

FOG & Flushable Wipes



Raleigh

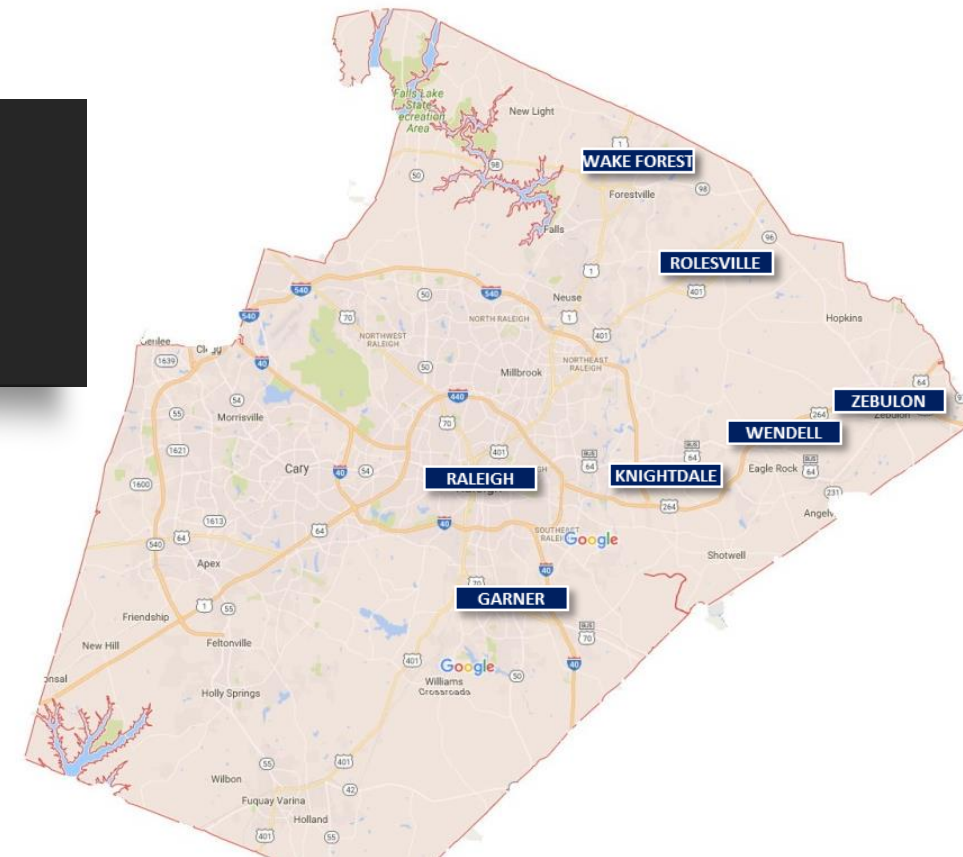
Stephen Calverley, Utility Analyst
Dustin Tripp, Senior Utility Analyst/ORC

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City of Raleigh Public Utilities Department

- CORPUD serves the City of Raleigh and the communities of:
 - Garner
 - Rolesville
 - Wake Forest
 - Knightdale
 - Wendell
 - Zebulon
- That is over 500,000 customers!



Sewer Maintenance Operations



610 Administration



61301 Easements Inspection



61303 Preventive Maintenance



615 CCTV Inspections



612 Repairs



61302 Easements Maintenance



61304 Reactive Maintenance



633 Fats, Oil & Grease

Sewer Maintenance Quick Facts

Maintain over 2600+ miles of main
Over 1000+ miles outside of paved
surfaces

FY18 SSO Rate was 1.07



Anatomy of a FOG Program

Presented by:
Stephen Calverley

F O O G
FATS OILS GREASE

CLOGS PIPES!

Fats, Oils & Grease Program Overview

- Inspect 2,228 Food Service Establishments (FSEs) and Vehicle Maintenance Facilities (VMFs)
- 4 Inspectors and 1 Coordinator
- Service area is divided into four territories
- Complete over 4,000 inspections per year



Components of a FOG Program

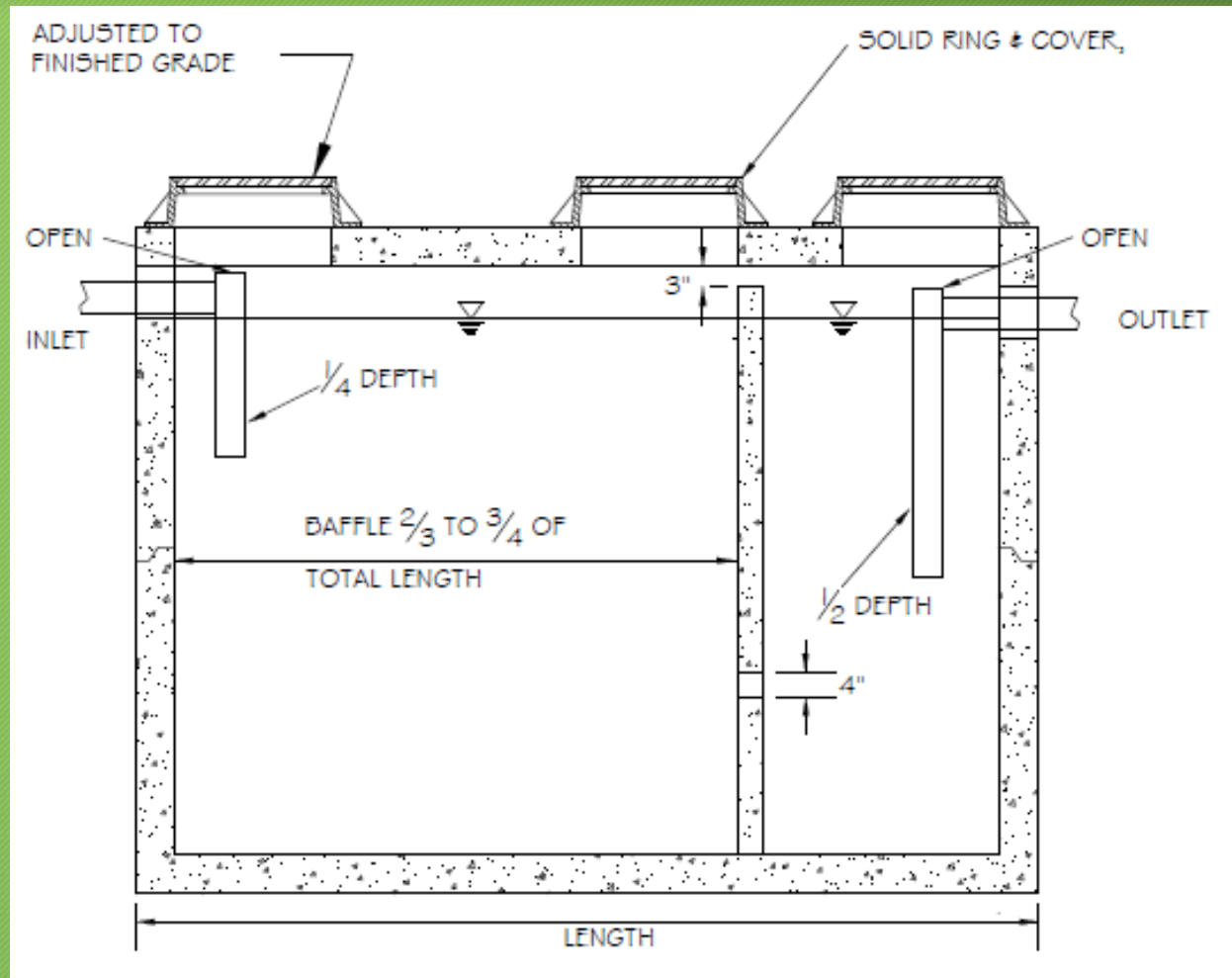
- Plan Review
- Risk Assessment
- Inspection
- Enforcement
- Asset Management
- Outreach & Education



Plan Review

- City of Raleigh Requires a minimum 1000 gallon Interceptor
- Interceptors must conform to City of Raleigh design standards.
- Designers must complete a sizing calculator based on *The Manning's Equation*, which takes into account the slope, roughness of the pipe, and pipe diameter size.
- Designers must submit plumbing plans that verify the fixtures that convey fats, oil and grease are connected to the interceptor.
- The Fats, Oil and Grease Coordinator evaluates for approval all new and re-use interceptors.

Design Detail



Risk Assessment

RISK: The potential of FSEs and VMFs to introduce FOG into the Sanitary Sewer Collection System

- **Level 1:** Establishment generates a minimal amount of FOG and normally complies with COR FOG regulations
- **Level 2:** Establishment generates a moderate or significant amount of FOG and normally complies with COR FOG regulations
- **Level 3:** Establishments generates a moderate or significant amount of FOG and/or has had one or more compliance issues with COR FOG regulations. Includes establishments located in grease intensive areas.

Inspections

For exterior grease interceptors, the City of Raleigh recommends cleaning to be done when:

- 75% of the retention capacity of the device has been reached

Or

- 25% of the total volume of the grease trap is comprised of grease and solids



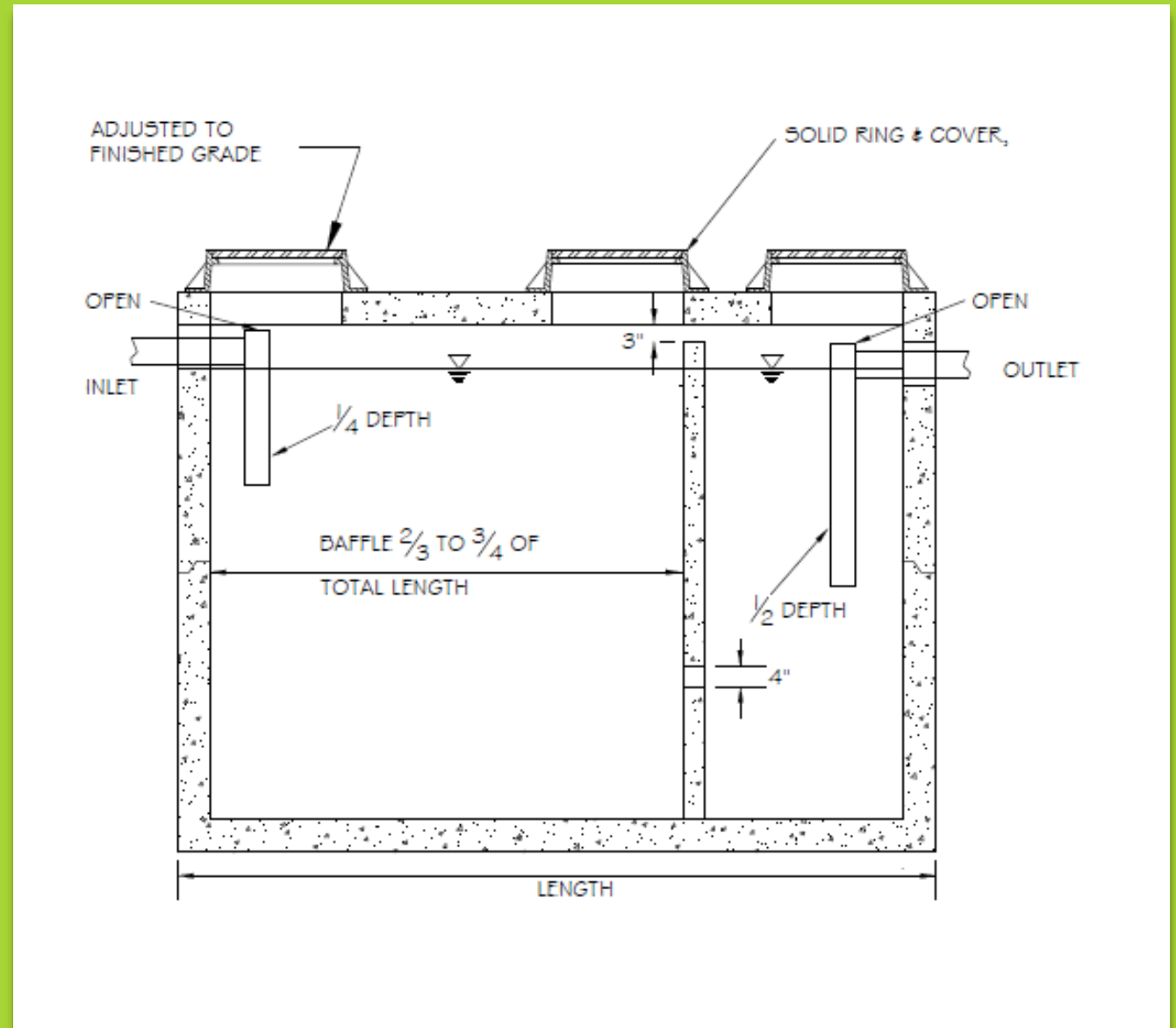
Inspections



All grease interceptors shall be completely pumped out at a minimum frequency of once per thirty calendar days, unless a variance is allowed for less frequent pumping or a pretreatment discharge permit has been issued specifically for these devices.

Inspections

The overall condition of the interceptor is evaluated for proper function and required components such as inlet and outlet sanitary tees



Inspections

Risk levels predicate the inspections frequency

- Risk Level 1 requires 1 annual inspection
- Risk Level 2 requires 2 annual inspections
- Risk Level 3 requires 3 annual inspections

Inspections: Core Sampling



Enforcement

Records

- Must maintain completed records on site for up to 3 years

Maintenance

- Pumping frequency is every 30 days

Components

- Must have inlet and outlet sanitary tees

Replacement

- Traps no longer working properly or that are corroded

Accessibility

- Unencumbered access for inspection

Blockages

- Interceptors must be in good working condition

Storm Water Infiltration

- Storm Water code enforcement is a sworn officer



Enforcement Response Plans

The focus is protecting the collection system by gaining compliance

- Plan
 - Needs to be written
 - Should have a enforcement escalation process
 - Needs to be understood by the inspectors and executed properly
- Enforcement actions
 - Should be documented
 - Need to be supported with no bias

Asset Management

Cityworks[®]
Empowering GIS



Inspection Details

Id: 380401

Location: Outback Steakhouse 845 US Hwy 70, Garner, NC 27529

Status: Completed Resolution:

Insp. Date: 07/23/2018 09:00 AM Inspected By: Worthy, Christopher

Outlet Solids Percentage

Outlet Total Depth: 38

Outlet Grease: 0.25

Outlet Solids: 0

Outlet Solids Percentage: 0.662251655629139

Outlet Solids Compliance (Above 25%-Mark Non-Compliant): Compliant

Inlet Solids Percentage

Inlet Total Depth: 38

Inlet Grease: 0.25

Inlet Solids: 0

Inlet Solids Percentage: 0.662251655629139

Inlet Solids Compliance (Above 35%-Mark Non-Compliant): Compliant

Components

Inlet Sanitary Tee Present: Yes

Outlet Sanitary Tee Present: Yes

Sanitary T Material: PVC

Condition

Entity

Highlight Get from Map History Remove Asset Costs

Update Inspection XY when adding/removing asset?

Editable Fields: All Fields:

SEWER GREASE INTERCEPTORS

OBJECTID: 5967
 Facility Identifier: FOG101541
 Facility Type: FSE
 Facility Name: Outback
 Hazard Level: 2
 Zone: 4
 Device Type: GGI
 CREATEDBY: RPUD
 CREATEDON: 2/27/2017 6:20:41 PM
 EDITEDBY: raleighpu
 EDITEDON: 3/19/2018 7:01:24 PM

Work Cycle

Repeat: Never
 Interval: 2 Months
 From: Projected Start Date

Related Work Activities

Request:
 Work Order:
 Create Work Order:

Create


Inspections:


Parent: [387549](#)

Create Child Inspection

Attachments

+ Add attachment... Remove all attachments

 Outback Hwy 70 GGI 2 inlet 072318.jpg 2.34 MB
 Attached by Worthy, Christopher M 07/23/2018 09:25 AM
 GGI 2 inlet 072318

 Outback Hwy 70 GGI 2 outlet 072318.jpg 3.12 MB
 Attached by Worthy, Christopher M 07/23/2018 09:26 AM
 GGI 2 outlet

Inspection Details

Type: FOG GGI Inspection

Submit To: Calverley, Stephen Date: 07/23/2018 09:23 AM

Priority: 3 Standard / Low

Initiated By: Worthy, Christopher M Initiated Date: 07/23/2018 09:23 AM

Projected Start: 07/23/2018 09:00 AM Projected Finish:

Actual Finish: 07/23/2018 09:26 AM

Closed By: Date Closed:

Cancel Insp? Cancel Date:

Cancel Reason:

Cancelled By:

Educational Outreach

- Commercial/Industrial (FSEs/VMFs)
 - Best Practices managing FOG
 - Onsite seminars
- Professional/Industry Publications
- Grease Hauler collaboration
 - Discuss what is required to meet the COR Sewer Ordinance
- Residential
 - Attend CAC (Citizen Advisory Council) meetings to discuss FOG message



FOG Obstacles

- Poor
 - FOG Management Practices
 - Grease Interceptor Maintenance
 - Records Management
- Lack of grease interceptor knowledge
- High manager turnover
- COR does not regulate grease haulers



Questions?



Flushable Wipes: An International Problem

Presented by:
Dustin Tripp

**THIS IS NOT
A TRASH CAN.**

'Disposable' & 'Flushable'
wipes clog your sewer pipes.

THINK BEFORE YOU FLUSH



**WIPES
CLOG
PIPES**





of backups are caused by wipes

Source: Sydney Water



Problems caused by Wipes



The Problem with Wipes

Two problems are associated with wipes:

1. Non-flushable wipes are not labeled clearly, so consumers do not know to dispose of them in the trashcan, not the toilet
2. Wipes labeled “flushable” do not actually break down well in real sewer systems



The Issue is the Tissue

Definition of Nonwoven:

A primarily fibrous assembly — other than a traditional paper, woven, or knit — which has been engineered to some level of structural integrity by physical and/or chemical means.

Basically, a nonwoven wipe is made to hold together better than toilet paper.



To be flushable

The product must:

- Break into small pieces quickly
- Must not be buoyant
- Does not contain plastic or regenerated cellulose and only contains materials which will readily degrade in a range of natural environments

NRRRF Experiment

- Performed by Adele Duterte and Kerreen Ryan in 2009
- Staff used a 2000ml beaker filled with water, placed on a magnetic stirrer, and set to swirl with a whirlpool effect
- Scott's toilet paper was used as the control
 - Instantly disintegrated upon spinning
- Puff's Plus Tissues
 - No disintegration by the end of the one hour time limit

NRRRF Experiment

NO DISINTERGRATION

- Puff's Plus Tissues
- Cottonelle Flushable Wipes
- Playtex Gentle Refresh Wipes
- Preparation H Medicated Wipes
- Tuck's Witch Hazel Hemorrhoidal Toilet Wipes
- Kandoo Flushable Wipes
- Clean & Clear Oil Blotting Sheets
- Kleenex Tissue
- Scott's Scrub Cloths (half sheet)
- Scott's Flushable Wipes
- Charmin Flushable Wipes (slight after first ten minutes, none further)

PARTIAL DISINTERGRATION

- Natural Choice Flushable Moist Wipes (33% of product disintegrated within one hour)
- Fresh Brush by Scrubbing Bubbles (25% of product disintegrated within one hour)

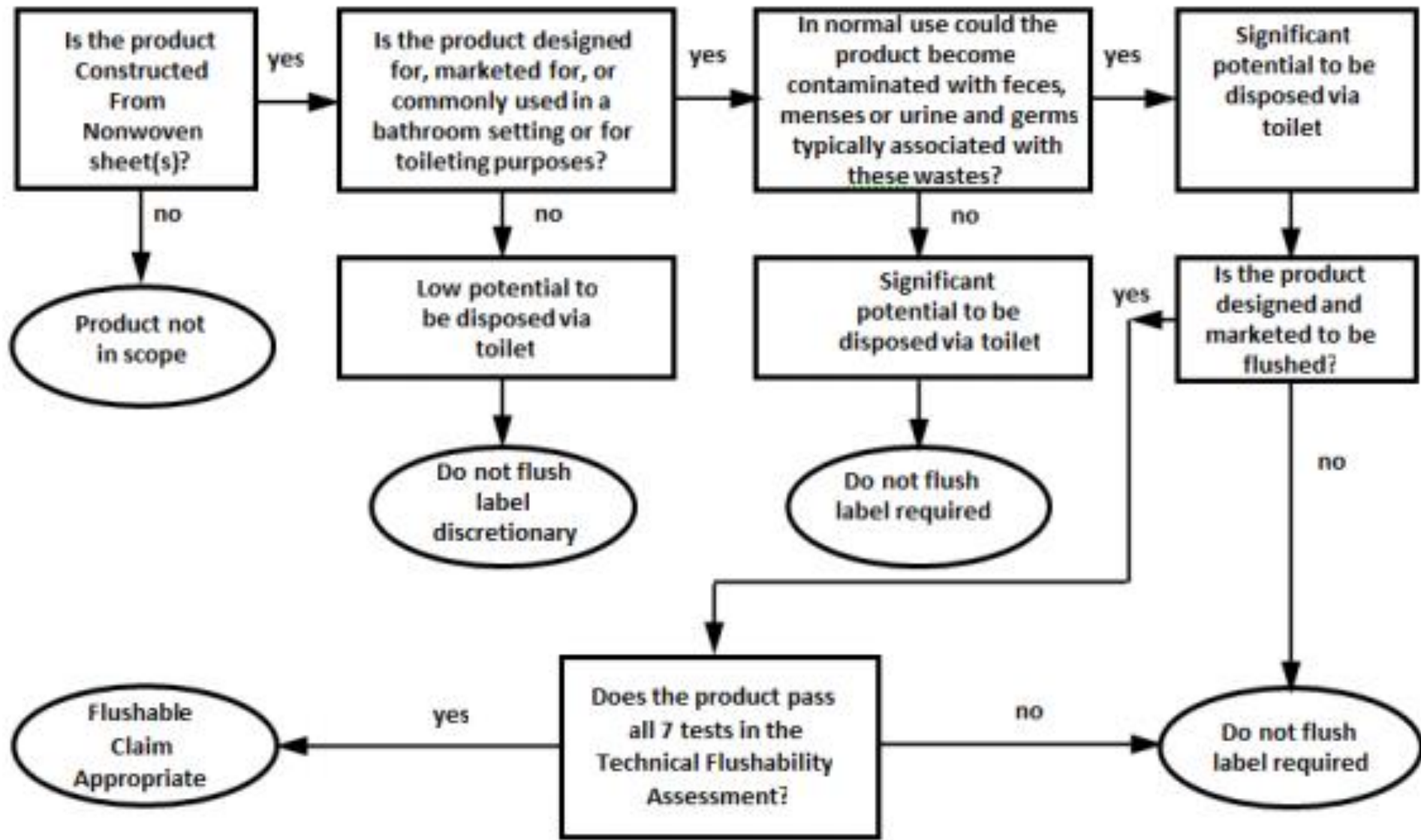


Figure 2: Illustrates the decision-making process for determining whether a product is within the scope of this Flushability Assessment and the labeling requirements specified by the INDA/EDANA Code of Practice.

National Association of Clean Water Agencies (NACWA) Experiment

In the photos: After traveling through a real sewer for 30 minutes, toilet paper (1) has completely disintegrated, while a “flushable” wipe (A) is completely intact:



Toilet paper - only ID tag remains



“Flushable” wipe – completely intact

TasWater (Tasmania) Experiment

Our long running test shows baby wipes unchanged after 18 months. "Flushable" wipes still holding shape

[#WorldEnvironmentDay](#)
[#cantflushthis](#)

Source: https://twitter.com/Tas_Water



NACWA Experiment

A previous version of the INDA flushability guidelines produced this wipe, which could be flushed 100 times without breaking apart!



Big Money

For wipe manufacturers, heavy investments in products for adults have resonated with customers. Market research, cited in a [Bloomberg News article](#) last year, suggested that from 2008 to 2013, sales of the moist flushable wipes had grown 23 percent to \$367 million.



DC Water's Nonwoven Disposable Products Act of 2016

- Took effect on January 1, 2018
- The Ordinance requires that wipes only be labelled as “Flushable” if they breakdown “in a short period of time after flushing in the low-force conditions of a sewer system.”
- The INDA pushed Congress to reverse the ordinance but the lobbying did not succeed



TOILET PAPER

THE ONE AND ONLY
FLUSHABLE WIPE



Paper, Pee, & Poo

Focus on the three Ps in customer outreach

ONLY PAPER, PEE & POO
BELONG DOWN THE LOO



DON'T FLUSH ANYTHING BUT THE THREE PS.

KNOW
YOUR POOS
& DON'TS





What's Next?

Questions?

Dustin M. Tripp

ORC / Senior Utility Analyst

City of Raleigh

Public Utilities Department

Sewer Maintenance Division

dustin.tripp@raleighnc.gov

