City of Newport
City Council Minutes
April 3, 2014

1. CALL TO ORDER
Mayor Geraghty called the meeting to order at 5:30 P.M.

2. PLEDGE OF ALLEGIANCE

3. ROLL CALL -
Council Present – Tim Geraghty; Tom Ingemann; Bill Sumner; Tracy Rahm; Steven Gallagher

Council Absent –

Staff Present – Deb Hill, City Administrator; Bruce Hanson, Supt. of Public Works; Curt Montgomery, Police Chief; Mark Mailand, Fire Chief; Renee Helm, Executive Analyst; Fritz Knaak, City Attorney; John Stewart, City Engineer;

Staff Absent –

4. ADOPT AGENDA

Mayor Geraghty - Where would you like to put Resolution No. 2014-11?

Councilman Gallagher - We can add it to the Consent Agenda.

Admin. Hill - I will be removing item 9.A from my report as well.

Motion by Geraghty, seconded by Rahm, to adopt the Agenda as amended. With 5 Ayes, 0 Nays, the motion carried.

5. ADOPT CONSENT AGENDA
Motion by Gallagher, seconded by Ingemann, to approve the Consent Agenda as amended which includes the following items:

A. Minutes of the March 20, 2014 Regular City Council Meeting
B. List of Bills in the Amount of $335,269.26
C. **Resolution No. 2014-10** - Accepting Donations for the Period of December 13, 2013 - March 31, 2014
D. Publication of Ordinance No. 2014-1
E. **Resolution No. 2014-11** - Supporting the Findings of the Red Rock Corridor Alternatives Analysis Update (AAU) Study

With 5 Ayes, 0 Nays, the motion carried.

6. VISITORS PRESENTATIONS/PETITIONS/CORRESPONDENCE

7. MAYOR'S REPORT –

Mayor Geraghty - Deb and I attended the Chamber Breakfast on Tuesday. They had a representative from the

Federal Reserve, an economist, speak. It looks like everything is good for 2014 in his opinion. The other item I wanted to talk about which was put in the newspaper was Deb's performance evaluation that was done at the March 6 workshop during a closed session. I wasn't at the actual workshop but I'll summarize what I think happened. We talked about Deb's performance, her strengths and weaknesses. Overall, I think it was satisfactory. It wasn't mentioned at the last meeting because of an oversight.

8. COUNCIL REPORTS –

Councilman Gallagher - I had a Red Rock meeting and we talked about Resolution No. 2014-11. The construction is on track.

Councilman Sumner - I'll remind people about the Stone Soup fundraiser on May 17th. There are multiple times available for bowling. It's a fun event. There will be plenty of food and people. You can get in touch with me for more information.

Councilman Ingemann - Nothing to report.

Councilman Rahm - Nothing to report.

9. ADMINISTRATOR'S REPORT –
A. Discussion Regarding Investment CD

This item was removed from the agenda.

B. Discussion Regarding Hiring a Full-Time Police Officer

Admin. Hill - At our last meeting, there was discussion about hiring a police officer right away. It's my recommendation that we postpone this discussion until we start the budget process in July or August. The main reason is that we'll be doing this large street project and don't know what the tax impact will be. At first blush, our bonding was going to be $2.7 million but we've added some areas and now it's $3.6 million. Stacie Kvilvang from Ehlers has not run the numbers to see exactly how we can structure it to lessen the blow but it will be a levy increase. I would really think we should wait to see where we're at at that point with the budget.

Mayor Geraghty - I would also agree with Deb's thinking. We've barely completed the first quarter of our fiscal year and other than taking it out of surplus funds we have no other options. That wouldn't fund it long-term either.

Admin. Hill - We do have two union negotiations this year and don't know what our impact will be on that. Our bonding for the streets is large and the projects for next year will be added to that.

Councilman Rahm - Have we started negotiations yet?

Admin. Hill - No.

Councilman Ingemann - We're sitting with 7 and the FBI recommended ration is 2.7, which says we should have 9. We had 8. If we were to take the CSO or whatever you're paying him and bring in a full-time police officer, the cost difference, because you're already budgeted for the CSO, will not be that much, let's say another $60,000 with benefits. By the time everything get's going it'll be June so we're looking at half a year. We'll have to bite the bullet and put it in the budget. These guys are overworked.

Mayor Geraghty - Is that everyone's opinion?

Councilman Gallagher - I don't know if they'll respond.

Mayor Geraghty - That's not what I took out of the memo that Deb gave us.

Admin. Hill - That's not the impression I got from the Officers I spoke with.

Mayor Geraghty - We set a budget for 2014, we should have had the discussion last August or September.

Councilman Ingemann - We did bring it up.

Mayor Geraghty - It didn't pass.

Councilman Ingemann - No, you blew it off.

Mayor Geraghty - I constantly hear that people don't want to raise taxes. Mr. Flood, I get constantly criticized for it.

Councilman Gallagher - Dan is in favor of this.

Mayor Geraghty - Then he speaks from both ends because he said he wasn't going to support me because I raise taxes. He'll fund money to buy out houses and now he'll fund an officer, we're talking $80,000 to $100,000. Next September, if you decide to run, will you campaign on that theme that you want to raise taxes $100,000?

Councilman Gallagher - Yes, I'm in support of this.

Mayor Geraghty - And you're talking about a police officer, not code enforcement?

Councilman Ingemann - Yes.

Mayor Geraghty - Who will do code enforcement?

Councilman Ingemann - The Officers.

Mayor Geraghty - They don't want to.

Councilman Rahm - I thought the Chief said he would designate one officer to do code enforcement. My concern is that it's a hasty decision.

Councilman Ingemann - I don't think it's hasty. We talked about it last year and they blew it off and said bring it up again so we are.

Mayor Geraghty - You want to buy a City Hall too.

Councilman Ingemann - I never said that.

Mayor Geraghty - You said we blew that off too. Do you want to put out another $150,000 a year for a new City Hall?

Councilman Ingemann - Sure we have money.

Mayor Geraghty - We do have money but it was set aside in the event that LGA would go away. We're in good times now but it won't be that way all the time. That's why we have the rating we do have.

Councilman Ingemann - Per 1,000 population, we have a higher crime rate than Minneapolis. What do you think about that?

Mayor Geraghty - What kind of crimes?

Councilman Ingemann - It doesn't make any difference.

Mayor Geraghty - It sure does.

Councilman Gallagher - They all needed police response. Chief do you want to say anything?

Chief Montgomery - The budget is in your hands.

Mayor Geraghty - Maybe we should look at other alternatives too.

Councilman Ingemann - What's that?

Mayor Geraghty - Merging or County participation, there are other options.

Councilman Rahm - I would like to see the data on the rates per population. The Chief has also given us calls per officer and said it's higher for the area. Longer-term though, I'm not against an officer, I think we need to look at how we'll fit it in the budget and the priorities and how much we want to raise or keep taxes. I don't know if I want to make a hasty decision right now, I think it should be done during a budgeting situation. If we blew it off last year, I don't remember that.

Mayor Geraghty - We didn't blow it off, we made a decision not to.

Councilman Rahm - I'd rather have some more facts about the crime rate, loading, and cost and I don't have that in front of me to make a good decision.

Mayor Geraghty - As far as calls, I don't know if we're comparing apples to apples.

Councilman Ingemann - It all requires a response.

Mayor Geraghty - Does every other city blog every call or incident?

Councilman Ingemann - Yes.

Chief Montgomery - They use the same dispatcher.

Councilman Rahm - When we look at costs, I want to make sure we're looking at all of the costs such as uniforms, equipment, benefits, etc. and right now I don't see that information in front of me.

Councilman Gallagher - Did we ask for that information?

Councilman Ingemann - Yes.

Mayor Geraghty - She has some numbers in her memo.

Councilman Rahm - Does that include equipment cost?

Admin. Hill - That's just salary and benefits. There's uniforms, ammo and other items. We don't factor in squad cars.

Councilman Gallagher - You did put a squad car in there.

Councilman Rahm - We have another budget that we put money in for those type of replacements.

Councilman Gallagher - We have the money.

Mayor Geraghty - Not on a long-term basis. You have to budget it in going forward otherwise we'll deplete every dollar we have.

Councilman Gallagher - There's reserve built up and there's no indication that LGA will decrease in the next four years.

Mayor Geraghty - We don't know that and I'm not in favor of taking it out of the EDA fund. If you want to go out and campaign that you want to build a City Hall and raise taxes $250,000 maybe we'll be number one in the State tax-wise.

Councilman Gallagher - I don't have to campaign now, I'm sitting on the Council.

Mayor Geraghty - Why is it being brought up now then? Let's do it in August or September, right before the election, to talk about it.

Motion by Gallagher, seconded by Ingemann to hire a Full-Time Police Officer. With 2 Ayes, Geraghty, Sumner and Rahm voting Nay, the motion failed.

Councilman Sumner - Bring it up with the budget.

Councilman Ingemann - Put this on the agenda for the first meeting in July please.

10. ATTORNEY'S REPORT – Nothing to report

11. POLICE CHIEF'S REPORT – Nothing to report

12. FIRE CHIEF'S REPORT – Nothing to report

13. ENGINEER'S REPORT –
A. Fats, Oils, and Grease Ordinance

Grant Brekke of Brekke Sale Corporation presented on grease interceptors as attached.

Councilman Gallagher - John, does the State Plumbing Code say that you have to have a grease interceptor? I'm reading the Code and don't see that anywhere. It's city ordinances, not the State Code.

Engineer Stewart - Correct. What we're going to do here is coming up with an ordinance that says if you discharge grease in excess of 100 parts per million then you need to worry about a grease interceptor. If you don't do that, you don't need to worry about it. When we're dealing with a fast food restaurant that does a lot of cooking and washing, then it's required. When we deal with churches and all they're doing is bringing in food that's already been cooked then we don't need to worry about it, unless they do it all the time. Tinucci's had a backup this year and I went out and took a look at the sewer tapes and met with them and toured the shop and it was clean. You would never know that they have a grease problem that built up over a year because they did such a good job of containing it. Gus, you do have that one sink in the back that I think you would want an interceptor on.

Gus Tinucci - There was a thing on T.V. a week ago and someone said that we're pouring grease down the drain. We're not doing that and no one in our industry does that because it would clog our lines before it clogs the City's

lines.

Engineer Stewart - I would agree with that, there's no evidence of that at all, but when we got to your outlet pipe it was down to 2 inches. That fat and oil was coming from somewhere. If you had one of these interceptors, that wouldn't happen.

Mr. Tinucci - Are you saying that if we put an interceptor on we won't need to have our lines backwashed anymore?

Engineer Stewart - I would say that this would diminish the need but you won't be able to get away from it all together. You're putting it on the three-compartment sink?

Mr. Tinucci - Yes, that's where we need to put it correct?

Engineer Stewart - You can put it on any sink but I think you would want to put it where the most concentration is. You'll get most of your fat, oil and grease with an interceptor.

Mr. Tinucci - Last year, we recycled 25,000 pounds of grease with Sanimax. I agree the interceptor will help.

Engineer Stewart - This ordinance did arise from an incident at Tinucci's. The restaurant was clean and you wouldn't think a problem existed but when you televised the sewer pipe there was 2 inches out of 6 inches left.

Mr. Tinucci - We've had it cleaned every six months since 2006 and we would call Chuck Johnson to have him backwash it and we never had a problem but no one came and backwashed this last time and then we have a problem. Who's fault is that? It didn't get pushed down the line far enough because we're at a dead end.

Engineer Stewart - The bowling alley runs through your system too. We have a State Code that says they can be required to put on a grease trap. The ordinance before you says that you don't need one if you don't go over 100 parts per million. We've been televising the restaurants in town to determine which ones have grease and which ones don't. What we'd like to do is have you consider this ordinance that requires the restaurant owner to prove that they don't need one. If they do, it would require up to monthly pumping. I would suggest that most of the places will be pumping quarterly. It's something that we do have a need for. Our main lift station has about a foot of grease on the walls. We don't have to treat it but it is an issue. We would like to get to the point where the City can require a restaurant to put on an interceptor. We're not talking about septic tanks, we're talking about something smaller.

Councilman Ingemann - Who determines 100 parts per million and at what point?

Engineer Stewart - What we're going to do is look at the televising tapes and if there's evidence of grease, we'll do some more investigation. If the pipe is pretty clean we'll walk away from it. The 100 parts per million is if we get into an argument. We would require the owner of the restaurant to take a sample and show us it isn't 100. We're not looking to create trouble.

Councilman Rahm - Do our surrounding communities require these?

Engineer Stewart - I'm not sure about St. Paul Park but Cottage Grove and Woodbury do.

Superintendent Hanson - Like John said, we're going to restaurants to televise and if there's no issue then we'll walk away but if there's an issue we'll talk with them.

Mr. Tinucci - They were at our restaurant the other day and said there was no issue. I think we're at a disadvantage because we're at the end of the line. Brian has water flowing by him constantly so it can't build up at his place. How many houses have garbage disposals for the main lift station, that ends up there too.

Superintendent Hanson - We know we have an issue at your place because you have to clean it every six months.

Mayor Geraghty - Are you suggesting that we take out the monthly on item 6?

Engineer Stewart - No, I'm suggesting we leave it in, it says quarterly later on. I don't know if we'll have to make people pump monthly unless they're bad actors.

Brian North - Who pays for the pumping?

Engineer Stewart - You do.

Mr. North - So we have to pay for the installation and quarterly pumping?

Engineer Stewart - Yes.

Mr. Tinucci - Who pays for the inspector?

Engineer Stewart - We'll ask you to give us a copy of your pumping invoice and if there's a problem we'll come and inspect.

Councilman Sumner - How do they pull the grease off?

Engineer Stewart - They suck everything out of the tank.

Councilman Sumner - But the grease will stay on the edge.

Engineer Stewart - I have seen them flush it out too.

Councilman Sumner - What's a typical cost?

Mr. Brekke - I've heard $0.25 per gallon so about $50.

Councilman Sumner - Can these be installed in the basement?

Engineer Stewart - No. For Tinucci's, they thought about putting it underneath their sink. We're not talking about digging big holes.

Mr. North - Are you acting on this tonight?

Mayor Geraghty - If you think it's user-friendly enough.

Engineer Stewart - Have you had a chance to look at it yet?

Mr. North - No.

Engineer Stewart - Why don't we give them a chance to look at it.

Mayor Geraghty - I think the fundamental thing is that you put in a grease trap and it's not a high cost.

Councilman Gallagher - You can get out of this too if you don't have grease?

Superintendent Hanson - Yes. If we don't see any grease on the tapes it's not an issue.

Mr. Tinucci - We have a national chain in town and they are on a main line and run more grease than anyone.

Superintendent Hanson - I look at their line not the main line, that makes no difference.

Councilman Sumner - How many restaurants do we have in town?

Superintendent Hanson - We're doing 10 facilities and have looked at 3 so far.

Councilman Sumner - Let's table it until we get all of the information.

Superintendent Hanson - It's still an issue if they're putting grease down the line/

Councilman Ingemann - A month won't make a difference will it?

Engineer Stewart - No.

Councilman Rahm - This is not unusual for other cities that are looking at these things too.

Engineer Stewart - Right.

Councilman Gallagher - Regardless of how the televising goes, we're still going to look at this ordinance. I don't think it matters how the televising goes, we would still have to pass something like this.

Mayor Geraghty - Is new construction addressed in here?

Engineer Stewart - Yes. There's no pressing issue to do it tonight.

Mayor Geraghty - I know you don't want to do it but it doesn't seem like it'll cost as much as we had originally thought.

Councilman Rahm - How do we measure the 100 parts per million?

Engineer Stewart - We would put in a sewer sampler for 24 hours and takes some sewage every 15 minutes. We would test it from that and it would tell us if it's over 100 parts per million.

Councilman Rahm - As a restaurant owner, wouldn't I want you to prove that I need it?

Engineer Stewart - I would make you pay for it though and prove that you don't.

Councilman Sumner - We can exempt a restaurant by looking at the televising?

Engineer Stewart - Yes, if there's no grease in the sewer we won't require them to put one in.

Mayor Geraghty - Does this apply to residential properties too?

Engineer Stewart - If they are producing more than 100 parts per million then yes.

Motion by Geraghty, seconded by Sumner, to table Ordinance No. 2014-4 until May 1, 2014. With 5 Ayes, 0 Nays, the motion carried.

14. SUPERINTENDENT OF PUBLIC WORKS REPORT – Nothing to report.

15. NEW/OLD BUSINESS

Admin. Hill - There is a memo from the Washington County HRA for a bus tour for them to present some marketing efforts and to visit some housing developments. This would be Wednesday, April 30 from 4 to 8. I'll send an email out next week.

Councilman Gallagher - Make sure you notice this on the website.

Executive Analyst Helm - Of course.

Councilman Gallagher - Can you also put something on our website about the Stone Soup Fundraiser?

Executive Analyst Helm - Typically, I get something from them but I haven't yet.

16. ADJOURNMENT
Motion by Geraghty, seconded by Rahm, to adjourn the regular Council Meeting at 6:48 P.M. With 5 Ayes, 0 Nays, the motion carried.

Signed: _____
Tim Geraghty, Mayor

Respectfully Submitted,

Renee Helm
Executive Analyst

Grease Interceptors
FOG (fats, oils and grease)

Presented To

City of Newport

4-3-2014

By Grant Brekke

Table Of Contents

I. Why is grease pre-treatment so important?

II. What are the local and national standards for grease interceptors?

III. Types of GI's.

IV. How do grease interceptors work?

V. Available materials for grease interceptors.

Why is grease pre-treatment so important?

A. Clogs municipal sewer lines and causes Sanitary sewer overflows.

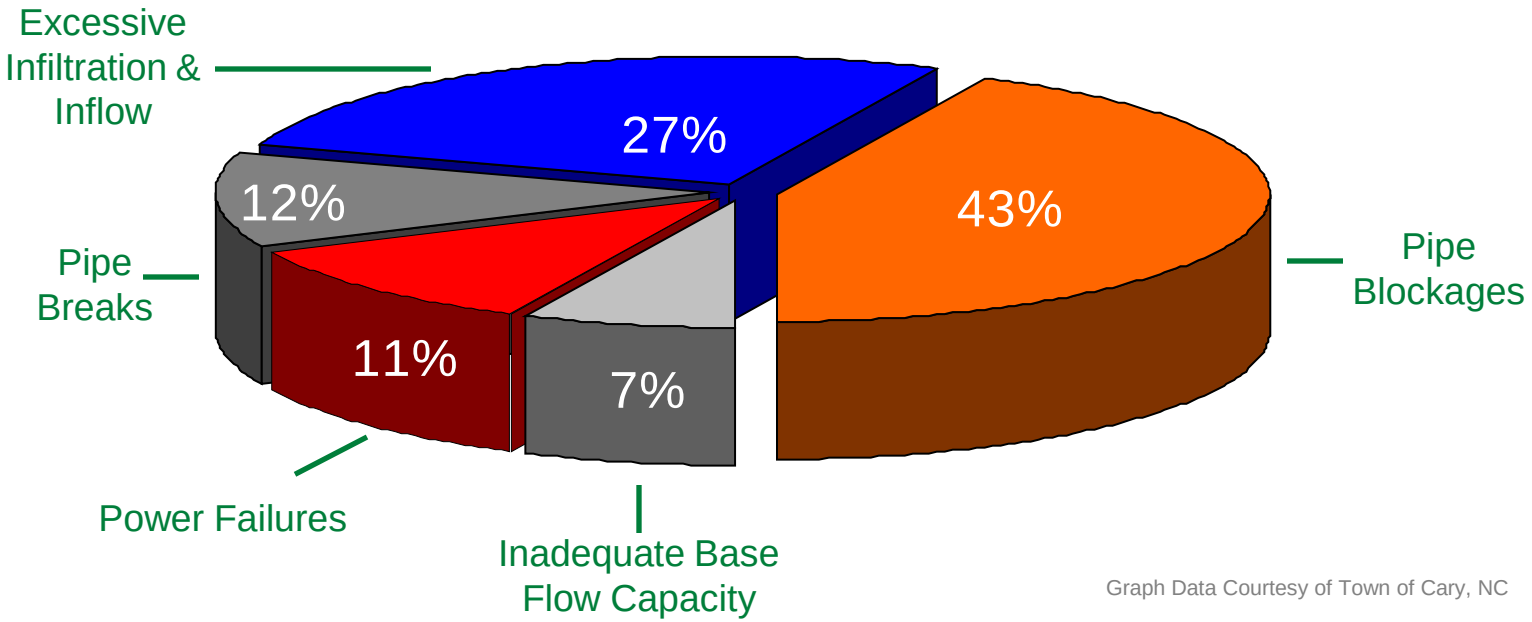
B. FOG is not digestible by treatment plants

C. FOG-laden waste hurts the environment

D. Codes require treatment and containment.

Why Do We Need Grease Interceptors?

Causes of Sanitary Sewer Overflows



Graph Data Courtesy of Town of Cary, NC

Quick Take **FOG blockages are the primary cause in 40% to 50% of pipe blockages** (Southerland, 2002).

- What is FOG? FOG refers to Fats, Oil, and Grease from food preparation, food services and kitchen clean up. It is generated in most types of restaurants and food service establishment kitchens.

- Why is FOG a problem? When poured down the drain, FOG can build up in pipes, pumps, and equipment, causing significant problems in the community's sewer system and wastewater treatment plants. Typical problems include sewer line blockages that can lead to sewer overflows and spills that cause environmental and health hazards, odors, property damage, and loss of customers.

SCHIER PRODUCTS

Why Do We Need Grease Interceptors?

Clogs municipal sewer lines

Accumulated grease deposits in sanitary sewer main.

Sanitary Sewer Overflow (SSO)

Quick Take

FOG greatly reduces the capacity (shrinking I.D.) of sewer lines, and clogs lift stations.

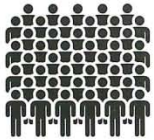
SCHIER PRODUCTS

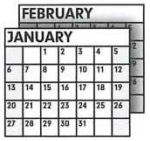
•How much grease can be produced?

Step 2 of 2: calculate grease capacity

After sizing for flow rate, calculate the grease capacity needed per the formula below. Recommended interceptor should have adequate grease storage capacity to support desired pump-out frequency.

Meals or Customers Per Day ✖ Grease Production (lbs.) Per Meal (see A B C D E F below) ✖ Days Per Pump-Out Cycle = **Grease Capacity Needed**





Low Grease Production[5]

- A **No Flatware:** 0.005 lbs./meal
- B **With Flatware:** 0.0065 lbs./meal

Examples: Sandwich Shop, Convenience Store, Fresh, Bar, Sushi Bar, Delicatessen, Snack Bar, Frozen Yogurt, Hotel Breakfast Bar, Residential

Medium Grease Production[5]

- C **No Flatware:** 0.025 lbs./meal
- D **With Flatware:** 0.0325 lbs./meal

Examples: Coffee House, Pizza, Grocery Store (no fryer), Ice Cream Parlor, Cafeteria (no food prep), Japanese, Fast Food, Drive-In, Greek, Indian, Low Grease Output FSE (w/fryer)

High Grease Production[5]

- E **No Flatware:** 0.035 lbs./meal
- F **With Flatware:** 0.0455 lbs./meal

Examples: Cafeteria, Family Restaurant, Italian, Steak House, Bakery/Donut Shop, Chinese, Buffet, Mexican, Seafood, Fried Chicken, Grocery Store (w/fryer), Barbecue

•Examples:

•Pizza 200 meals per day, times .0325 = 6.5 lbs of grease per day. Times 30 days = 195 lbs per month. 585 lbs per qtr.

•Burger or chicken fast food 300 meals per day, times .034 = 10.5 lbs per day, times 30 days = 315 lbs per month. 409 lbs with flatware. 1227 lbs per qtr.

SCHIER PRODUCTS

Why Do We Need Grease Interceptors

FOG is not digestible by treatment plants

Clean water exiting treatment facility

FOG Laden water exiting treatment facility

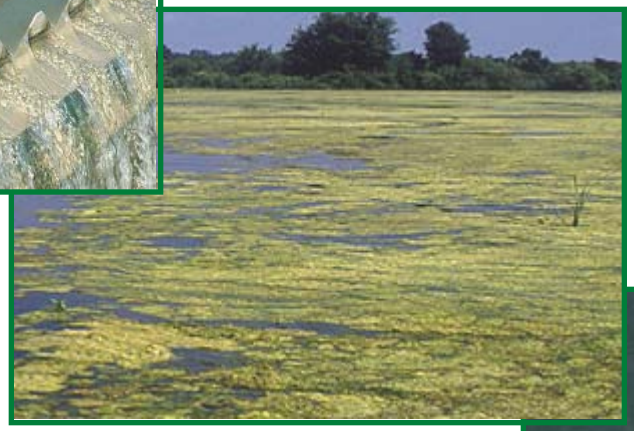
Quick Take **Treatment Plants cannot adequately process FOG-laden water**

Why Do We Need Grease Interceptors

Hard on the environment

1 FOG-laden water exits to rivers from treatment plants.

2 Increased nutrients stimulate and accelerate algae growth (bloom)



3 Algae increase causes small fish population to likewise increase

4
- Increase in fish numbers contributes to *Phisteria* outbreaks: causes fish kills
- Death of algae and its decomposition causes oxygen levels to decrease: causes fish kills

Quick Take **FOG - laden water bad for river/lake health**

SCHIER PRODUCTS

What are the local and national standards for grease interceptors?

A. Flow Rate Based Grease Interceptor Standards

B. Volume Based Grease Interceptor Standards

What Are The National Standards?

Grease Interceptor Standards: Hydromechanical

- There are three “performance-based” national standards for grease interceptors 100 GPM and below.

Standards Comparison	Standard Name	Recognized by IPC & UPC	Allow External Flow Control	Allows Built-In Flow Control	Covers 4-100 GPM	Standard Type
ASME	A112 Series	Yes	Yes	Yes	Yes	Consensus
CSA	CSA-B481	No	Yes	Yes	Yes	Consensus
PDI	PDI-G101	No	Yes	No	Yes	Proprietary

- ***Consensus Standard** An open process with balanced committees where all interests are represented in the creation of a standard. There is only one consensus grease interceptor standard in the U.S.: ASME’s A112.14 Series (A112.14..3, A112.14.4, A112.14.6).

- ***Proprietary Standard** Written by a group of individuals who have a proprietary interest in the way the standard reads. The standard is not open to anyone beyond selected committee for review. PDI-G101 is a proprietary standard.

SCHIER PRODUCTS

Minnesota Code history.

4715.1110 GREASE INTERCEPTORS FOR COMMERCIAL BUILDINGS.

A grease interceptor of sufficient size and efficiency shall be installed in the waste line leading from sinks, drains, or other fixtures when, in the opinion of the administrative authority, greasy wastes can be introduced into the drainage system in quantities that can cause line stoppage. Grease interceptors shall be placed as near as possible to the fixture and the grease interceptor shall be vented. No food waste disposer or dishwashing machine shall discharge into the building drainage system through a grease interceptor. Sinks or other fixtures served by grease interceptors shall be trapped and vented ahead of the grease interceptor.

Grease interceptors, when used, shall have a grease retention capacity in pounds of grease, of at least twice the flow-through rate, in gallons per minute.

Grease interceptors shall be equipped with devices to control the rate of water flow through the interceptors so that it does not exceed the rated flow of the interceptor. Air openings on flow control devices must connect to the plumbing vent system.

STAT AUTH: MS s 16B.62; 326.37 to 326.45
HIST: 19 SR 590

- 1998 code language.
- A 35 gpm Hydromechanical GI has to retain 70 lbs of grease.
- No mention of Gravity style GI's.

SCHIER PRODUCTS

4715.1100 INTERCEPTORS AND SEPARATORS REQUIRED.

Interceptors for oil, grease, sand, and other substances harmful or hazardous to the building drainage system shall be provided as stated elsewhere in these rules.

The size, type, and location of each interceptor, and of each separator shall conform to the requirements of this chapter, except that units may be accepted which are engineered and manufactured specifically for the intended function and which are documented by the manufacturer and project design engineer to be properly designed and sized for the specific project, and no waste other than those requiring treatment or separation shall discharge into any interceptor.

STAT AUTH: MS s 16B.62; 326.37 to 326.45; 326B.121; 326B.43 to 326B.49
HIST: 19 SR 590; L 2007 c 140 art 4 s 61; art 6 s 15; art 13 s 4

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4715.1115 EXTERIOR GREASE INTERCEPTORS.

Subpart 1. **Authorized uses.** An exterior grease interceptor may be installed if it is acceptable to the administrative authority. Only fixtures that discharge greasy waste may be piped to the interceptor. Dishwashing machines and food waste grinders may not be routed through the interceptor unless the routing is acceptable to the administrative authority.

Subp. 2. **Construction.** The grease interceptor tank must be readily accessible for inspection and maintenance. The tank must comply with parts 5 and 6 of ASTM Standard C1227-98. The name of the tank manufacturer, the liquid holding capacity, and compliance with ASTM C1227-98 for the tank construction must be permanently affixed to the tank.

The grease interceptor must allow a detention time of at least 30 minutes and must be protected from freezing. The landscape must be bermed to divert runoff. The tank must be protected to prevent loadings that may lead to structural collapse.

The materials used in piping to the inlet of the tank must comply with building drain requirements. The tank outlet piping may comply with building sewer materials, unless the outlet piping reenters the building, in which case, the materials must be approved for building drain to point of connection to building sewer.

Baffles or tees must be provided at the inlet and outlet of the tank. The invert of the inlet must be at least two inches above the invert of the outlet. The inlet baffle/tee must extend at least six inches below the liquid level, and the outlet baffle/tee must extend at least 12 inches below the liquid level of the tank. Both inlet and

- 2009 code language
- Hydromechanical still the same. Code now acknowledges Gravity Style GI's.
- ASTM standard only allows concrete construction.
- Code now seperates inside and exterior GI's.
- No standards on gravity units, so, they sited a septic tank ASTM design.

SCHIER PRODUCTS

New Grease Interceptor code language has been written into the 2012 Minnesota Plumbing Code. This language was voted on and approved with a 12-0 vote by the Plumbing code committee.

SCHIER PRODUCTS

4715.1100 INTERCEPTORS AND SEPARATORS REQUIRED.

Interceptors for oil, grease, sand, and other substances harmful or hazardous to the building drainage system shall be provided as stated elsewhere in these rules.

The size, type, and location of each interceptor, and of each separator shall conform to the requirements of this chapter, except that units may be accepted which are engineered and manufactured specifically for the intended function and which are documented by the manufacturer and project design engineer to be properly designed and sized for the specific project, and no waste other than those requiring treatment or separation shall discharge into any interceptor.

STAT AUTH: MS s 16B.62; 326.37 to 326.45; 326B.121; 326B.43 to 326B.49
HIST: 19 SR 590; L 2007 c 140 art 4 s 61; art 6 s 15; art 13 s 4

4715.1105 GREASE INTERCEPTORS.

Subpart 1. **Uniform Plumbing Code (UPC).** For the purposes of this part, "UPC" means the 2009 edition of the Uniform Plumbing Code as adopted by the International Association of Plumbing and Mechanical Officials (IAPMO), 5001 East Philadelphia Street, Ontario, CA 91761. Portions of this part reproduce text and tables from the UPC, with permission of IAPMO. The UPC is not subject to frequent change and a copy of the UPC is available in the office of the commissioner of labor and industry. The UPC is copyright 2009 by the IAPMO. All rights reserved.

Subp. 2. **General requirements.** A grease interceptor complying with this part shall be installed in waste lines leading from fixtures or equipment in establishments where grease may effect line stoppage as determined by the administrative authority. Only waste requiring separation may discharge to a grease interceptor. Food waste grinders and dishwashers may discharge to a gravity grease interceptor where permitted by the manufacturer and the administrative authority.

Each establishment for which a grease interceptor is required shall have an interceptor that serves only that establishment unless otherwise approved by the administrative authority. Grease interceptors must be installed in approved locations and must be readily accessible for inspection and maintenance. Grease interceptors shall be located as close as practical to the fixtures served. Each grease interceptor installation must preclude siphoning and provide air relief. Each fixture discharging to a grease interceptor shall be trapped and vented according to this chapter.

A grease interceptor located outside the building that is a part of an individual sewage disposal system is not subject to the requirements of this chapter.

Subp. 3. **Hydromechanical grease interceptors.**

A. Hydromechanical grease interceptors shall comply with ASME Standard A112.14.3. Plumbing fixtures or equipment connected to a hydromechanical grease interceptor shall discharge through an approved type of flow control installed in a readily accessible and visible location. The total flow through the flow control device shall not be greater than the rated flow of the grease interceptor. No external flow control device having adjustable or removable parts shall be installed. Except for integral flow control devices, each flow control vent shall connect to the plumbing vent system. A vent shall be installed downstream of the grease interceptor according to this chapter.

B. Hydromechanical grease interceptors shall be sized using one of the following methods.

(1) When the flow rate of fixtures or appliances are unknown, the grease interceptor shall be sized based on the diameter of the drain discharging to the interceptor according to the following table:

- 2012 code language.
- New language gets rid of inside/exterior GI's. But, now includes sizing.

SCHIER PRODUCTS

Hydromechanical Interceptor Sizing Using Gravity Flow Rates

waste pipe diameter, in.	min. interceptor size, gpm
2	20
3	75
4	150
5	250
6	500

(2) Where fixture dimensions and flow rates of all connected fixtures and equipment are known, the interceptor must be sized as follows:

(a) calculate the volume of each connected fixture;

(b) multiply the volume of all connected fixtures by a fill factor of 0.75 to obtain the discharge volume;

(c) divide the fixture discharge volume by a drain period of one minute; and

(d) add flow rates of appliances, hydrants, and equipment. The minimum grease interceptor size is the sum of all flow rates discharging to the interceptor.

C. Example for sizing using fixture capacity: Two compartments of a sink, a hose bibb, and an appliance will discharge to the interceptor.

(1) Calculate the volume of each fixture.

[Length, in.] x [Width, in.] x [Depth, in.] /231=[Volume, gallons]

24"x24" 12"x2 compartments /231=59.8 gallons

(2) Calculate the discharge volume of each fixture.

[total volume] x 0.75 fill factor = [discharge volume]

59.8 gallons x 0.75 = 44.9 gallons

(3) Calculate the flow rate from each fixture.

[discharge volume]/[1-minute drainage period]=[flow rate]

44.9 gallons/1 minute=44.9 gpm

(4) Add flow rates from appliances, equipment, and hydrants.

2 compartments of a sink	44.9 gpm
Hose bibb	5 gpm
Appliance	2 gpm
	51.9 gpm

(5) Minimum interceptor size. The interceptor must be rated at 51.9 gpm or greater.

Subp. 4. **Gravity grease interceptors.** Gravity grease interceptors shall comply with IAPMO/ANSI Standard Z1001 or ASTM Standard C1613. Gravity grease interceptors shall provide for free air circulation through the interceptor and inlet and outlet pipes. Gravity grease interceptors shall be sized by the drainage fixture unit value for all connected fixtures according to the following table.

Drainage fixture units (A,B,C)	Interceptor volume, gallons
8	500
21	750
35	1,000
90	1,250
172	1,500
216	2,000
307	2,500
342	3,000
428	4,000
576	5,000
720	7,500
2,112	10,000
2,640	15,000

A. The maximum allowable drainage fixture units plumbed to the kitchen drain lines must be connected to the grease interceptor.

B. When the flow rate of directly connect fixtures or appliances have no assigned drainage fixture unit values, the additional grease interceptor volume shall be based on the known flow rate (gpm) multiplied by 30 minutes.

C. Drainage fixture unit values must be determined according to part 4715.2300.

Subp. 5. **Protective Treatments.** Grease interceptors constructed of metal, concrete, or other materials subject to corrosion shall have protective treatment approved by the manufacturer.

- ASTM standard is finally a GI standard.
- Pot or scullery sink is 4 FU. Three compartment sink would be valued at 12 FU. 750 gal. unit.

- Above and beyond UPC language.

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Subp. 6. **Interceptors located outside of buildings.** A grease interceptor outside of the building must be installed to be protected from freezing. Buoyancy protection must be provided when required by the manufacturer's installation instructions. If installed in a nonpaved area, the landscape must be bermed to divert runoff. Accessways for exterior grease interceptors must be at least 20 inches square or a diameter to allow adequate access to tank interior for inspection and maintenance. Access to the inlet and outlet must be provided. The grease interceptor and covers must be protected from loadings that may lead to structural collapse and must be designed to withstand any anticipated traffic loadings. Exterior grease interceptors to be abandoned are subject to the requirements of the Minnesota Pollution Control Agency for abandoning septic tanks.

Subp. 7. **Labeling.** All grease interceptors must contain a clear and permanent product identification label listing the construction standard identified in subpart 3 or 4 and any additional labeling requirements of that standard.

Subp. 8. **Testing, maintenance, and records.** Each grease interceptor installation must pass a manometer test with one inch of water column for five minutes or a vacuum test with two inches of mercury for 60 minutes. Grease interceptors shall be inspected at least once every three months and shall be maintained in efficient operating condition by periodic removal of the accumulated grease and latent material. Records of inspection and maintenance must be kept. The administrative authority shall set the exact frequency, duration, and availability of the inspection, cleaning, and record-keeping information.

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How Do Grease Interceptors Work?

A. Flow Control or Hydromechanical

B. Retention Time, Gravity Style

How Do Grease Interceptors Work?

Flow Control, Hydromechanical

- Hydromechanical grease interceptors work by using the wastewater as a separation medium. Particles less dense than water float to the surface, while heavier-than-water particles settle at the bottom. Because this "processing" takes time, the Hyrdromechanical interceptor requires a flow control device to meter the flow of the effluent.

Without Flow Control

- Effluent can move too quickly through the unit, keeping the grease entrained in the water and carrying it through the outlet.
- Turbulence is created inside the unit, which also keeps grease entrained in the flowing water and carries it through the outlet.

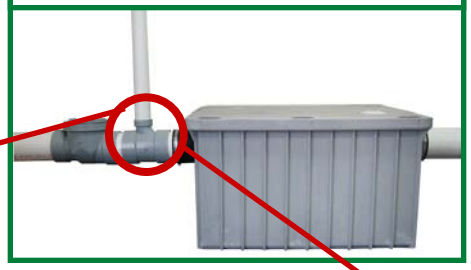
Quick Take **Flow control is a crucial part of a Hydromechanical grease separator.**

SCHIER PRODUCTS

How Do Grease Interceptors Work?

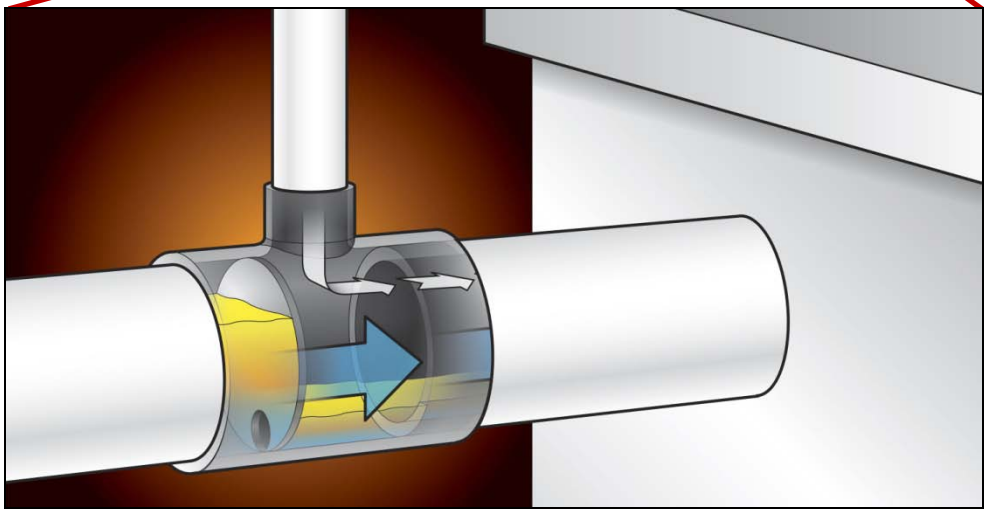
Flow Control: External flow control

Unit with External Flow Control



External Flow Control – The traditional design

- Requires additional labor and materials to install.
- Requires venting/air intake to function properly.



Quick Take **External flow control is harder to enforce during installation and is hard to keep clog-free.**

How Do Grease Interceptors Work?

Flow Control: Built-In, internal

Built-In Flow Control

- Requires no additional labor or materials to install, thus promoting correct installation.
- Does not require additional venting (pipe, fittings, glue, pipe hangers, labor).
- Is easy to clean from inside the unit.

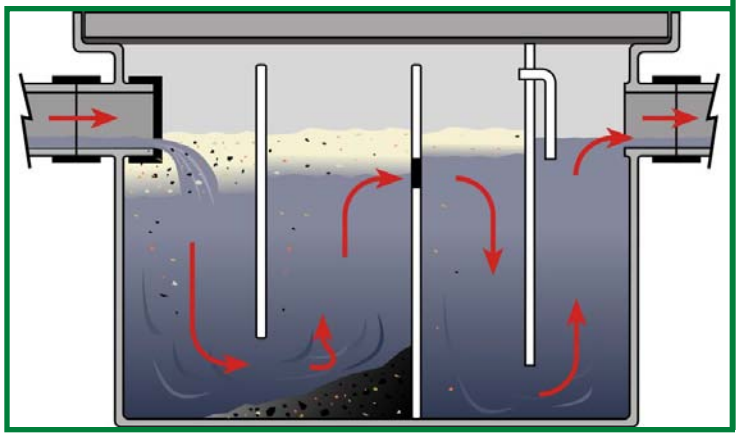
How Do Grease Interceptors Work?

Baffles, good or bad?

- **Baffles** have been a key tenet of interceptor design for over 60 years. Baffles force effluent to travel a longer route, aiding separation while limiting turbulence.

Research has shown that baffles also

- Create sharp and narrow turns in the effluent path, which increases velocity and turbulence. Turbulence slows separation and reincorporates settled grease and sediments back into the effluent travel path, and eventually carries them through the outlet.
- Make grease interceptors more difficult to clean by restricting access and creating unnecessary surface areas for grease to stick to.
- Create 'dead spots' of no flow, effectively reducing the size of the interceptor by not making the entire wet volume available during separation.

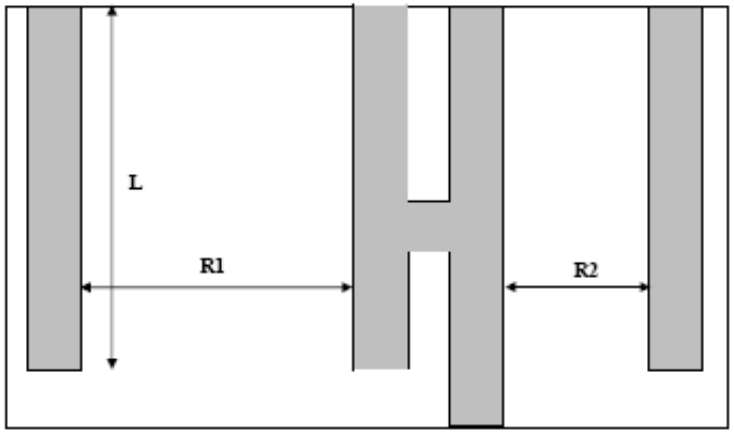


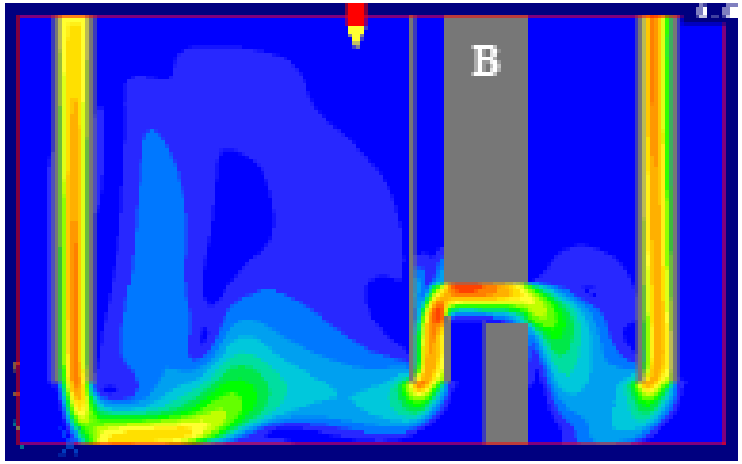
Quick Take **Baffles are the traditional internal design for grease interceptors.**

SCHIER PRODUCTS

How Do Grease Interceptors Work?

Flow Pattern: WERF (water environment research foundation) F.O.G. Study



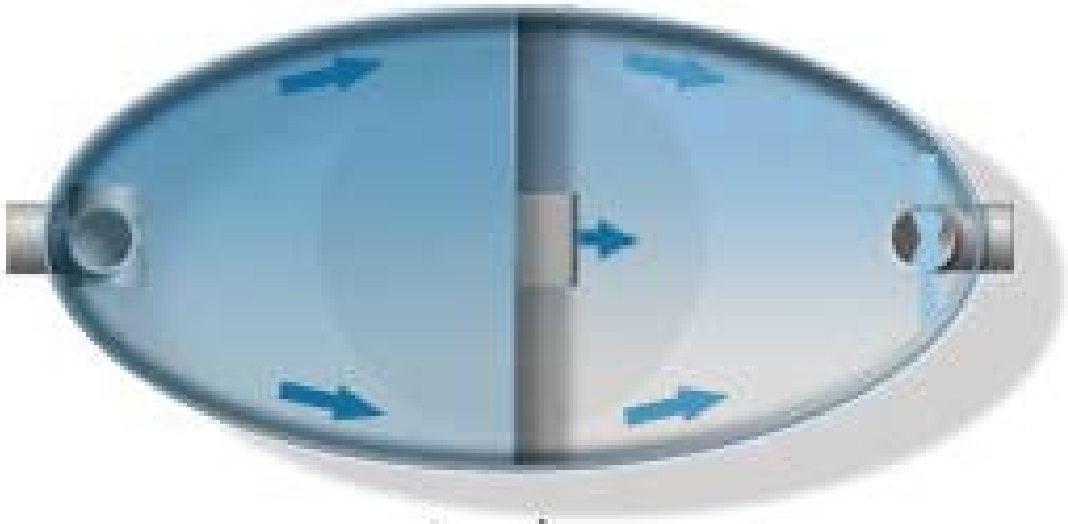


- 25 Simulations were performed using different combinations of the variables above, including a simulation with an R2/R1 value of “0” denoting the absence of a baffle.
- The best-performing simulation had no baffle
- Contradicts IAPMO Z1001, ASTM F2649-08, & UPC Section H which all mandate a baffle

“Analysis of the results of the simulation suggests that the inclusion of a baffle wall may be detrimental to the removal of influent oil.”

- Baffle wall orifice creates acceleration of flow which can lead to short-circuiting (see above)

Quick Take **Baffles caused a performance reduction**

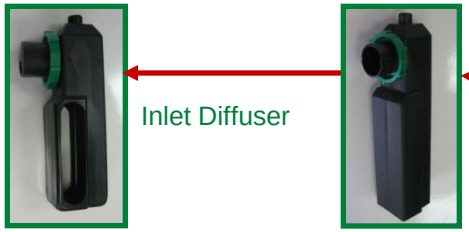


topview

How Do Grease Interceptors Work?

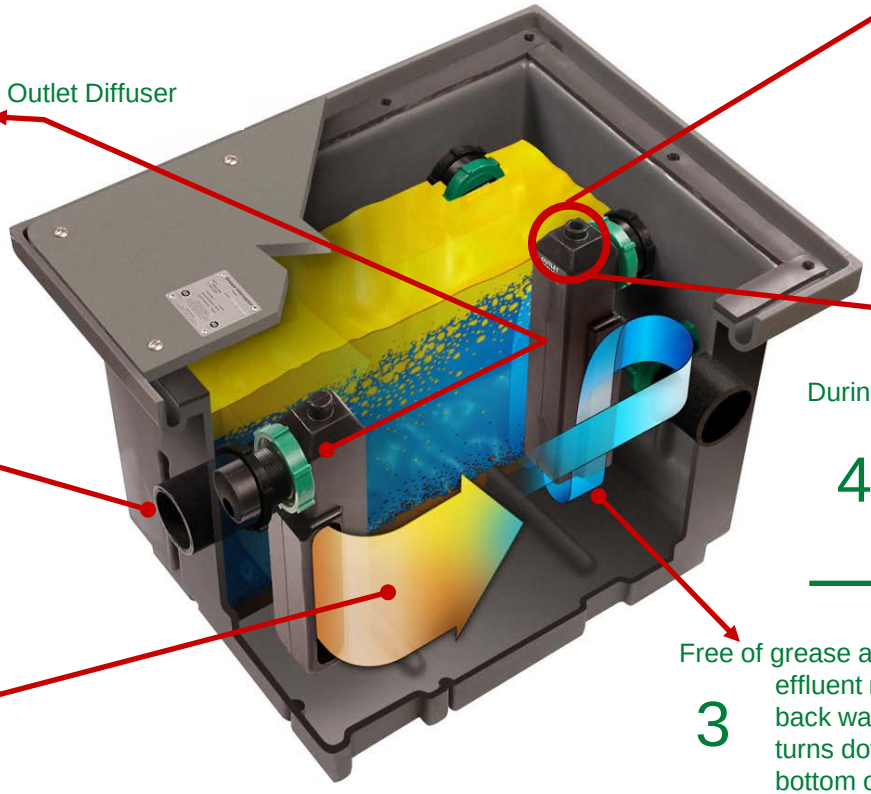
Hydromechanical with inlet Diffusers

•**Inlet and Outlet Flow Diffusers** create a distributed flow pattern inside the interceptor which makes all of the wet volume available for separation.



Inlet Diffuser

Outlet Diffuser



1 Effluent is evenly distributed from the slots of the inlet diffuser for a "centered flow" between the grease and sediment layers.

2 Effluent flows smoothly across the inside of the unit, while grease rises and the sediment drops.

3 Free of grease and sediment, the effluent reaches the back wall of the unit, turns down, then out the bottom of the outlet diffuser.

4 During operation, the air-relief at the top of the outlet diffuser allows the unit to breathe without additional venting at the sidewall of unit.

* Per NSF data of Schier Trapper II models

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How Do Grease Interceptors Work?

Retention Time: Theoretical vs. Actual

*For example only, not actual data

- The simple formula for retention time only holds true if there is a perfectly distributed flow through the static body of water (interceptor).
- If the St. Clair River dumps into Lake St. Clair at 1Million Gallons Per Hour, and Lake St. Clair has a volume of 1 Billion Gallons, we could say that St. Clair River water is retained by the lake for 1,000 hours. In reality, most of the incoming river water flows to the Detroit River in much less time. The same is true with grease interceptors with poor flow pattern design. <u>Larger does not always = better.</u>

Available materials for grease interceptors

A. Steel
B. Stainless Steel
C. Concrete
D. Fiberglass
E. Thermoplastics

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Available Materials

Steel

Heavy, increasingly thinner, rust-prone covers
1

Rust-prone construction, guaranteed to rust and fail.
2

Difficult to carry and install. Increases labor costs and jobsite injury.
5

Interior walls become rusted, pitted – harboring FOG and bacteria and leaching waste into the surrounding soil
3

4
Increasingly thinner walls and baffles accelerate time to failure

Unprotected Steel is the wrong material for grease interceptors.

Target!!!

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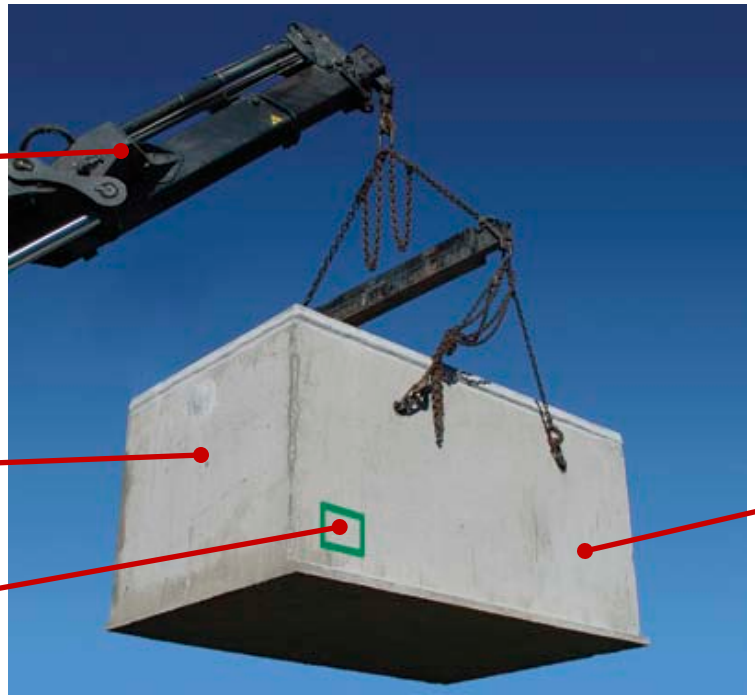
Available Materials

Concrete

1 Heavy. Cranes needed to place the unit at the jobsite. Extra reinforcements needed due to weight.

2 Large footprint required for placement



3 Concrete corrodes when in contact with F.O.G., Per, Portland Cement Handbook. Mn code requires internal lining.

5 Currently there are no pre-cast concrete grease interceptors that offer third-party certified flow-rates or grease capacities.

Quick Take **Concrete is the wrong material for grease interceptors.**

Available Materials

Replacing a concrete unit, after 5 years in use, with a HDPE unit

SCHIER PRODUCTS

Available Materials

Polyethylene

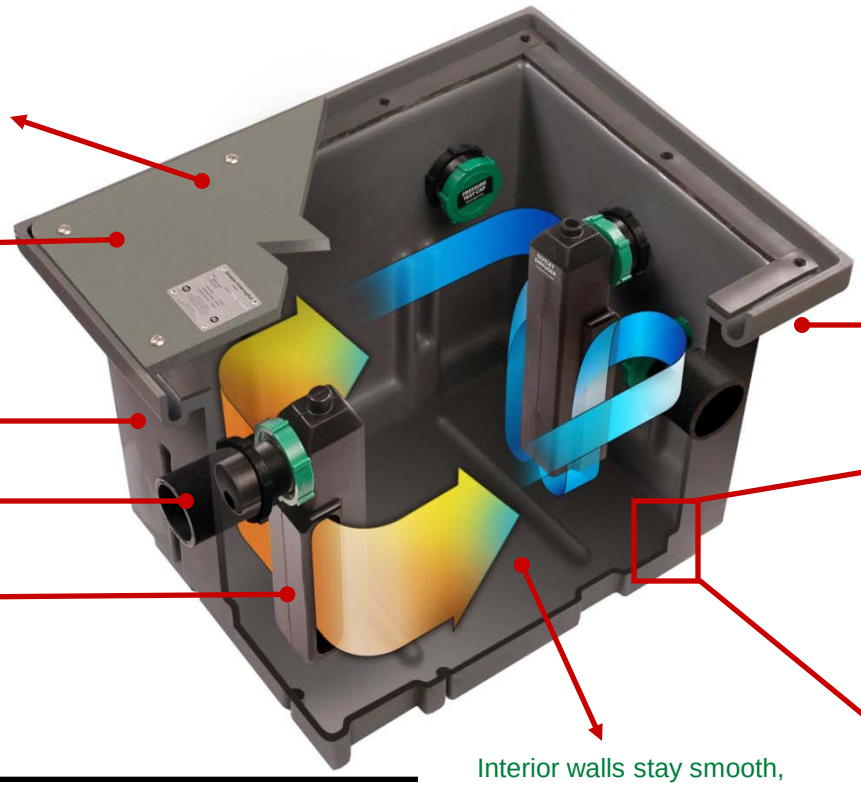
1 Heavy-duty body and covers

2 100% corrosion-proof construction: cover, walls, connections, guts.

3 Interior walls stay smooth, easy-to-clean, sanitary.

4 Polyethylene has uniform wall thickness. Durable and crack-resistant.

5 Ergonomically-designed for easy transport to installation location. Reduces labor costs.



Quick Take **Thermoplastics are a good material choice for grease interceptors. One Manufacturer offers a Lifetime Warranty.**

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Available Materials

Comparison of Available Materials

•Materials •Comparison	Corrosion Proof?	•Lightweight?	•Inexpensive?	•Easy to Install?
•Steel	No	•No	•Yes	•No
•Stainless Steel	Yes	•No	•No	•No
•Concrete	No	•No	•Yes	•No
•Fiberglass	Yes	•No	•No	•No
•Thermoplastics	Yes	•Yes	•Yes	•Yes

Concrete

Steel

Thermoplastic

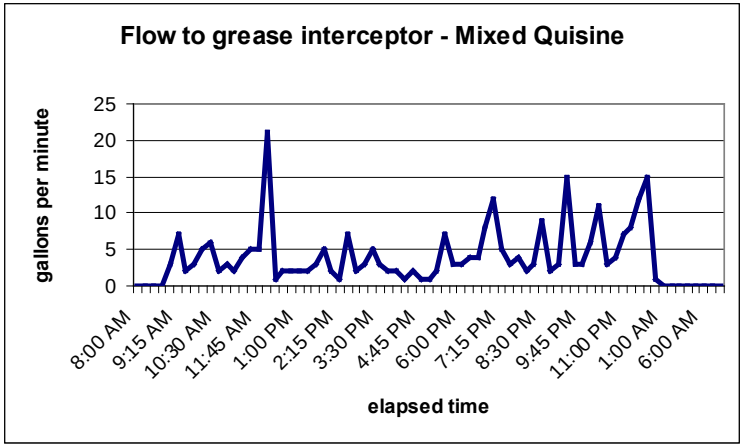
Stainless

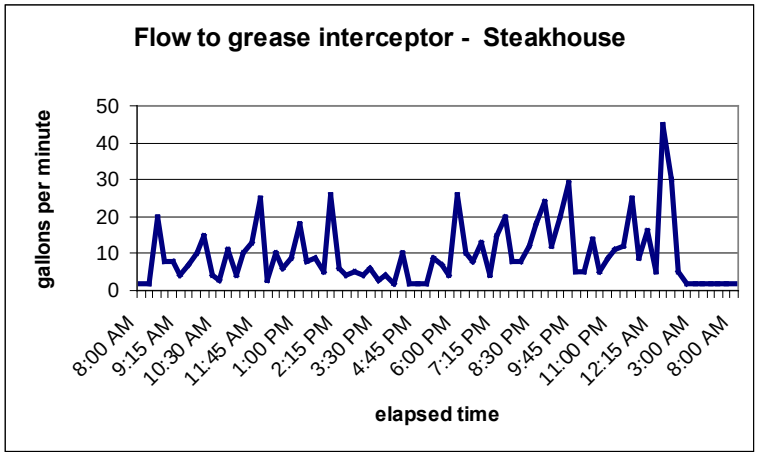
Fiberglass

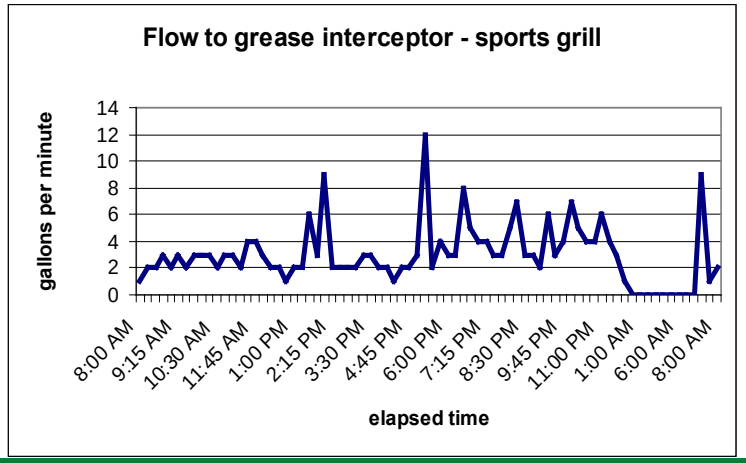
GI Flow Analysis

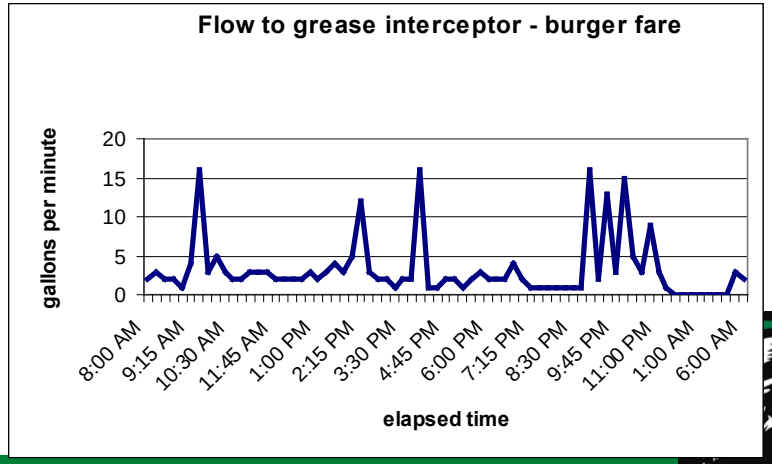
- Flow observations were made at 23 restaurants in the Town of Cary.

GI Flow Analysis









GI Flow Analysis

- 23 restaurants observed
- GI Sizes ranged from 1,000 to 1,500 gallons
- Water use ranged from 1,700 to 6,300 GPD
- 90-95% of flows fell below 10 gpm
- Peak flow rates were 3-7 times the average flow for the day
- Data suggests long average retention times, exceeding 2 hrs
- Gravity units oversized.

Thank You For Your Time!

SCHIER PRODUCTS