited except where classified as a restaurant that cleans its own interceptor. This applies only to those restaurants that have a grease interceptor less than 100-gallon capacity.
- C. Maintenance of grease interceptors shall be performed in accordance with the type of interceptor is required in **Section 4** herein.

- D. The User shall be responsible for the proper removal and lawful disposal of the grease interceptor waste. All Waste removed from each grease interceptor shall be disposed of at a facility permitted by the North Carolina Division of Solid Waste Management to receive such waste. No grease interceptor waste shall be discharged directly to the wastewater collection system or wastewater treatment facilities.
- E. The Town may conduct mandatory inspections of every Food Service Establishment connected to the sewer collection system once every year and at other times as the Town deems necessary, at its discretion.
- F. **If grease is responsible for a sewer blockage, all Food Service Establishments upstream from the blockage will be inspected.**
- G. The exclusive use of enzymes or biological additives as a grease degradation agent is not considered acceptable grease interceptor maintenance practice. Any user who utilizes these additives must apply for a variance and follow the procedures for a variance study, as set forth in Section 9, to reduce the monthly maintenance requirements.

**Section 2: Design and Structural Criteria for EXTERIOR Grease Interceptors:**

Grease interceptors shall conform to the following criteria when being designed and constructed (refer to example drawing "Typical Underground Grease Trap"):

- A. A 24-minute retention time under *actual peak flow*.
- B. New in-ground grease interceptors shall be no less than 1,000 gallons total capacity unless otherwise approved by the ORC.
- C. Interior baffles to distribute flows. Will extend six (6) inches above water line but, cannot flood the inlet pipe.
- D. Minimum 2:1 length to width ratio.
- E. Low velocity flow near outlet.
- F. Baffle wall be located a distance from inlet wall of  $\frac{2}{3}$  to  $\frac{3}{4}$  of the total length of the interceptor.
- G. Nine (9) inches of freeboard at grease interceptor top.

- H. Each grease interceptor shall have inlet and outlet tees. The outlet tee shall extend 50% into the liquid depth. The inlet tee shall extend 25% into the liquid depth. Inlet and outlet tee must be plugged at the top of the sanitary tee and be a minimum of three (3) inches in diameter.
- I. Access openings over the inlet, outlet, and each compartment within the grease interceptors. Each opening shall be twenty-four (24) inches in diameter and contain pick holes. All covers shall be constructed of cast iron or equivalent traffic bearing material. Manholes/covers must extend to the finished grade and shall be installed to exclude the entrance of surface or storm water into the interceptor.
- J. Full size cleanouts shall be installed on the inlet and outlet sides of the interceptor and extended to grade.
- K. Grease interceptors must be vented in accordance with the N.C. State Plumbing Code with a minimum 2" diameter vent piping. Vent connections may be made through the top of the interceptor, in which case the bottom of the vent shall extend no closer than 6" to the static water level, or may be made through the side of the interceptor's access opening.
- L. In-ground grease interceptors shall receive kitchen wastes. Kitchen wastes include: pot sinks, prep sinks, can wash, floor drains, and dishwasher.
- M. Minimum concrete compressive strength of 3,500 psi.
- N. Joints should be properly sealed to prevent infiltration or exfiltration.
- O. Grease interceptors must meet a minimum structural design of 150-pounds/square foot for non-traffic installations. For vehicular traffic conditions the grease interceptor shall be designed to withstand an H-20 wheel load.
- P. Grease interceptors shall meet the following standards: ASTM C-1227 for Septic Tanks, C-913 for Precast Concrete Water and Wastewater Structures, ACI-318 for Design and ASTM C-890 for establishing Minimum Structural Design Loading.
- Q. Grease interceptors made of polyethylene or fiberglass tanks shall be able to withstand the appropriate loading (traffic or non-traffic) or perform under a vacuum test to stimulate loading and include 12,000 psi ultimate tensile strength. 19,000 psi flexural strength and 800,000 psi flexural modulus of elasticity as per ASTM D790. Tanks shall be listed and labeled.

- R. A North Carolina design professional will specifically design cast in place or masonry tanks. Tanks must be manufactured as a grease interceptor.

Section 3: **Service Records:**

A. Small Interceptors:

- All Food Service Establishments shall maintain a written record on-site of grease interceptor maintenance for three (3) years. A copy of each maintenance record shall be mailed or faxed to the Town, at the address and number indicted below, no later than fifteen (15) days after the end of the month during which the maintenance occurred. Any person who fails to comply with this section is subject to enforcement actions as outlined in Section 11. Failure to submit monthly maintenance records for two (2) consecutive months may result in an inspection, fine and water service termination.

B. Large Interceptors:

- Large outside interceptors shall keep all records for three (3) years and should be sent in fifteen (15) days after maintenance of grease trap. Plumping shall be done on an as needed basis, as described by the I & I Department of Yadkinville. Any person who fails to comply with this section is subject to enforcement actions as outlined in Section 11.

- C. Records and/or reports are to be mailed to: Town of Yadkinville Public Works Facility, C/o ORC I & I Department, P. O. Drawer 816, Yadkinville, N.C. 27055. Contact number is (336) 679-2990 and fax number is (336) 677-1199.

Section 4: **Existing Facilities with Grease Interceptors:**

- A. All existing Food Service Establishments shall maintain grease interceptors for continuous, satisfactory and effective operation.
- B. Maintenance shall include the complete removal of all contents, including floatable materials, wastewater, sludge and solids. Separation, decanting or back flushing of the grease interceptor or its wastes is prohibited.
- C. The Town of Yadkinville uses the 25% rule. If floatable materials and settleable solids on bottom of interceptor is 25% of height of water of interceptor reaches this point, it is ready for

pumping (example – a tank is 48” high from bottom to top of floatable, this would need pumping as soon as possible).

- D. The Food Service Establishment should have a licensed North Carolina Septage Management Firm service all interceptors at intervals not to exceed thirty (30) days, quarterly, minimal, or on an as needed basis.
- E. Service records shall be submitted as stated in **Section 3**.
- F. Any additional fixtures that are added to the Food Service Establishment and discharges a grease-laden waste stream as identified in **Section 2 (A)** shall be plumbed into the interceptor and/or a new interceptor may be required.

Section 5: **Food Service Establishment in New Facilities:**

- A. Food Service Establishments, locating in newly constructed facilities, shall install a grease interceptor adequately sized and approved by the Town.
- B. All new grease interceptors shall be designed and constructed in accordance to **Section 2**.
- C. No new Food Service Establishments will be allowed to initiate operations until grease interceptors are approved and inspected by the Town.
- D. Following installation of a grease interceptor, all Food Service Establishments shall comply with maintenance requirements as set forth in **Section 4**.
- E. Food Service Establishments with a bona fide hardship of a physical property restriction shall install a point-of-use grease interceptor. Construction and maintenance shall follow **Section 6 (B)**.

Section 6: **New Food Service Establishments in Existing Facilities:**

- A. New Food Service Establishments locating in existing buildings are required to comply with the grease interceptor standards applicable to new facilities, as set forth in **Section 5**.
- B. For cases in which exterior type grease interceptors are infeasible to install *due to physical property restrictions*, a “point-of-use” grease trap shall be installed. The “point-of-use” grease trap shall comply with sizing criteria. More than one (1) fixture can be plumbed into a single grease interceptor, however, the

grease interceptor size shall equal to the total fixture capacity for all fixtures which the interceptor services. Flow control fittings must be provided to the inlet side of all point-of-use if required by the manufacturer. The inlet temperature of the grease interceptor shall be 140° F or less. Maintenance procedures shall follow **Section 4**.

- C. The Town must approve control devices and grease interceptor design prior to installation.

Section 7: **New Buildings (Strip Centers) with the Potential for Food Service Establishments:**

All new buildings or strip centers containing sections designated for commercial enterprise of the strip center are encouraged to provide a stub-out for a separate waste line for future grease interceptor installation. The owner of a new strip center shall consider suitable physical property space and sewer gradient that will be conducive for the installation of an exterior, in-ground grease interceptor(s) for any flex space contained within the strip center. Physical Property Restrictions and sewer gradient shall not be a defense for failure to install an exterior, in-ground grease interceptor.

Section 8: **Substandard Grease Interceptors:**

- A. Any Food Service Establishment without a grease interceptor will be given a compliance deadline not to exceed six (6) months from date of notification to have approved and installed grease interceptors.
- B. In the event an existing Food Service Establishment's grease interceptors are either under-designed or substandard in accordance with this policy, the owner(s) will be notified in writing of the deficiencies and required improvements of this standard. An exterior in-ground interceptor will be required and installation and maintenance shall follow **Section 4** of this policy.
- C. For cases in which exterior type grease interceptors are infeasible to install *due to physical property restrictions*, a point-of-use grease trap shall comply with the Town or Director's sizing criteria. More than one (1) fixture can be plumbed into a single grease interceptor; however, the grease interceptor size shall be equal to the total fixture capacity for all fixtures which the interceptor serves. Flow control fittings must be provided to the inlet side of all point-of-use if required by the manufacturer. Maintenance procedures shall follow **Section 4**.

- D. The ORC must approve control device and grease interceptor design prior to installation.

Section 9: **Variance:**

- A. A variance to exceed the requirement set forth in **Section 4** which sets the scheduled maintenance requirements for all grease interceptors at intervals not to exceed quarterly, or on an as needed basis (for interceptors equal to or greater than 500 gallons), may be requested of the Town upon submission of sufficient information and documentation. Such documentation shall provide a written explanation for the need to vary from the maintenance schedule requirements of this resolution. After submission of a request to the Town, the Town will review all information submitted and will notify the Food Service Establishment in writing of its acceptance or denial of the variance request. All food Service Establishments requesting a variance shall agree to submit to a variance study. The Town has the right to discontinue the variance study at any time the grease interceptor discharge adversely affects the sanitary sewer collection system or treatment works.
- B. Fees associated with the request of a variance will include a variance fee of \$300, which includes estimated costs associated with the variance study. All fees are non-refundable and shall be paid in advance.
- C. A variance to exceed quarterly interval requirements for scheduled maintenance set forth in **Section 4** may be granted if the accumulated grease cap and sludge pocket measurements remain below twenty-five percent (25%) of the total depth from the grease interceptor's interior floor to the static or working water level, at any point between the influent and effluent pipes/baffles of the grease interceptor. No variance will be granted to exceed a one-hundred eighty (180) day interval, with the exception of schools and seasonal event facilities that may exceed a one-hundred eighty (180) day interval upon submitting a request in writing to the Public Works Director and receiving written permission from the Public Works Director.
- D. Any Food Service Establishment who is found to violate the twenty-five percent (25%) rules as set forth in subsection **Section 4 (C)** herein below, may be required to pump more frequently than quarterly.
- E. Variance Study Procedure.  
Once a variance has been granted, a variance study shall be conducted in accordance with the following procedure:

1. Prior to a variance study, the grease interceptor shall be completely pumped and sufficiently cleaned by a servicing company at the user's expense. A variance study cannot be conducted unless the grease interceptor is properly serviced, as determined by the Town.
2. The Food Service Establishment shall contact the Town two (2) working days prior to the scheduled interceptor cleaning.
3. Once the grease interceptor is cleaned properly and refilled with water from the Food Service Establishment, the Town will conduct a visual inspection of the grease interceptor and verify that all components of the trap are in place and in proper working order. If a grease interceptor fails the visual inspection, the Food Service Establishment shall correct all inadequacies at the Owner's expense. The Food Service Establishment shall notify the Town in writing of all corrected measures upon completion. Such notification shall be mailed to the address set forth in **Section 3**.
4. Two (2) weeks after initial pumping, the Town will measure the grease cap and sludge pocket to further evaluate grease interceptor performance.
5. Four (4) weeks after the initial pumping, the Town will re-measure the grease cap and sludge pocket to further evaluate grease interceptor performance.
6. This process will continue on a bi-weekly basis until the accumulated grease cap and sludge pocket reach 25 percent (25%) of the total depth of the grease interceptor. Variance studies shall not exceed a period of ninety (90) days.
7. The Town will review all data obtained, and submit in writing, the results of the variance. The result will only be furnished to the Food Service Establishment requesting the variance.
8. The Town will not be responsible for any grease discharge, odor, or blockages associated during or after the variance study. At no time during the variance study, shall the grease interceptor be pumped, except by direct approval by the Town.

F. Variance Revocation:

A variance to exceed the quarterly interval requirement for scheduled maintenance may be revoked by the Town, at its discretion, if at any time after a variance is granted the following occurs:

- Grease interceptor discharge adversely affects the sewer collection system or treatment works.
- Grease and solids accumulation is greater than twenty-five percent (25%) of the total depth from grease

interceptor's interior floor to the static or working water level, at any point within the grease interceptor.

- A Food Service Establishment significantly increases food service production, seating capacity, or menu change.
- A Food Service Establishment causes or contributes to a sanitary sewer blockage or overflow.

Section 10: **Prohibitions and Violations:**

- A. No user shall contribute or cause to be contributed into the sanitary sewer system the following:
  - 1. Hot water running continuously through grease interceptor.
  - 2. Discharge of concentrated alkaline or acidic solutions into a grease interceptor.
  - 3. Discharge of concentrated detergents into grease traps.
  - 4. Discharge of oils and grease into the sanitary sewer system.
- B. It shall be a violation of this Resolution for any person or User to:
  - 1. Modify a grease interceptor structure without consent from the Town.
  - 2. **Provide falsified maintenance records.**
  - 3. Not comply with the Policy.

Section 11: **Enforcement:**

- A. Any Food Service Establishment that is identified, in whole or in part, as the source of a sanitary sewer blockage and/or overflow, will be assessed and fined not less than \$500 plus all expenses to repair damages to all parties involved. In addition, all remediation costs for clean up, and any fines dispensed from the State of North Carolina, will also be at the disbursement of the Food Service Establishment.
- B. Food Service Establishments committing one of the offenses listed herein will be assessed the corresponding amounts on a calendar year basis. These fines will be billed no less than quarterly and are payable upon receipt.
- C. The fines provided for in this section are not exclusive and do not prohibit the Public Works Director from using any other remedy provided by the law.

D. Minor Violation:

**1<sup>st</sup> Offense:**

- |  |        |
|--|--------|
| 1. Failure to submit records                 | \$ 50  |
| 2. Inspection hindrance (equipment related)  | \$ 50  |
| 3. Failure to maintain on-site records       | \$ 50  |
| 4. Failure to pump grease and submit records | \$ 150 |

**2<sup>nd</sup> Offense:**

- |  |        |
|--|--------|
| 1. Failure to submit records                 | \$ 100 |
| 2. Inspection hindrance (equipment related)  | \$ 100 |
| 3. Failure to maintain on-site records       | \$ 100 |
| 4. Failure to pump grease and submit records | \$ 300 |

**3<sup>rd</sup> Offense:**

- |  |        |
|--|--------|
| 1. Failure to submit records                 | \$ 150 |
| 2. Inspection hindrance (equipment related)  | \$ 150 |
| 3. Failure to maintain on-site records       | \$ 150 |
| 4. Failure to pump grease and submit records | \$ 450 |

**4<sup>th</sup> Offense and Up:**

- |  |         |
|--|---------|
| 1. Failure to submit records                 | \$ 300  |
| 2. Inspection hindrance (equipment related)  | \$ 300  |
| 3. Failure to maintain on-site records       | \$ 300  |
| 4. Failure to pump grease and submit records | \$ 1000 |

E. Intermediate Violation:

**Failure to maintain necessary equipment  
(T's, grease trap not watertight, baffles, etc):**

- |                                   |         |
|-----------------------------------|---------|
| 1. 1 <sup>st</sup> Offense        | \$ 150  |
| 2. 2 <sup>nd</sup> Offense        | \$ 300  |
| 3. 3 <sup>rd</sup> Offense        | \$ 500  |
| 4. 4 <sup>th</sup> Offense and Up | \$ 1000 |

F. Major Violation:

- |  |         |
|--|---------|
| 1. Source of sewer blockage (minimum)          | \$ 500  |
| 2. Source of sanitary sewer overflow (minimum) | \$ 1000 |
| 3. Falsification of maintenance records        | \$ 1000 |

# **SIZING CRITERIA**

**Sizing Criteria:**

- I. How to Determine the Size of an **Exterior, In-ground** Grease Interceptor Using the Manning Formula:

- The Formula for calculating Grease Interceptor Sizing is:

- ***Gallons of interceptor = [ [(1) = GPM/fixture (derived from Manning formula x (2) = total # fixture ratings of grease-laden waster streams] + (3) direct flow from a dishwasher, laundry washer, glass water (in GPM)] x (4) = 24 minute retention time.***

- ***Components of Equation =***

1. **GPM/fixture** – This is derived from the Manning Formula. It takes into account the slope; roughness of the pipe (plastic) used, and pipe diameter size. When applying the Manning Formula, we arrive at the drainage rates of various pipe diameter sizes:

Inch Pipe Diameter	=	GPM/Fixture
0.5"	=	0.8
1.0"	=	5.0
1.5"	=	15
2.0"	=	33
2.5"	=	59
3.0"	=	93

2. **Fixture Ratings of Grease-Laden Waste Streams:** Fixtures that have more grease in their waste stream received higher values while less grease corresponds to a lower rate. The Table is shown below:

Table of Common Commercial Kitchen Fixtures and their Corresponding Rating (each):

Type of Kitchen Fixture	=	Corresponding Rating
2, 3, or 4 Compartment pot sink	=	1.0
1 or 2 Compartment <i>meat</i> prep sink	=	0.75
Pre-rinse Sink	=	0.5
1 or 2 Compartment <i>vegetable</i> prep sink	=	0.25
Can Wash	=	0.25
Mop Sink	=	0.25
Floor Drain	=	0.00

3. **Direct Flow from Dishwashers, Laundry Washer and Glass Washer:** These flows must be added directly to the GPM flow because of their potential for discharging large quantities of water in a short time period. Since these appliances have pumps, the Manning Formula cannot be applied to predict flow; must use manufacturer's discharge rate for flow in GPM but not less than the draw down rate.
4. **Twenty-four Minute Retention Time:** Engineers have determined that when applying several criteria to determine proper grease (animal and vegetable lipids) separation (using Stokes's Law, specific gravity of lipids, etc.), a twenty-four minute retention time is required.

II. **Example #1:** A restaurant has the following fixtures in their kitchen (all fixtures have a 1.5" pipe diameter):

- ◆ (1) 3-Compartment Pot Sink = (1.0 + 0.5 + .25 + 10 GPM x 24)
- ◆ 1 Pre-rinse Sink
- ◆ (1) 2-Compartment Vegetable Prep Sink
- ◆ 1 Dishwasher that discharges 10 GPM

● Using the formula to size exterior grease interceptors, we get:

- ◆ Gallons needed for grease interceptors
  - = [[15 GPM x [1 + 0.5 + 0.25] + 10 GPM] x 24 minutes
  - = [[15 GPM x 1.75] + 10 GPM] x 24 minutes
  - = 26.25 GPM + 10 GPM x 24 minutes
  - = 36.25 GPM x 24 minutes
  - = 870 gallons round up to the next size = —→ **1,000 gallons grease interceptor is required**

III. **Example #2:** A restaurant has the following fixtures:

- At 0.5 inch pipe diameter: Pre-rinse sink
- At 1.5 inch pipe diameter:
- At 3.0 inch pipe diameter:
  - ◆ (1) 3-Compartment Pot Sink
  - ◆ 1 Pre-rinse Sink
  - ◆ 1 Meat Prep Sink
  - ◆ 1 Vegetable Prep Sink

● At 3.0 inch pipe diameter:

◆ 1 Can Wash

● Using the formula to size exterior grease interceptors, we get:

- For the pre-rinse sink, we take  $0.8 \text{ GPM} \times 0.5 = 0.4 \text{ GPM}$
- For the 1.5 inch pip diameter fixture:  $15 \text{ GPM} \times [1 + 0.5 + 0.75 + 0.25] = 15 \text{ GPM} \times 2.5 = 37.5 \text{ GPM}$
- For the can wash:  $93 \text{ GPM} \times 0.25 = 23.25 \text{ GPM}$
- Add  $23.25 \text{ GPM} + 37.5 \text{ GPM} + 0.4 \text{ GPM} = 61.15 \text{ GPM} \times 24 \text{ minutes} = 1,468 \text{ gallons}$ ; round up to the next size = **1,500 gallon grease interceptor is required.**

**IV. How to Determine the Size of a Point-of-Use Grease Interceptor:**

Step 1	Determine the cubic contents of the fixture by multiplying length x width x depth.	Number of compartments times 24" long by 24" wide by 14" deep. Cubic contents: $3 \times 24 \times 24 \times 14 = 24,192$ cubic inches
Step 2	Determine the capacity in gallons 1 gallon = 231 cubic inches	Contents in gallons: $24,192 \div 231 = 104.7$ gallons.
Step 3	Determine actual drainage load. The fixture is usually filled to about 75 percent of capacity with wastewater. The items to be washed displace about 25 percent of the fixture content. Actual drainage load = 75 percent of the fixture capacity.	Actual Load: $.75 \times 104.73 \text{ gallons} = 78.55$ gallons.
Step 4	For design considerations, it is good practice to calculate the flow rate in GPM equal to or greater than 75 percent of the fixture capacity	Calculated flow rate for design capacity in GPM on 75 percent of fixture capacity: 75 percent of fixture capacity = 78.55 gallons. Flow Rate = 78.55 GPM
Step 5	Select the grease separation device that matches the calculated design flow rate. Note: Select next larger size when flow rate falls between two sizes.	<b>79 GPM</b>