

Georgia Adopt-A-Stream

BACTERIAL MONITORING WORKSHOP



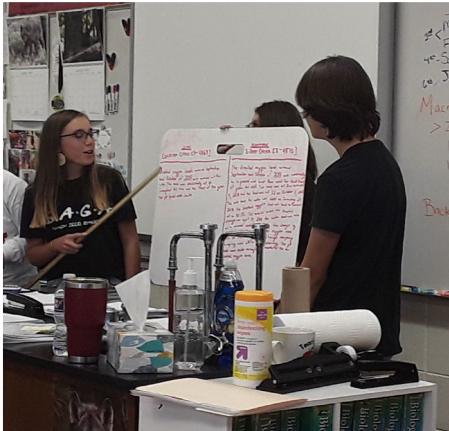
Georgia Adopt-A-Stream

A citizen science water quality monitoring program encouraging all Georgians to get familiar with their watersheds, monitor impacts, improve streams, rivers, wetlands, lakes, and estuaries, and inform others about their effect on water quality.



A

Awareness



Increase public awareness of nonpoint source pollution & water quality issues

D

Data



Collect baseline water quality data according to Adopt-A-Stream protocols

O

Observations



Take observations of sites to note water quality conditions

P

Partnerships



Seek partnerships with local gov'ts, nonprofits, & other organizations to share results & resources

T

Tools & Training



Utilize tools & training provided by staff & local coordinators

TYPES OF POLLUTION



POINT SOURCE POLLUTION

- Easily identifiable pollutant source
- Regulated by GA EPD through NPDES permitting process



NONPOINT SOURCE POLLUTION

- Sources not easily distinguished/identified
- Everyone contributes
- Main cause of water quality problems in GA

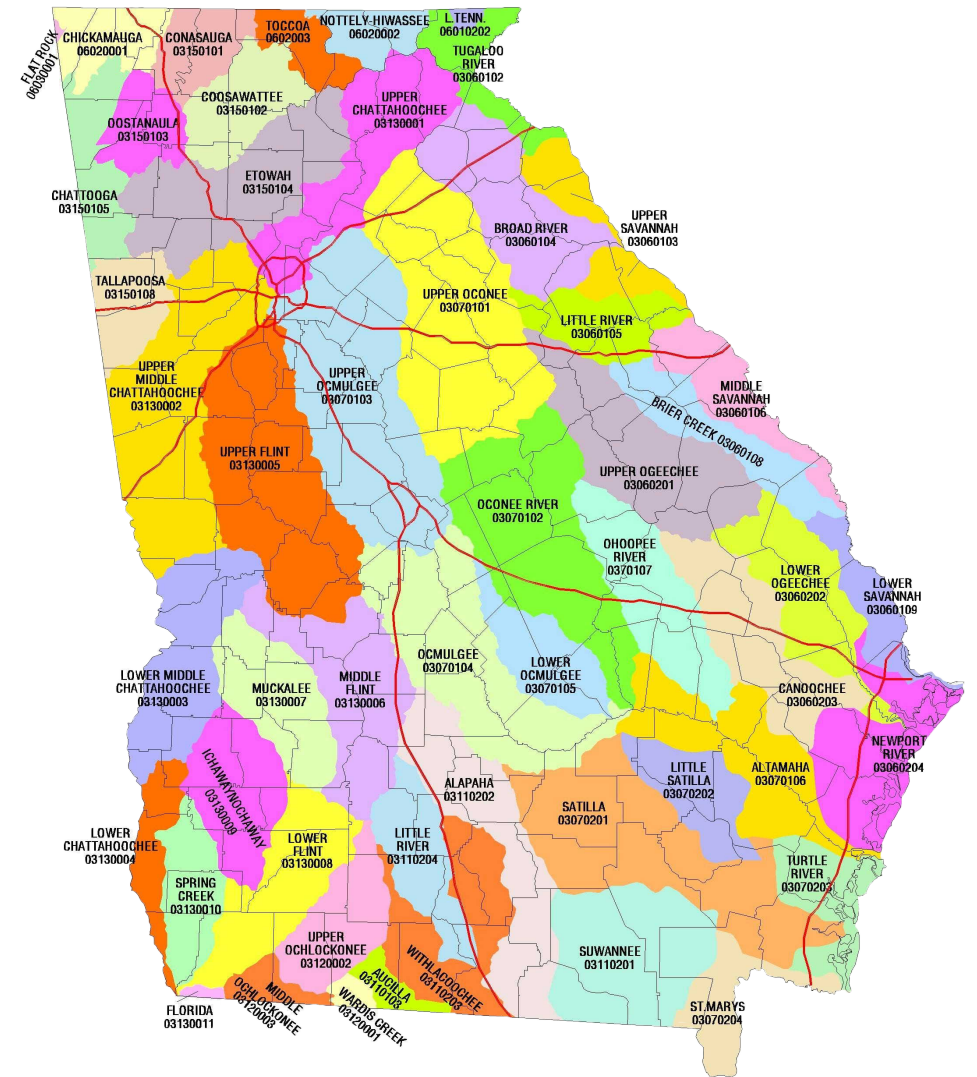
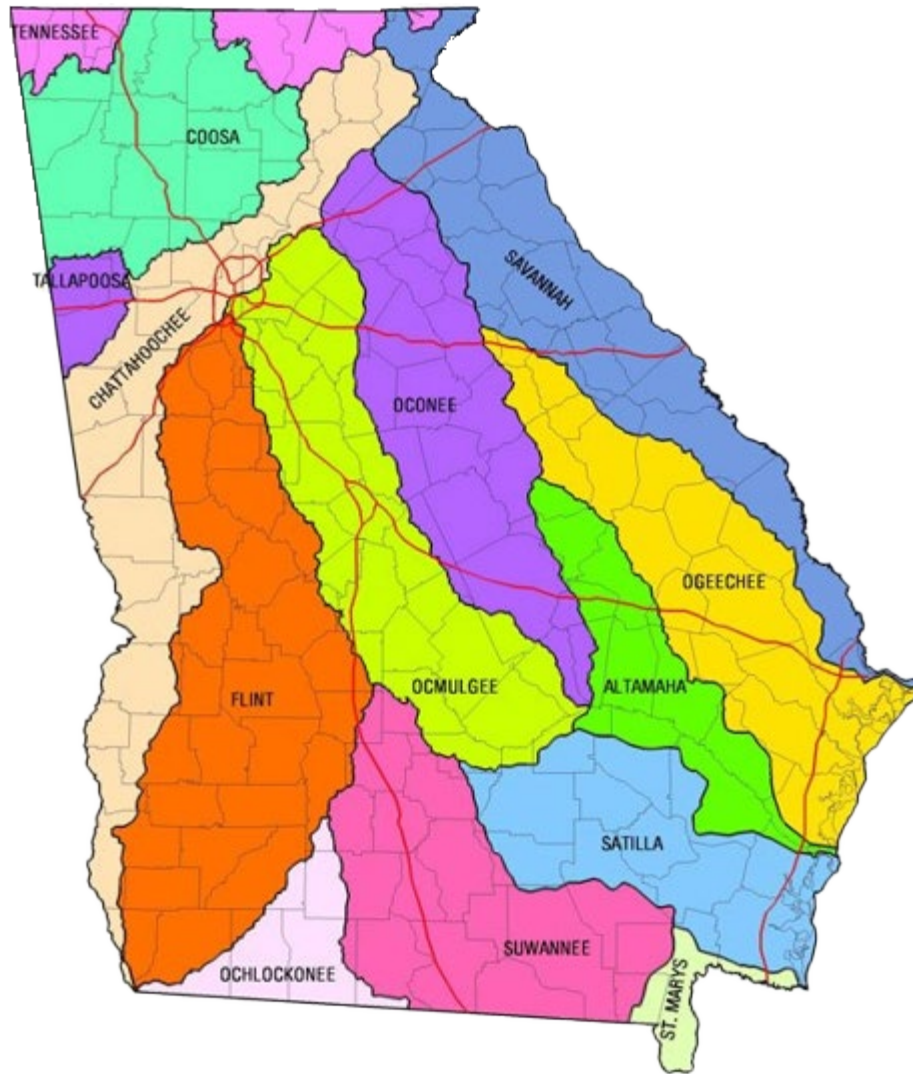
WHAT IS A WATERSHED?

- **A land area from which water, sediment, and dissolved materials drain to a common point along a stream, wetland, lake, or river.**
- Its boundaries are defined by the highest points of land around the waterbody.

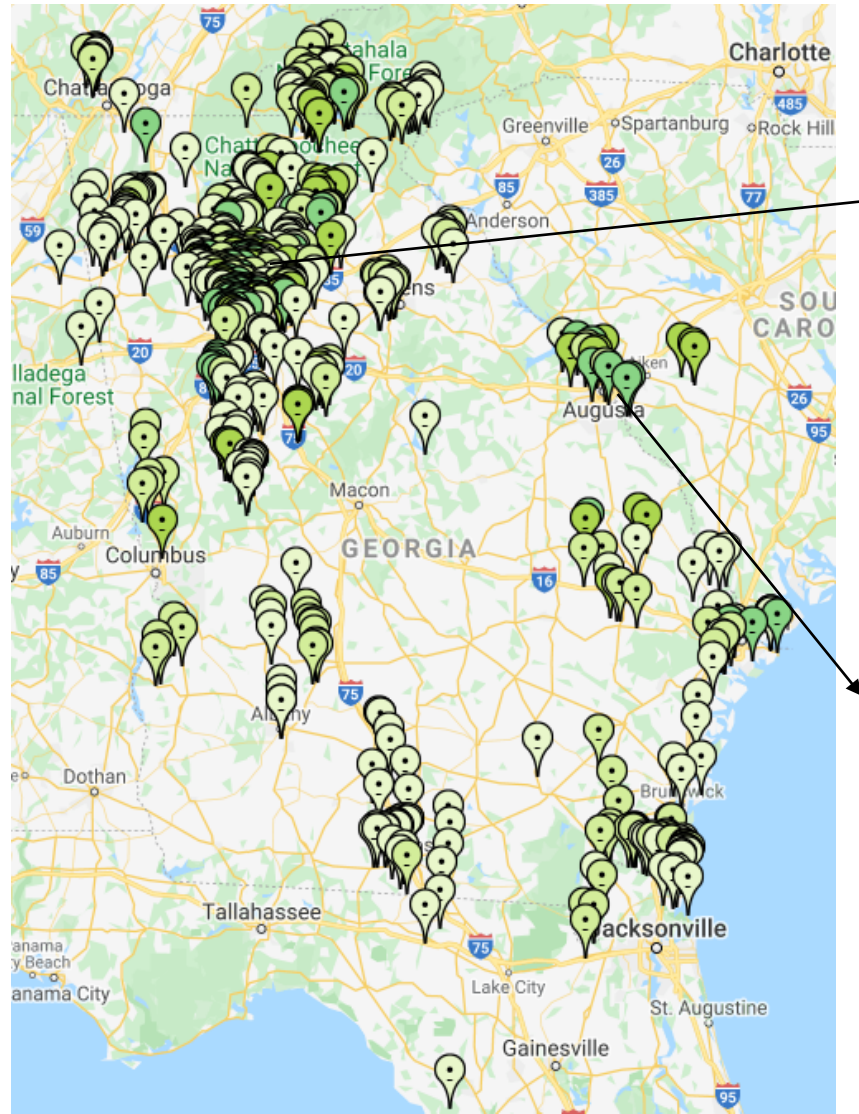
There is an unbreakable link between human health and wellbeing and ecosystems. -Walter Reid



WHERE IS YOUR WATERSHED?



VOLUNTEER NETWORK AND SUPPORT

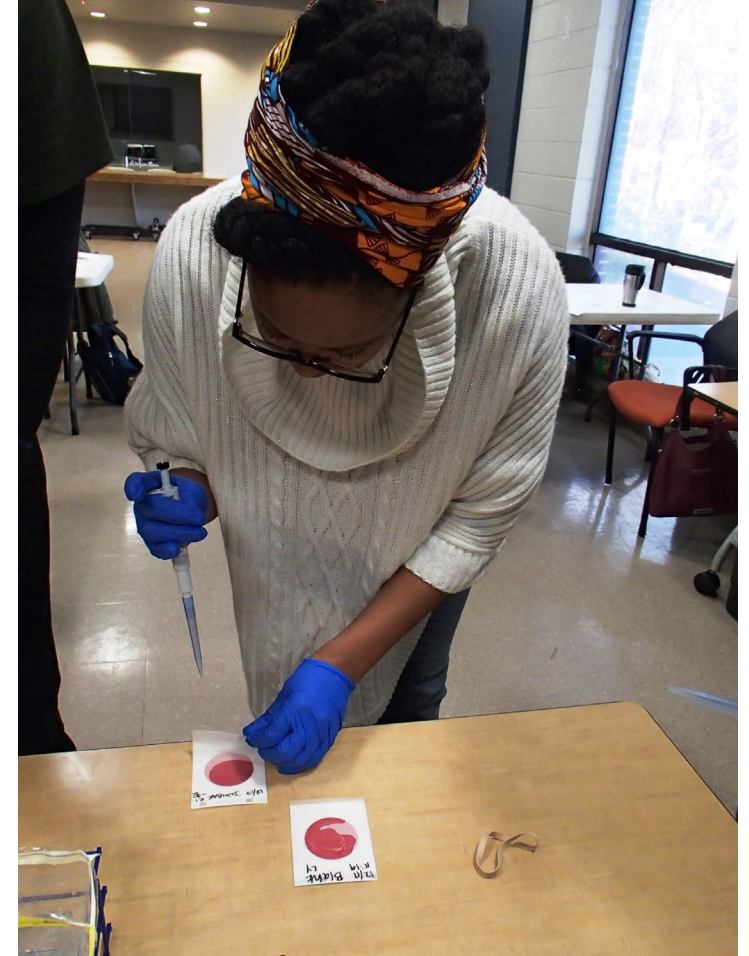


VOLUNTEER NETWORK AND SUPPORT



AAS VOLUNTEERS USE STANDARDIZED PROTOCOLS

- EPA Approved Quality Assurance Project Plan (QAPP)
- Quality Assurance/Quality Control (QA/QC)
 - Required to attend workshop(s) and pass certification test(s) to become certified
 - Only individuals are certified
 - Set monitoring protocol ensures all volunteers are collecting baseline data using standard methods
 - Only certified volunteers can enter data, but anyone can access the 20+ years of data in the online AAS database

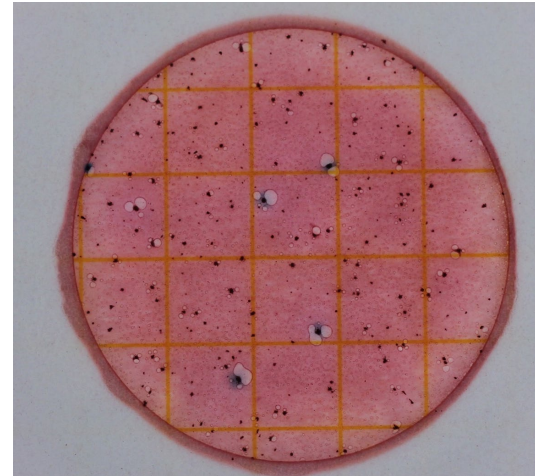


EARNING YOUR QA/QC BACTERIAL CERTIFICATION



FIELD & LAB:

Volunteers must demonstrate how to properly collect and plate a sample



WRITTEN TEST:

Volunteers must pass a written evaluation with a score of at least 80% and must correctly identify E. coli colonies and calculate E. coli levels of example plates with accuracy of at least 90%



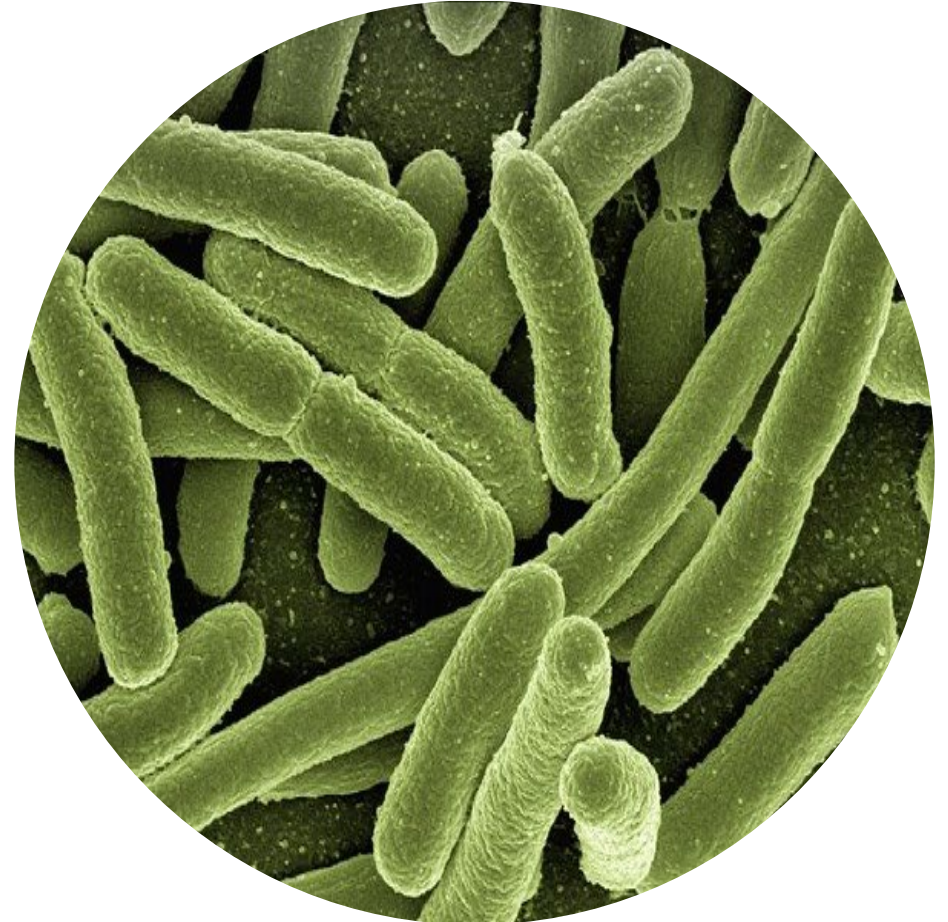
WHY IS BACTERIAL MONITORING IMPORTANT?

- **Monitor bacterial contamination of surface waters to assess if pathogens are present**
 - Human health is at risk when in contact with waters that contain harmful bacteria
 - Gaining a snapshot of surface water contamination (*E. coli* colonies), not long-term trends

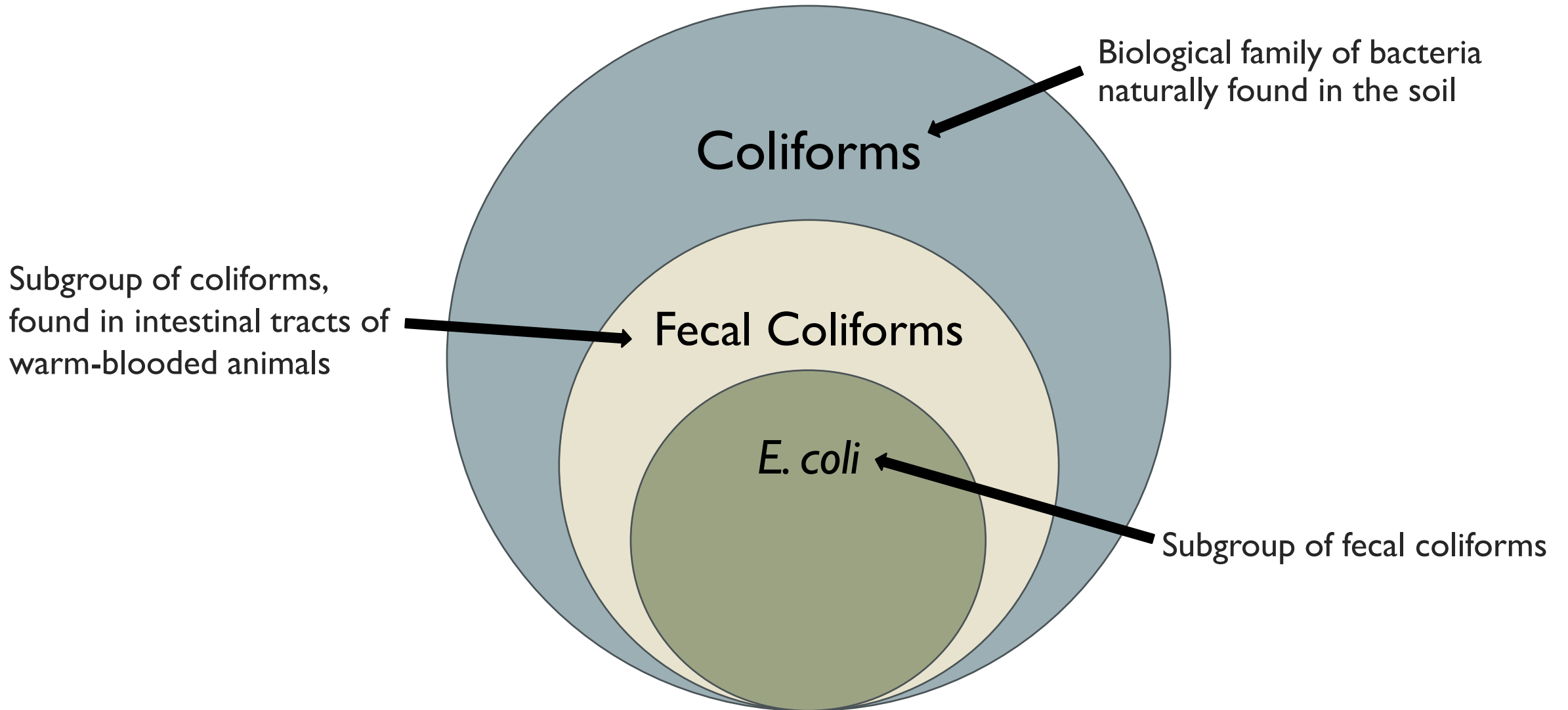


ABOUT BACTERIA

- **Single-celled, living microscopic organisms**
- Pros:
 - Decomposition
 - Digestion
 - Nutrient Cycling
 - Pollution Control
- Risks:
 - Release Toxins
 - Cause Disease (Pathogens)



WHAT IS *E. COLI*?



WHY MONITOR FOR *E. COLI*?

- **High levels indicate the possible presence of pathogens**
- Sources of *E. coli* in waterways:
 - **Wildlife**
 - **Livestock**
 - **Urban storm runoff**
 - **Sewage**
 - Leaking sewage pipes
 - Combined sewer overflow
 - Wastewater treatment plants
 - Failing septic systems



WHERE, WHEN, AND HOW OFTEN?

- Where to monitor:
 - **Well mixed, flowing area of water**
 - Same site location
- When to monitor:
 - Normal flow conditions
 - Same time of day
- How often to monitor:
 - **Once a month**



FACTORS INFLUENCING *E. COLI* COUNTS

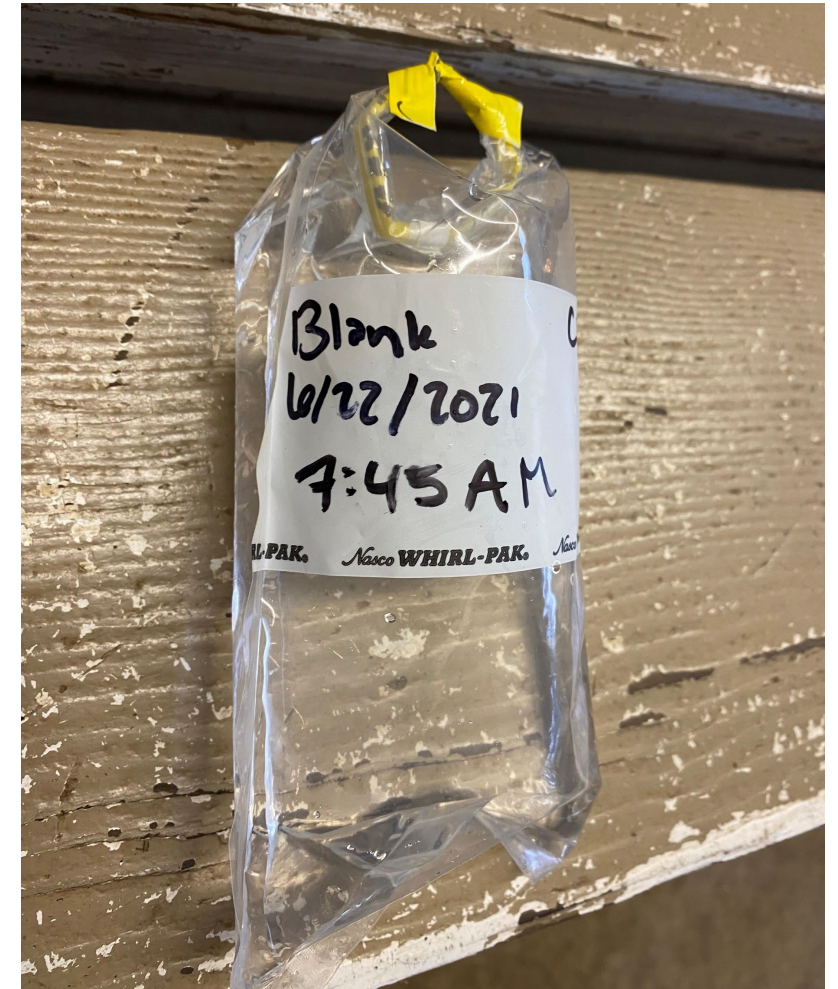
- Weather:
 - **Higher levels following a rainstorm or heavy runoff event**
 - Avoid sampling during high flow
- Season/Temperature:
 - **Warmer water temperature = higher *E. coli* replication rates**
 - **Colder water temperature = lower *E. coli* replication rates**



HOW TO MONITOR FOR *E. COLI*

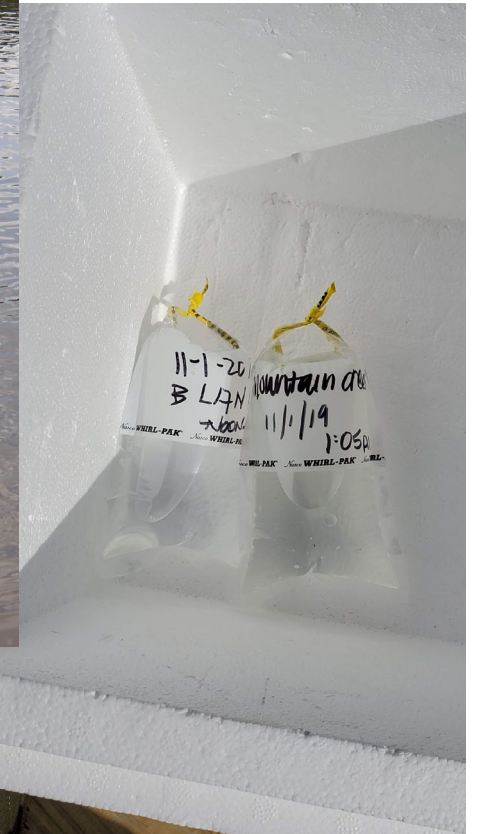
STEP 1: PREPARE THE BLANK/CONTROL

- **Proves no contamination occurred during sample collection, transport, or plating**
- How to prepare a blank:
 - Label Whirl-pak® bag as a blank
 - Put gloves on and remove perforated seal
 - Use small white tabs to open the bag
 - Fill the bag 2/3 up with DISTILLED WATER
 - Whirl!
 - Place in sanitized cooler with ice



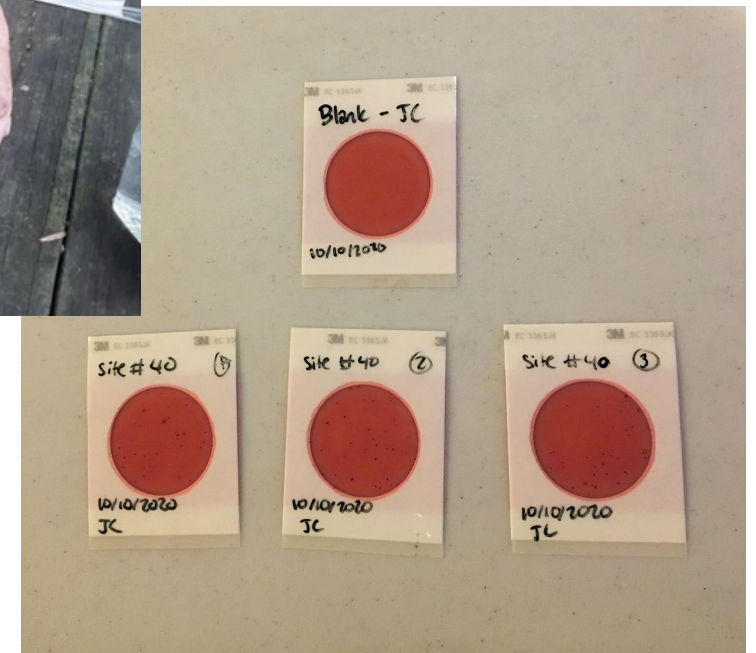
STEP 2: COLLECTING A SAMPLE

- Label a Whirl-pak® bag with the location, date, and time
- Use same procedure as blank to open
- Fill Whirl-pak® 2/3 with stream water (collected upstream) and whirl!
- **Place sample in cooler immediately after collection**
 - Ice prevents E. coli from replicating
 - Lid prevents UV rays killing existing bacteria
- **Plate within 24 hrs of collection**



STEP 3: PLATING YOUR SAMPLE

- Clean area with disinfectant
- Invert Whirl-pak® to mix sample
- Label 3M Petrifilm plates
 - Date and time
 - Site name
 - Blank, Plate 1, Plate 2, Plate 3
- Use pipette to take one **1 mL sample from the blank, plus three 1 mL samples from the stream water (4 plates total)**



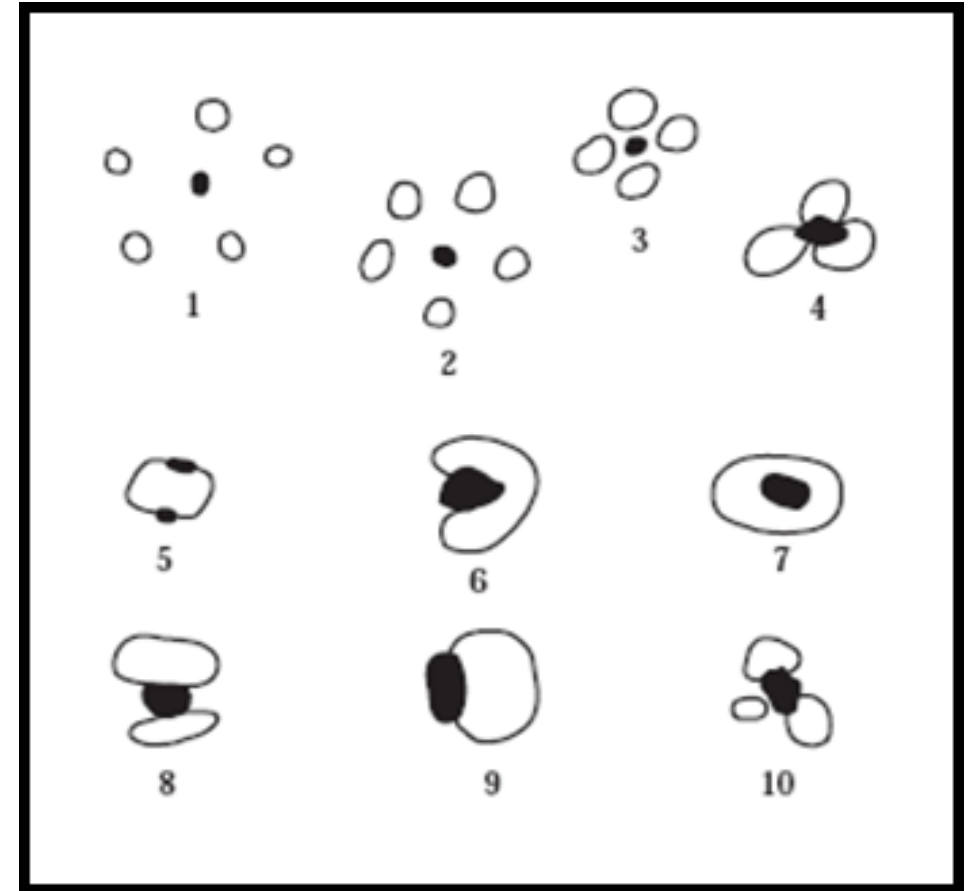
STEP 4: INCUBATING YOUR SAMPLE

- **$35^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for 24 hours \pm 1 hour**
- Check minimum and maximum temperatures after incubating
- Use AAS or EPA approved incubator



STEP 5: READING YOUR RESULTS

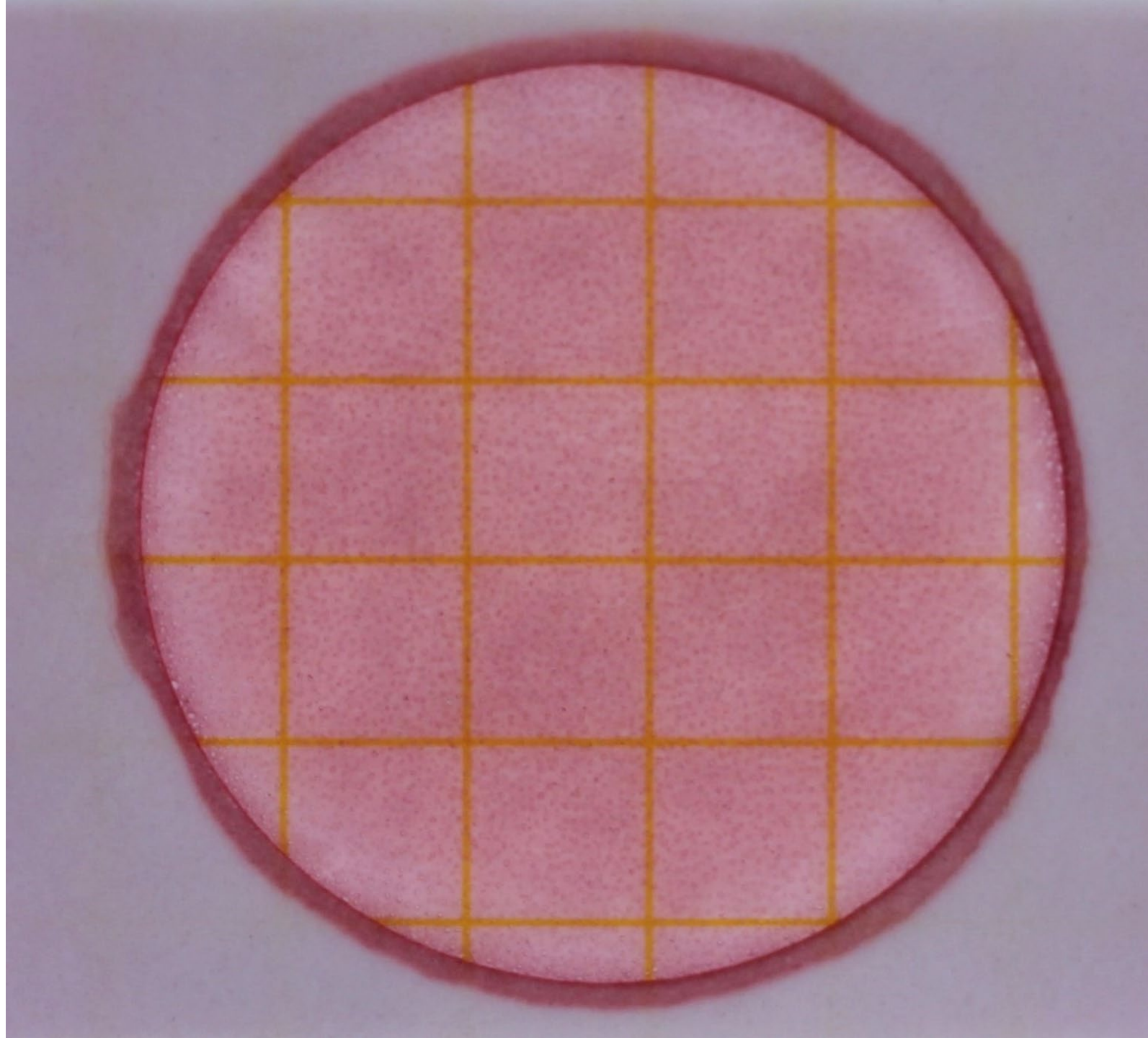
- Only count **blue colonies with gas bubbles**
- Do not count colonies growing more than halfway off the medium
- Units for bacteria: **Colony Forming Units (CFU)/100 mL**



Possible gas bubble patterns

BLANK/ CONTROL

**There should not be
any colonies (*E. coli*
or general coliform)
on the blank!**



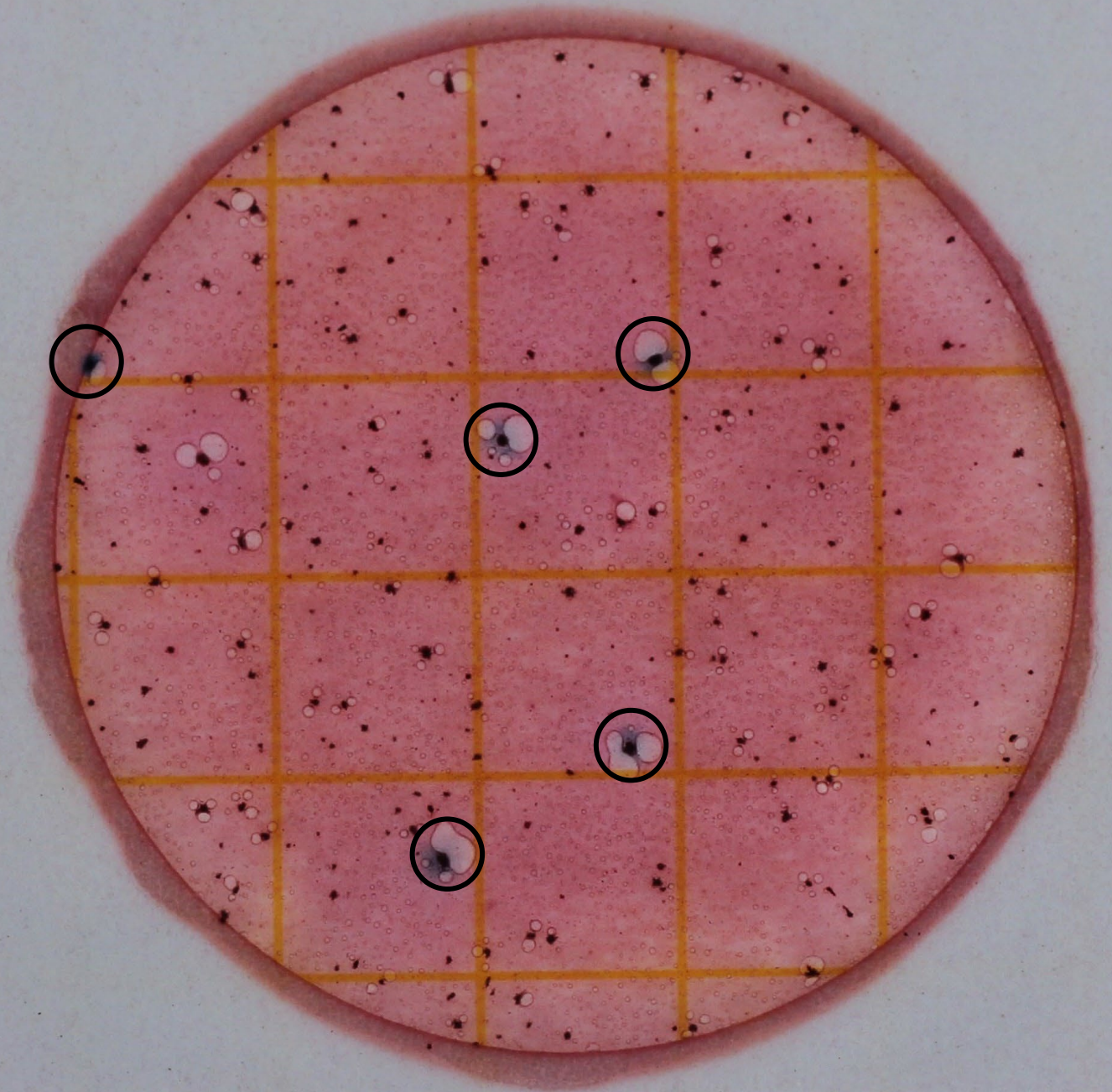
EXAMPLE #1

How many *E. coli*
colonies do you see?



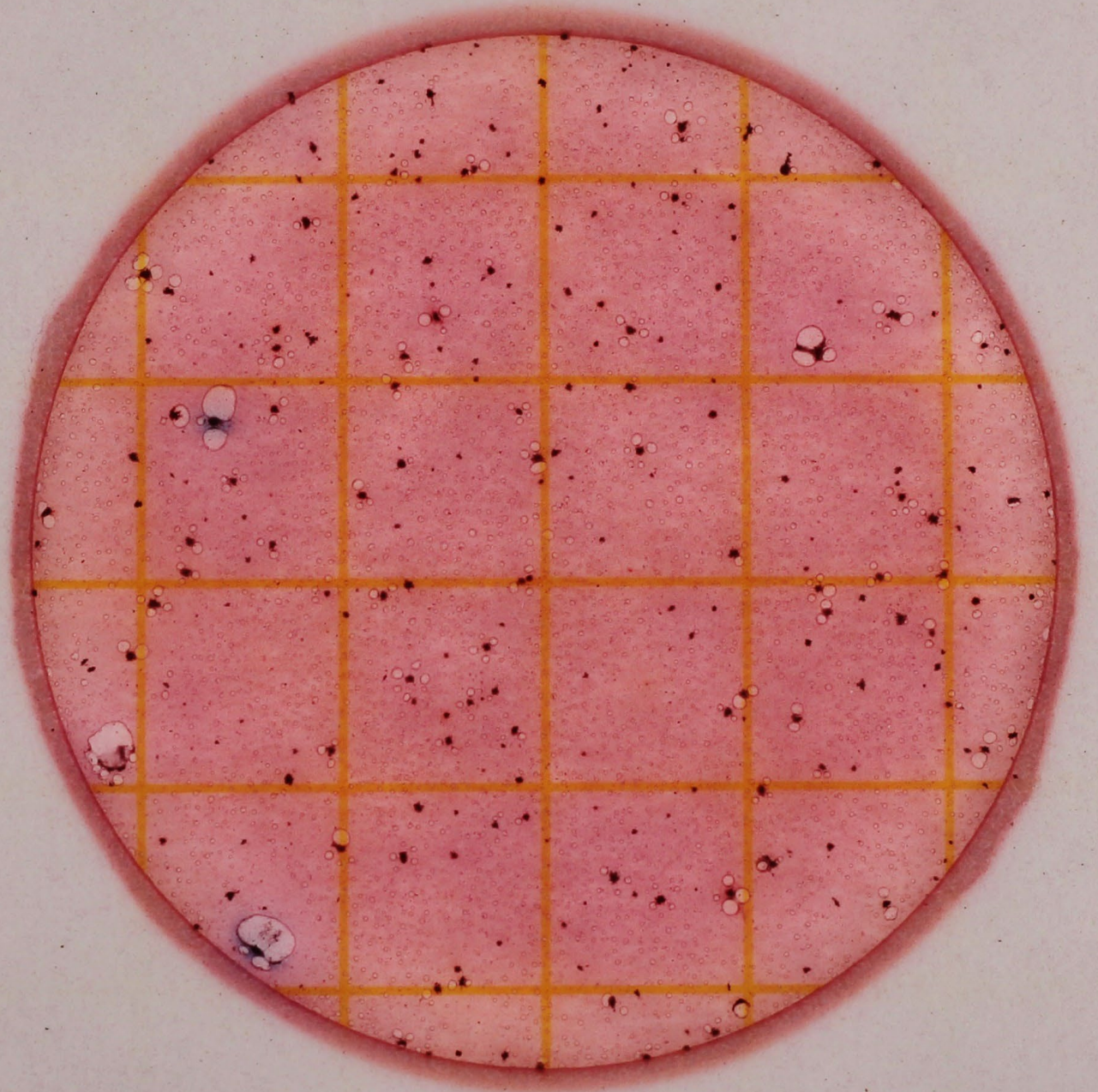
EXAMPLE
#1
ANSWER

How many *E. coli*
colonies do you see?



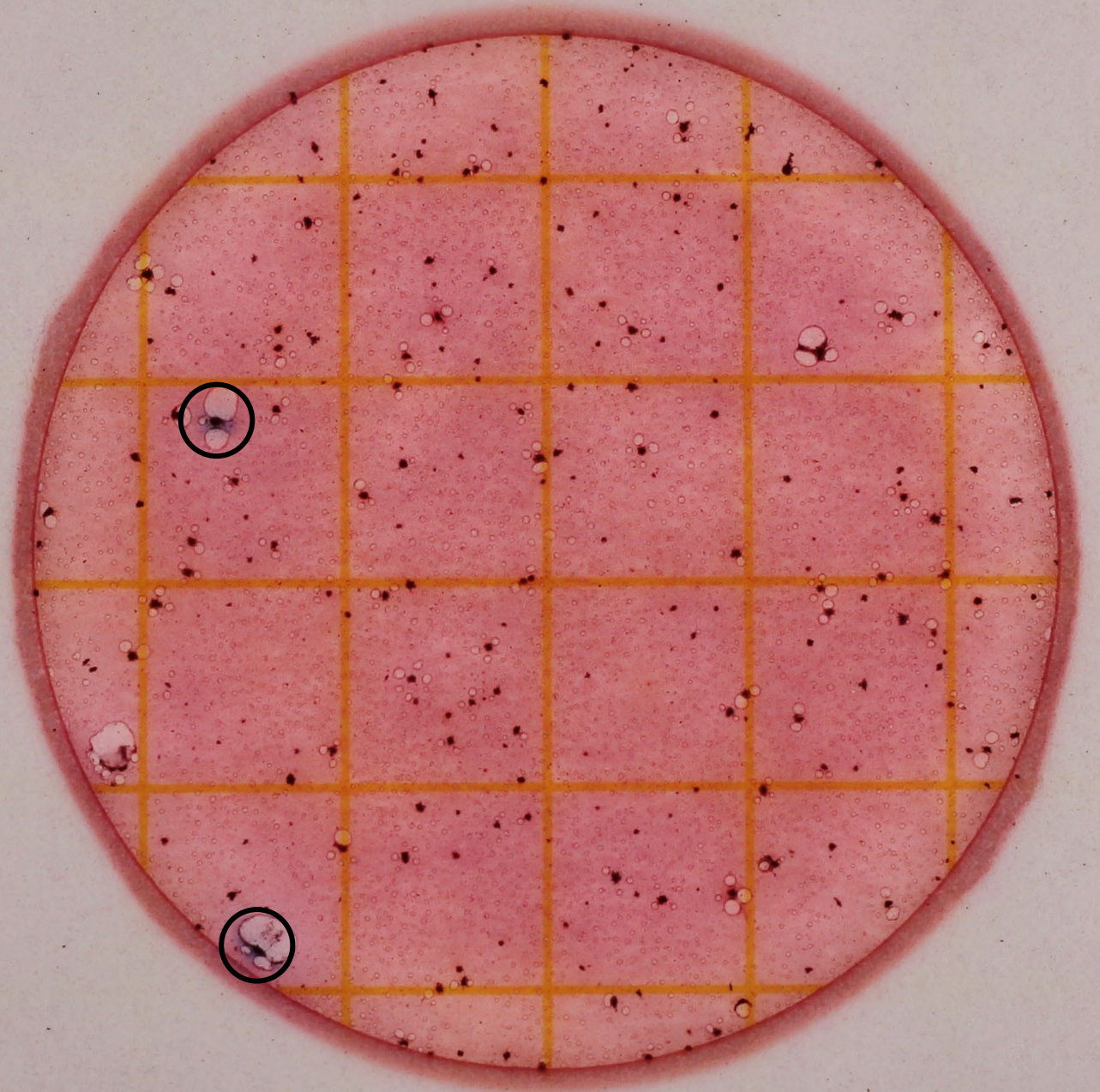
EXAMPLE #2

How many *E. coli*
colonies do you see?



EXAMPLE
#2
ANSWER

How many *E. coli*
colonies do you see?



EXAMPLE #3

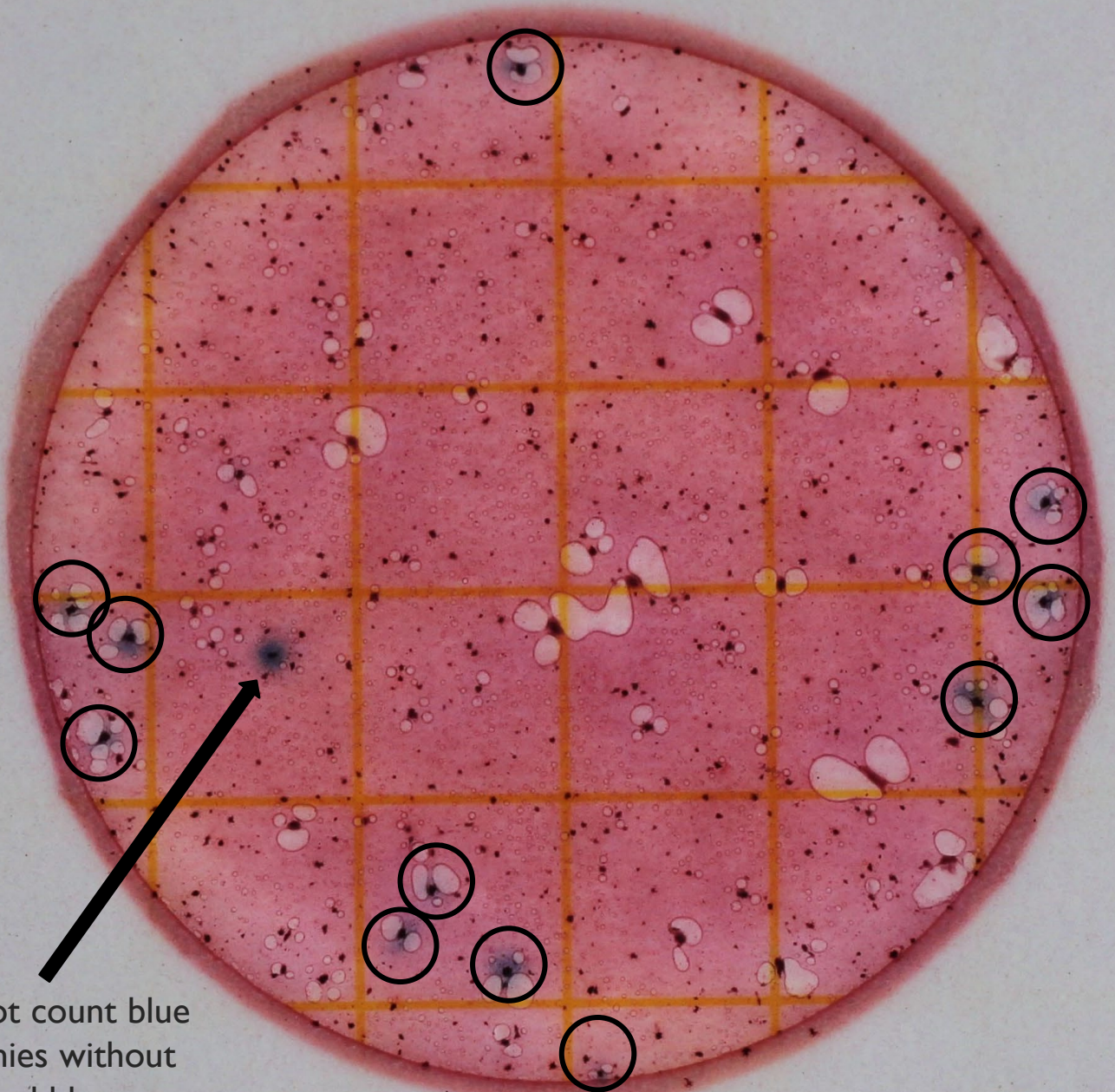
How many *E. coli*
colonies do you see?



EXAMPLE #3 ANSWER

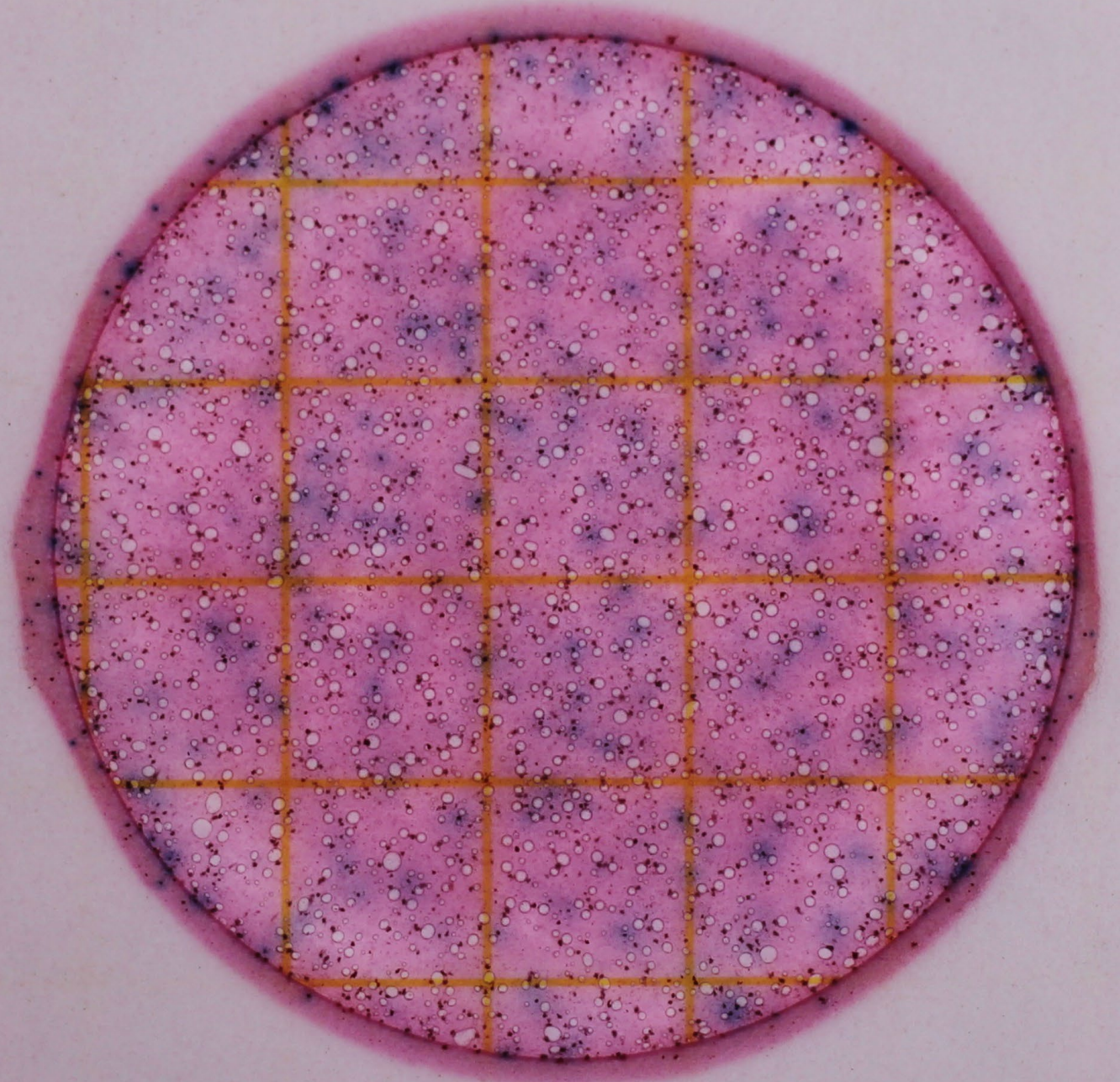
How many *E. coli*
colonies do you see?

Do not count blue
colonies without
bubbles



EXAMPLE #4

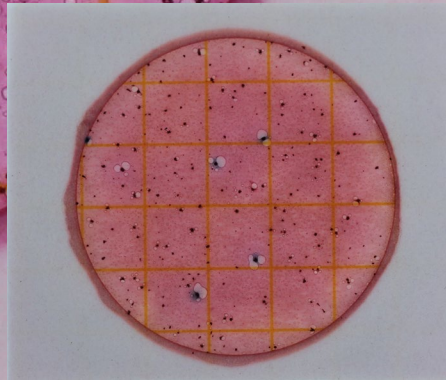
How many *E. coli*
colonies do you see?



EXAMPLE #4 ANSWER

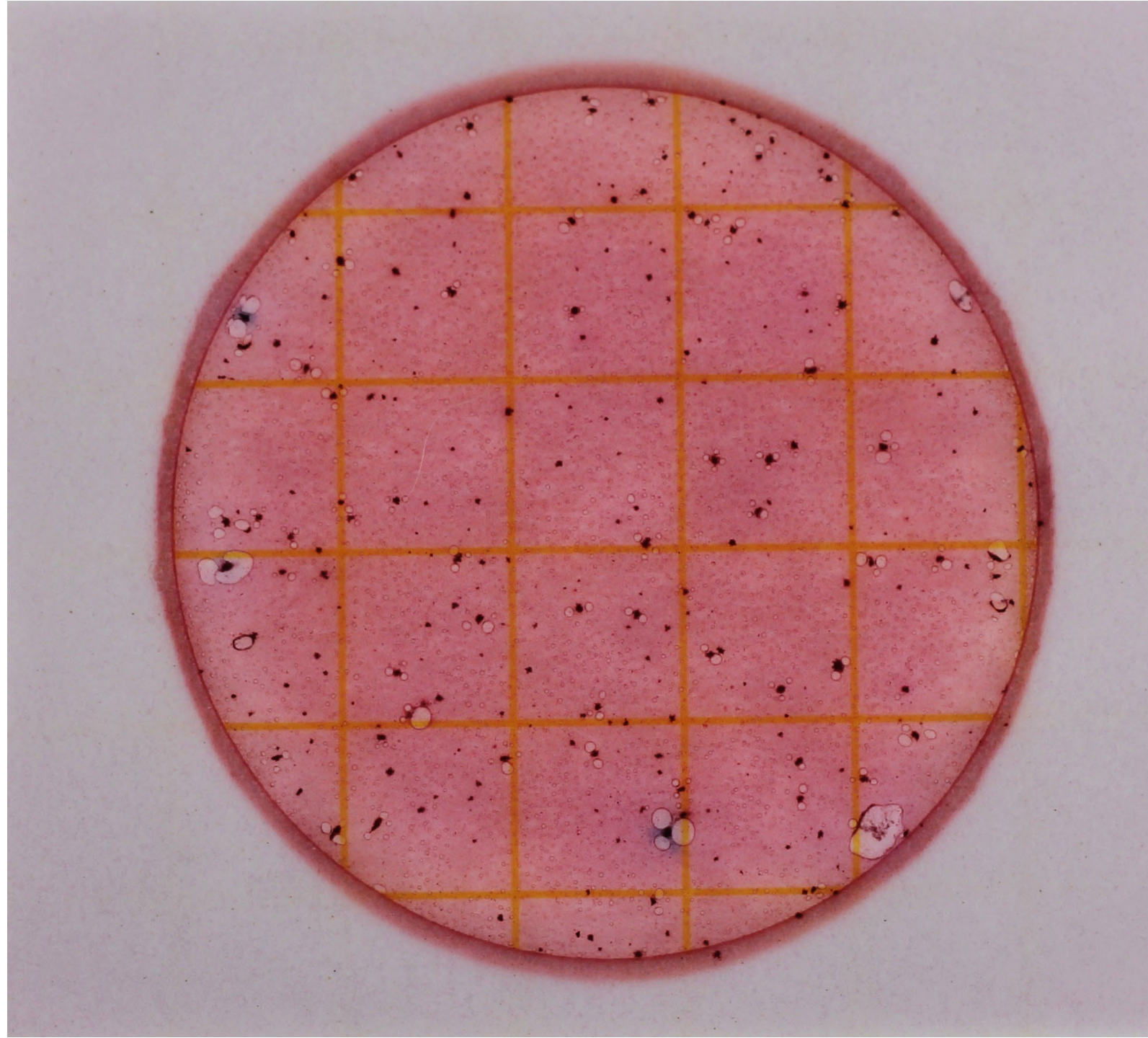
How many *E. coli*
colonies do you see?

Too Numerous To Count (TNTC)



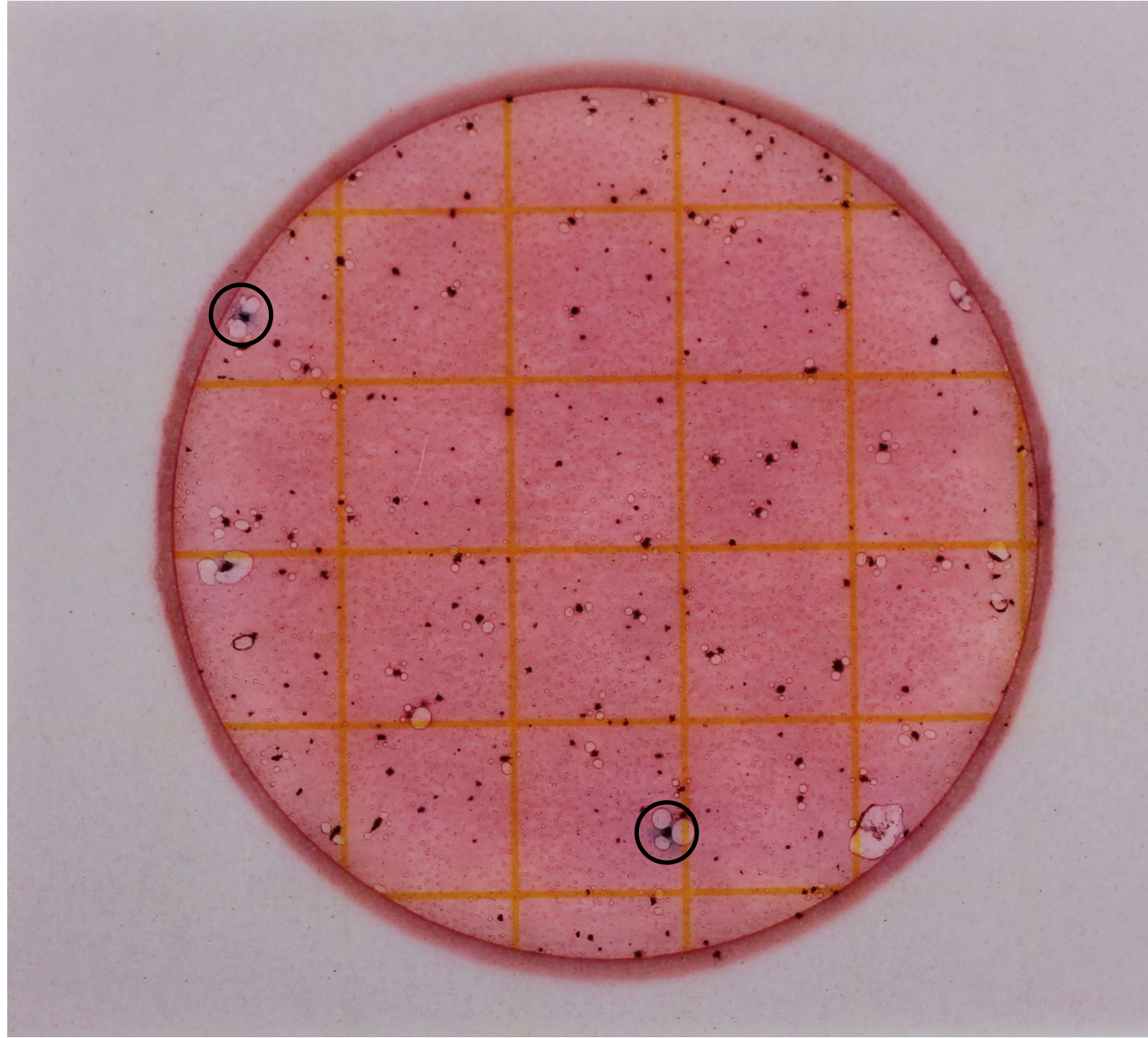
EXAMPLE #5

How many *E. coli*
colonies do you see?



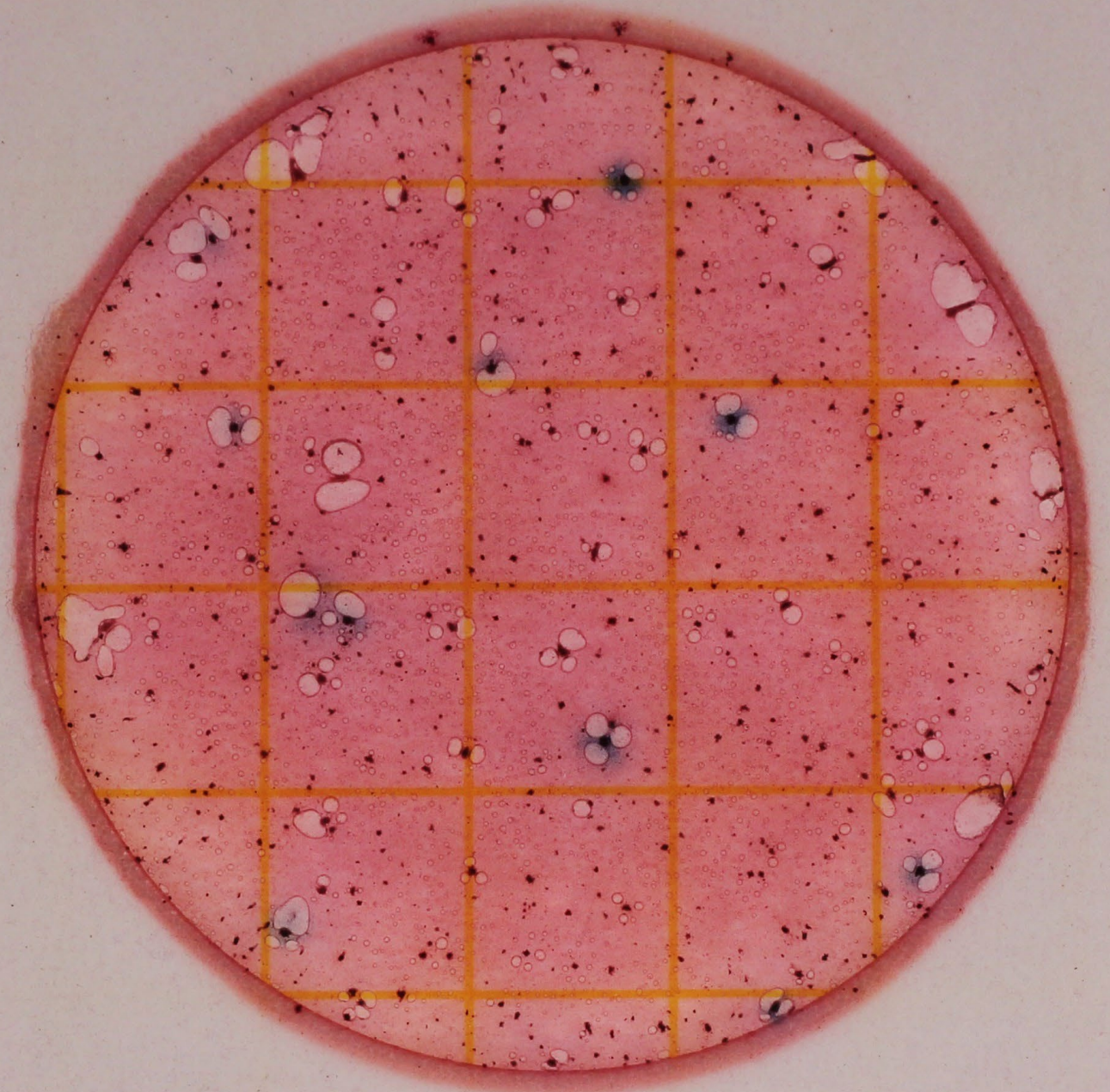
EXAMPLE
#5
ANSWER

How many *E. coli*
colonies do you see?



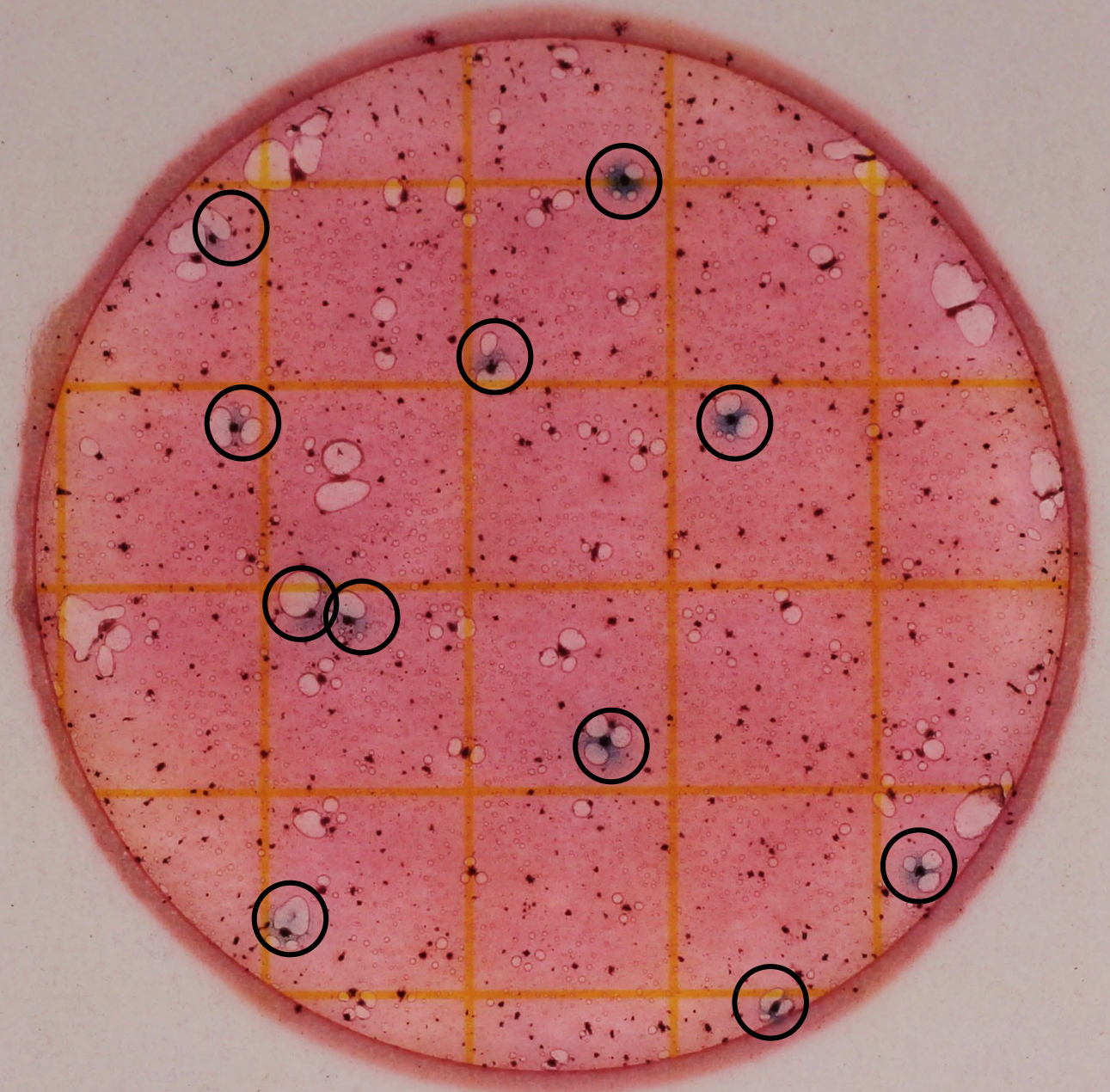
EXAMPLE #6

How many *E. coli*
colonies do you see?



EXAMPLE #6 ANSWER

How many *E. coli*
colonies do you see?



EXAMPLE #7

How many *E. coli*
colonies do you see?



EXAMPLE #7 ANSWER

How many *E. coli*
colonies do you see?

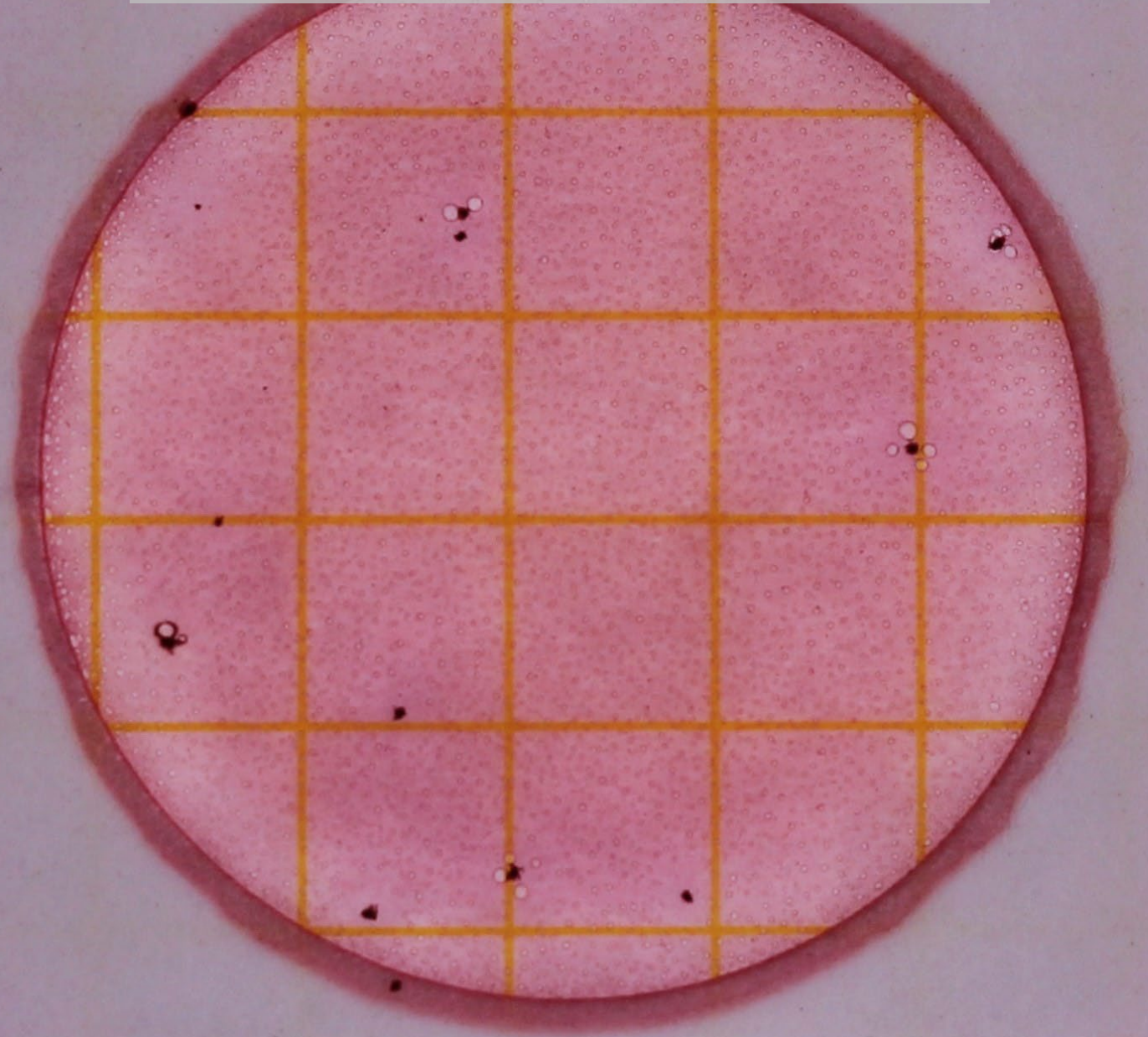


Too Numerous To Count (TNTC)

EXAMPLE #8

How many *E. coli*
colonies do you see?

Would this be an acceptable blank?



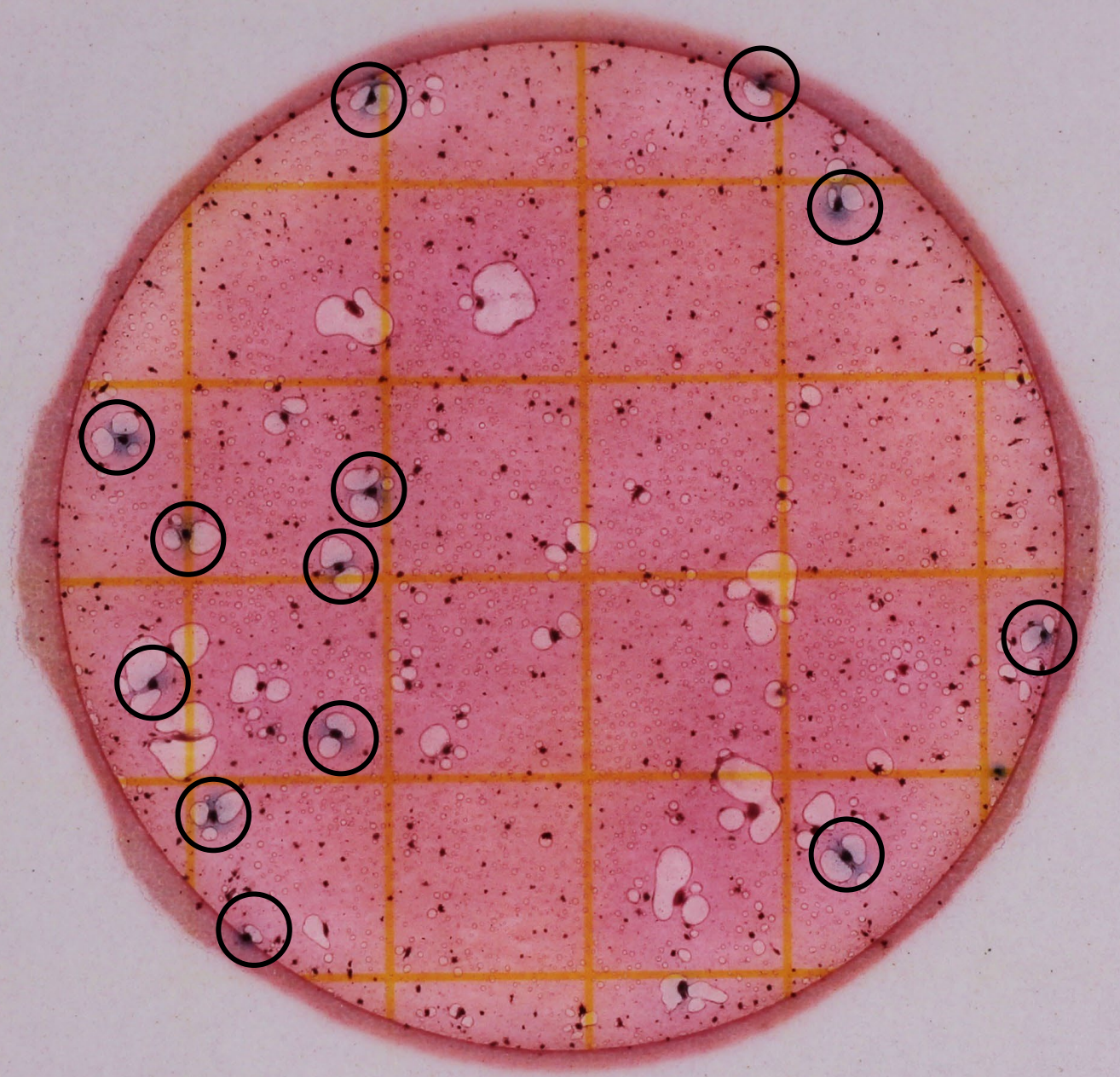
EXAMPLE #9

How many *E. coli*
colonies do you see?



EXAMPLE
#9
ANSWER

How many *E. coli*
colonies do you see?



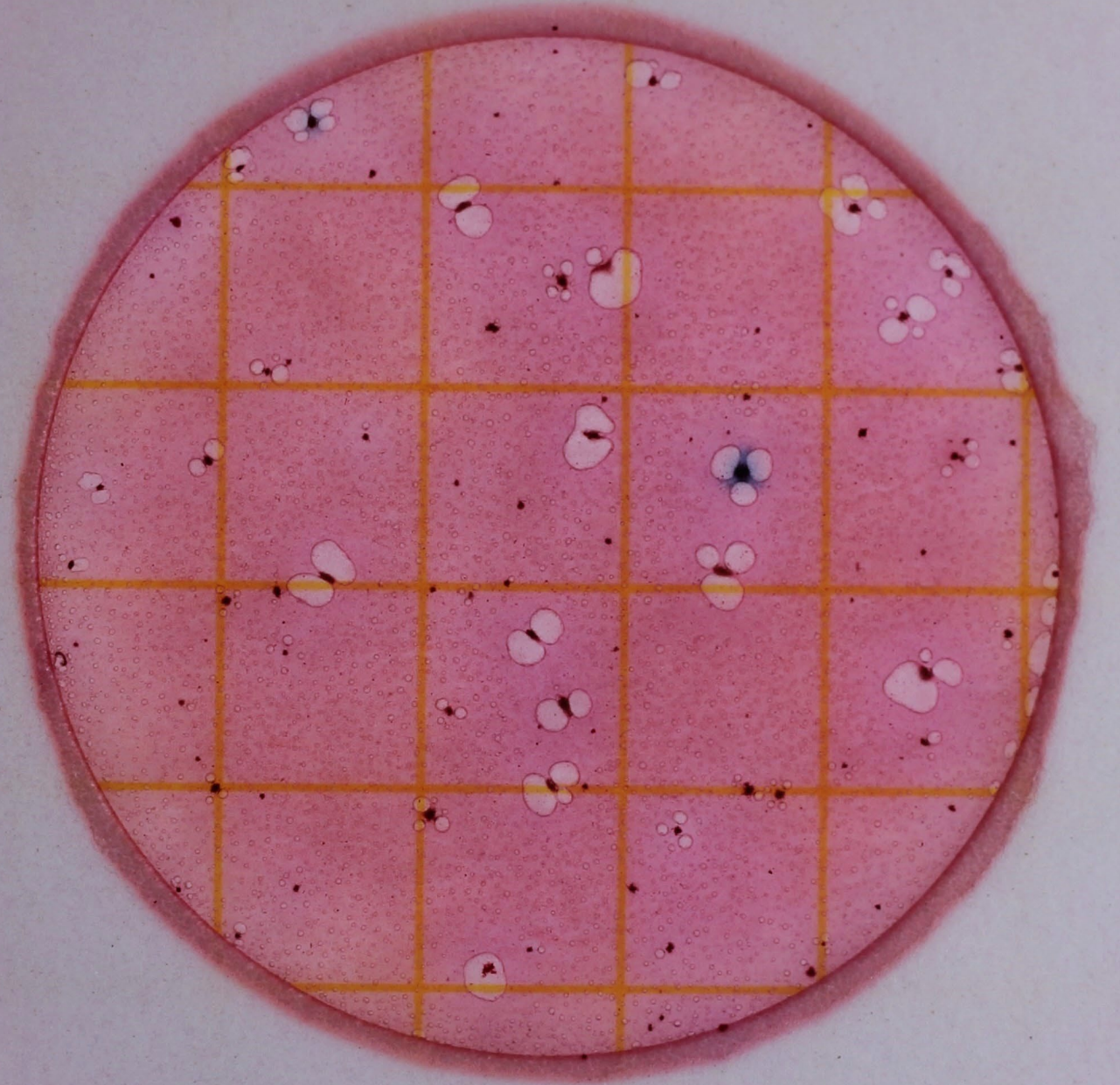
EXAMPLE #10

How many *E. coli*
colonies do you see?



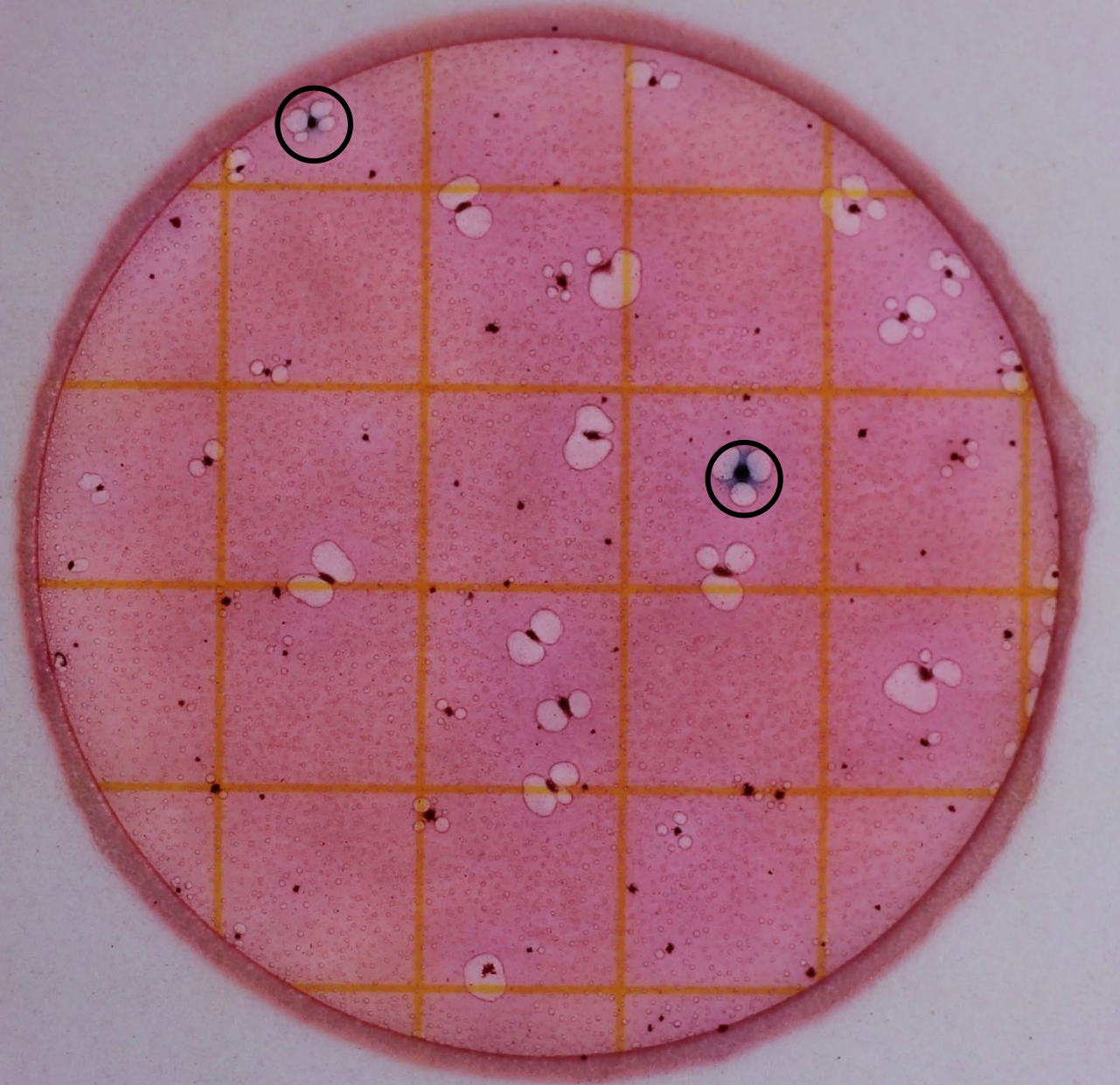
EXAMPLE #11

How many *E. coli*
colonies do you see?



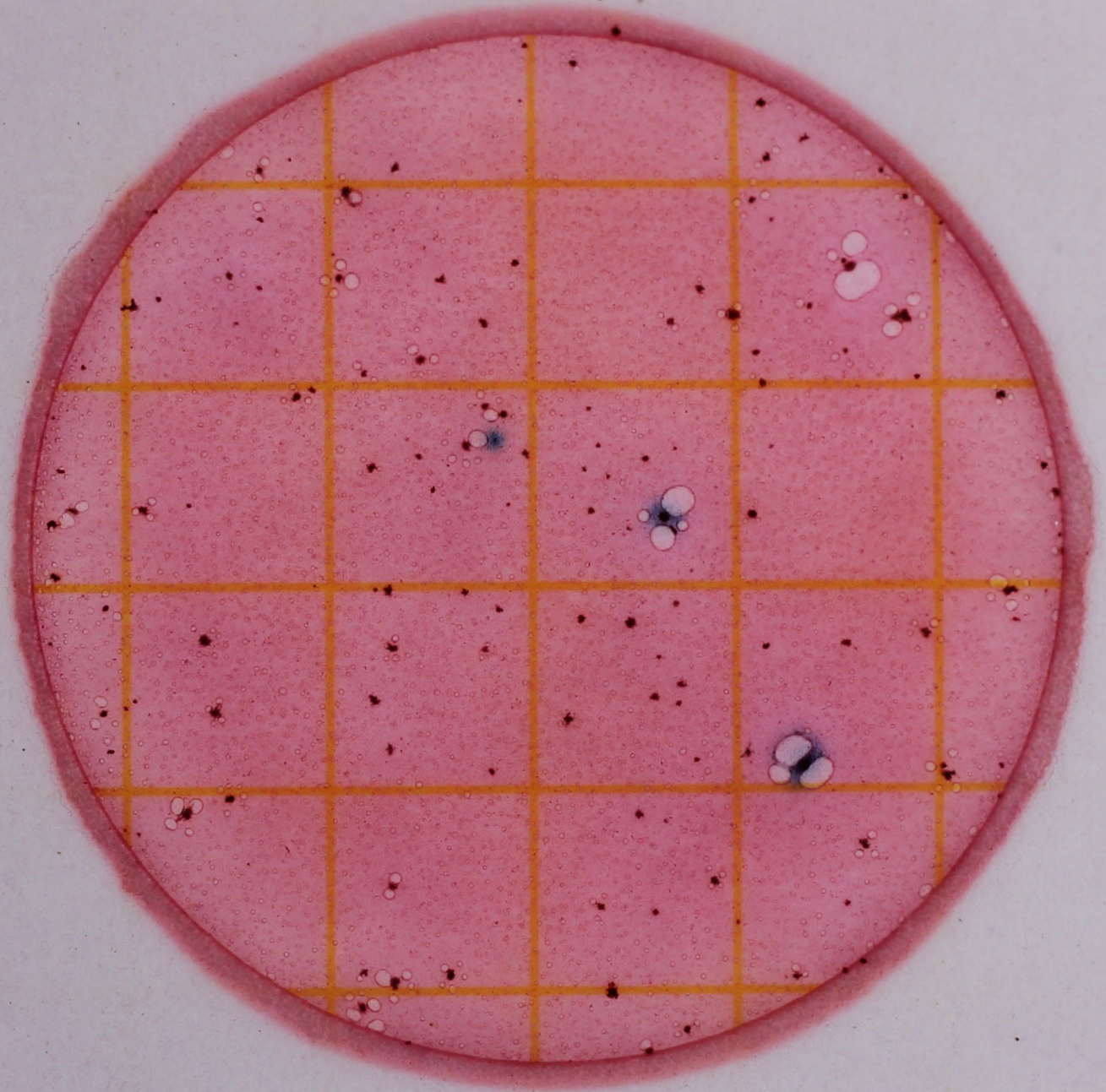
EXAMPLE
#11
ANSWER

How many *E. coli*
colonies do you see?



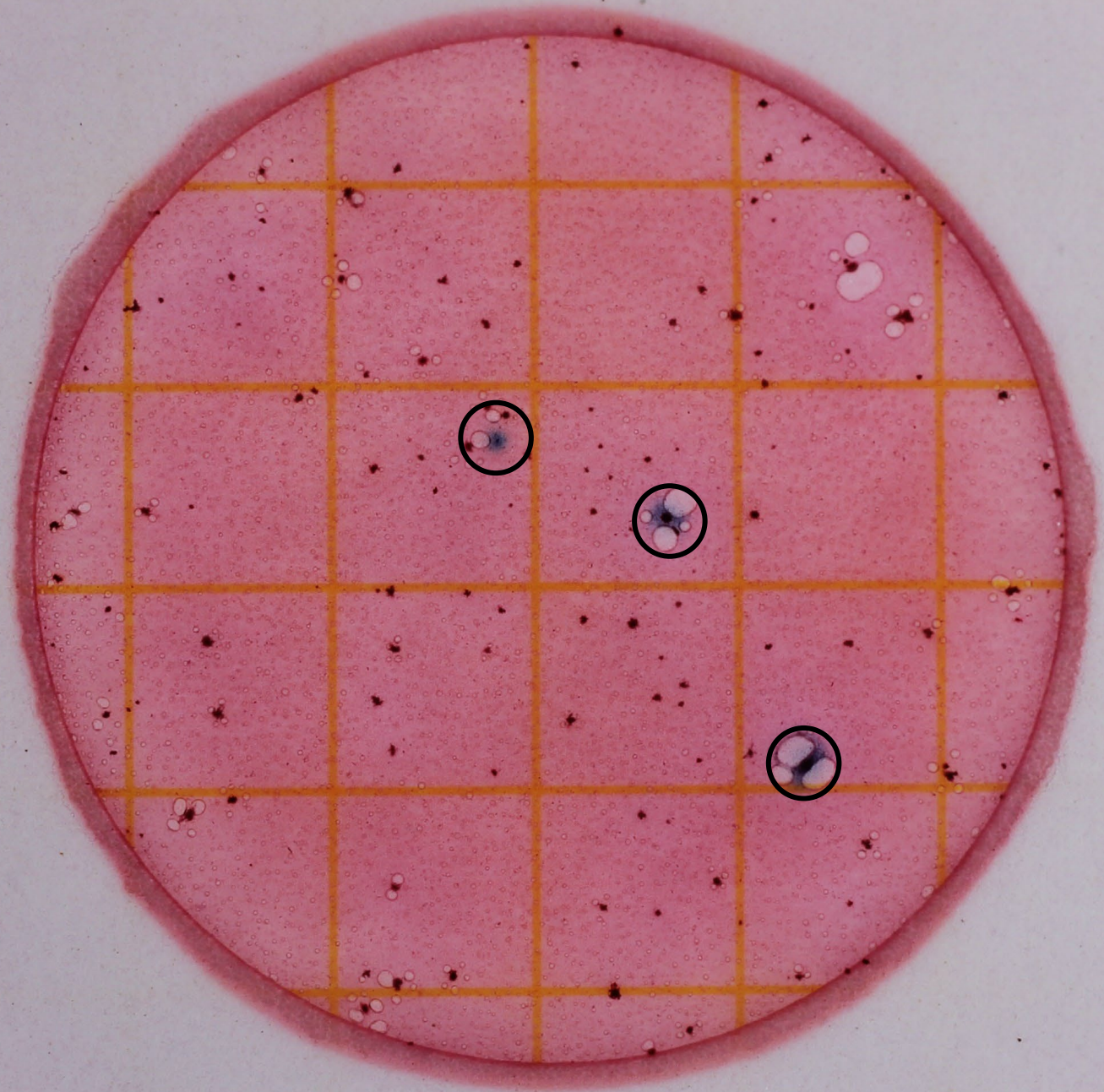
EXAMPLE #12

How many *E. coli*
colonies do you see?



EXAMPLE
#12
ANSWER

How many *E. coli*
colonies do you see?



STEP 6: CALCULATING YOUR RESULTS

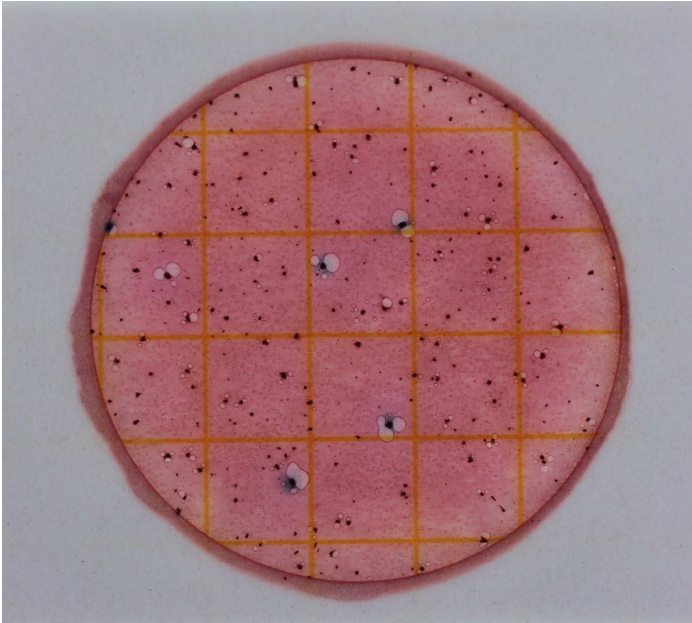


Plate 1

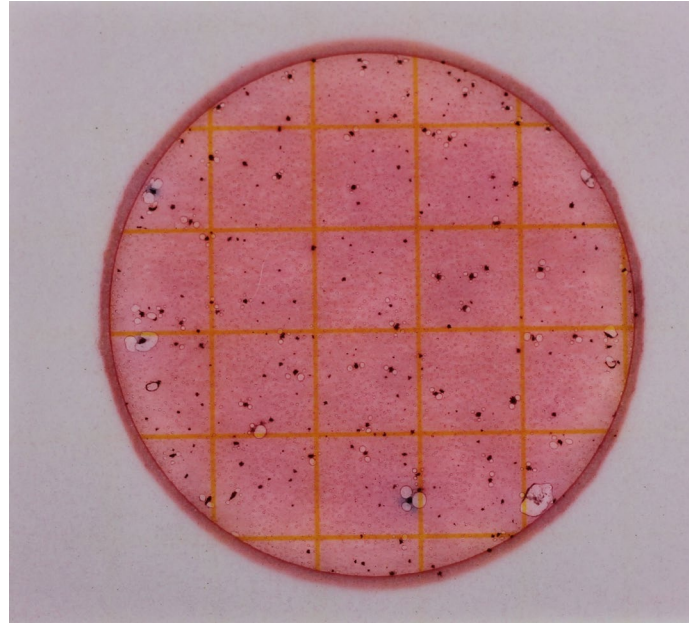


Plate 2

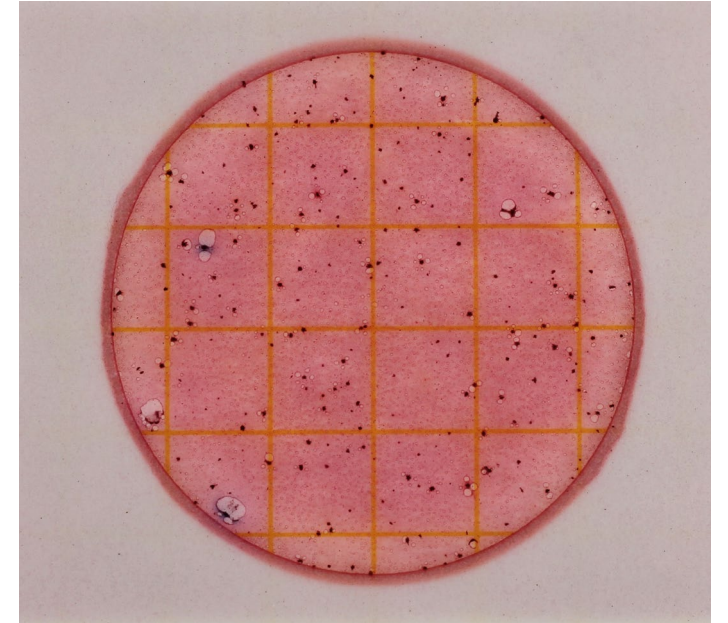


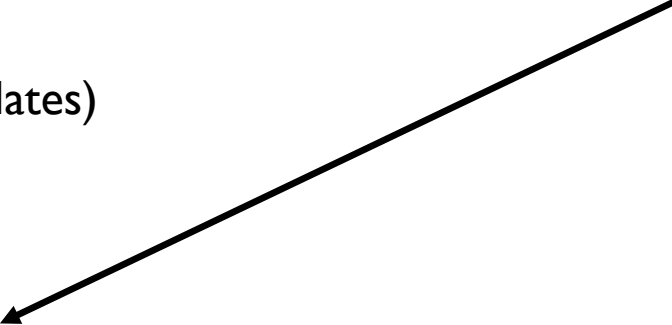
Plate 3

	Plate 1	Plate 2	Plate 3
E .coli colonies	5	2	2

STEP 6: CALCULATING YOUR RESULTS

Step 1:
$$\frac{(\text{Plate 1} + \text{Plate 2} + \text{Plate 3})}{3} = \text{Average CFU/1 mL}$$

(total # of plates)



Step 2:
$$\text{Average CFU/1 mL} * 100 = \underline{\text{Average CFU/100 mL}}$$

STEP 6: CALCULATING YOUR RESULTS

	Plate 1	Plate 2	Plate 3
E . coli colonies	5	2	2

Step 1:
$$\frac{(5 + 2 + 2)}{3} = 3.00 \text{ CFU/1 mL}$$

Step 2:
$$3.00 \text{ CFU/1 mL} * 100 = \underline{300 \text{ CFU/100 mL}}$$

STEP 6: CALCULATING YOUR RESULTS

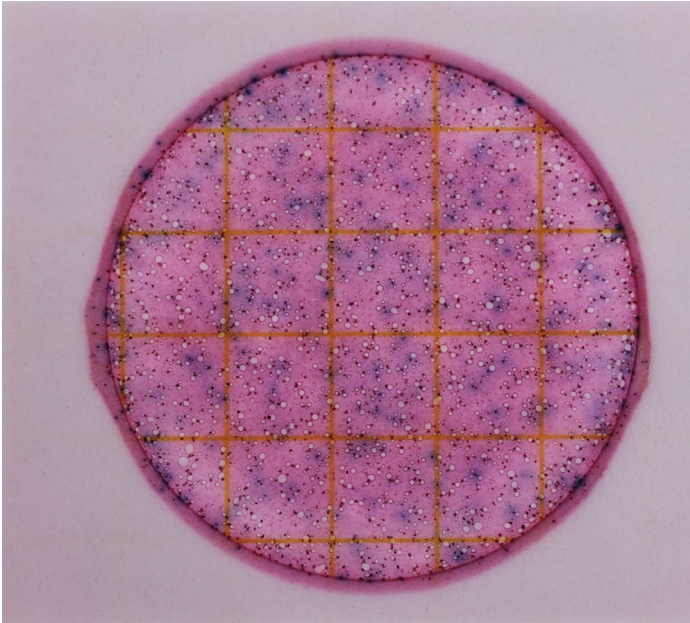


Plate 1

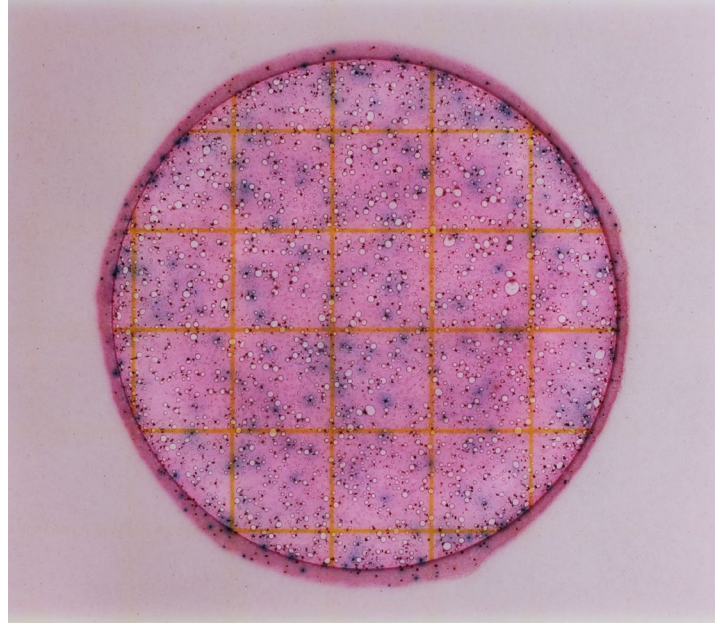


Plate 2

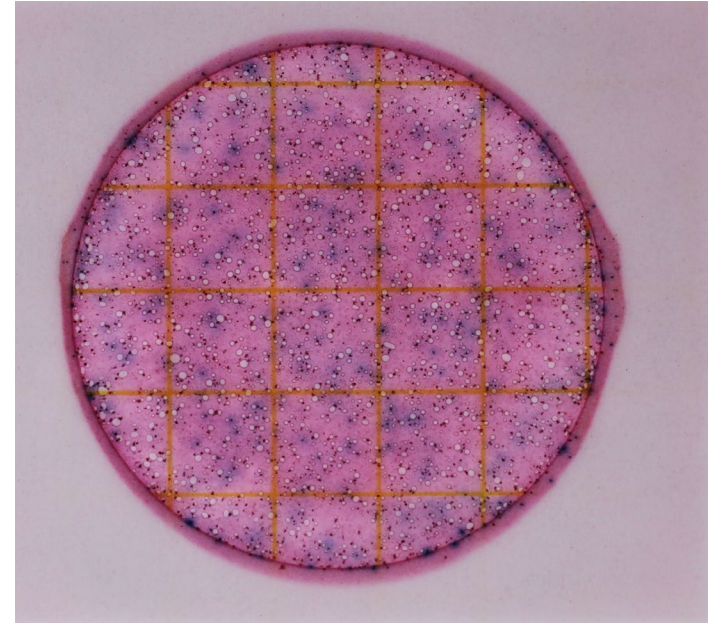


Plate 3

	Plate 1	Plate 2	Plate 3
E .coli colonies	TNTC	TNTC	TNTC

STEP 6: CALCULATING YOUR RESULTS

	Plate 1	Plate 2	Plate 3
E . coli colonies	TNTC	TNTC	TNTC

$$\frac{(\text{TNTC} + \text{TNTC} + \text{TNTC})}{3} = \text{TNTC}$$

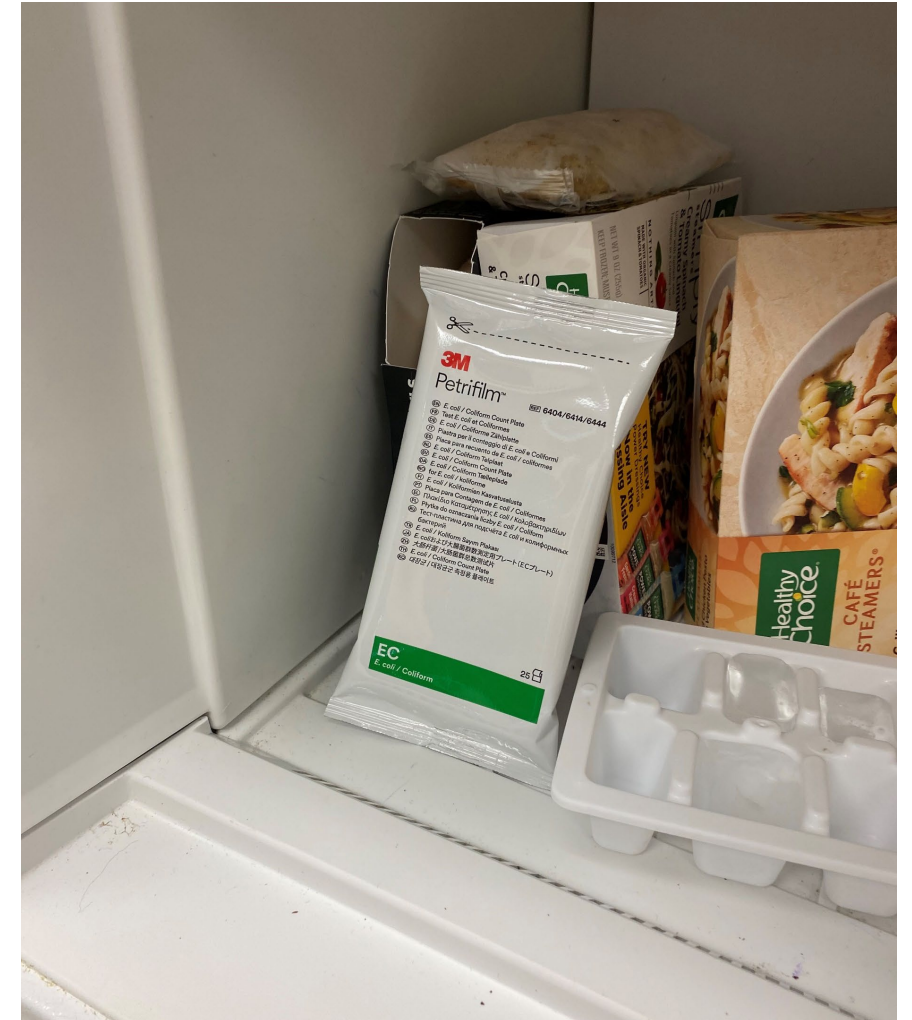
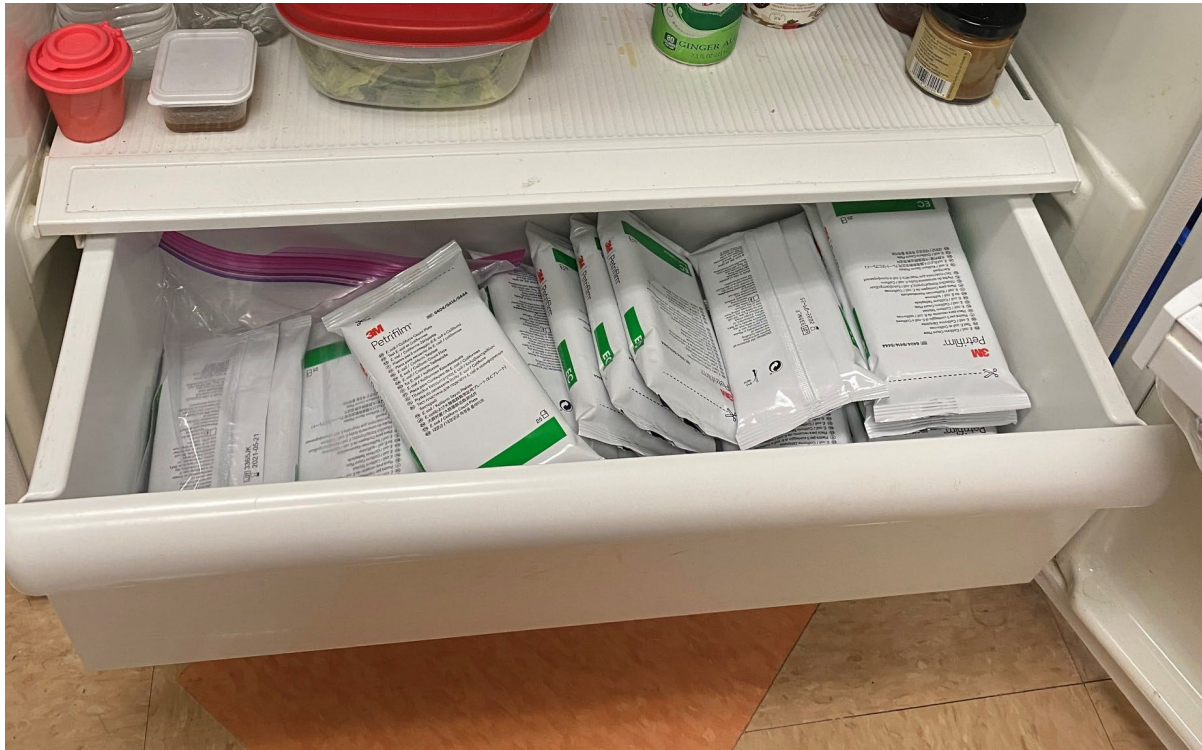
STEP 7: DISPOSAL AND CLEAN-UP

- **Spray plates with disinfectant, seal in bag/used Whirl-Pak, and throw away**
- Wipe down incubator & surrounding surfaces with disinfectant
- Wash hands!



HOW TO STORE PETRIFILM

- If using within one month, keep in the fridge
- If not, store in the freezer and thaw before use



REGULATORY STANDARDS

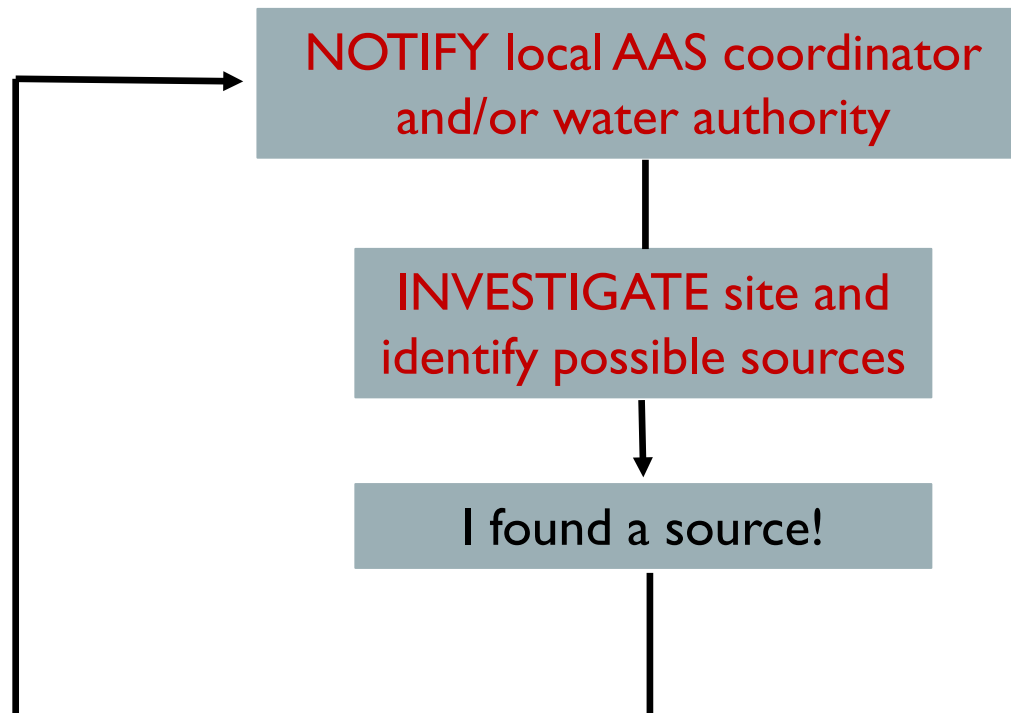
- State of GA regulatory data transitioned from fecal coliforms to *E. coli*
 - State standards reflect established EPA guidelines
 - Includes enterococci to indicate presence of pathogens in coastal waters
- Statistical Threshold Value (STV) - <10% of samples should exceed given level
 - Risk level of 36/1,000 people getting sick from primary contact activities
 - **Sample again if sample > STV**
 - **Report if samples are consistently > STV (2+ months out of the year)**

	<i>E. coli</i> STV	Enterococci STV
EPA recommended level (CFU/100 mL)	<410	<130

HIGH *E. COLI* COUNTS

AAS Action Value: >1000 CFU/100 mL

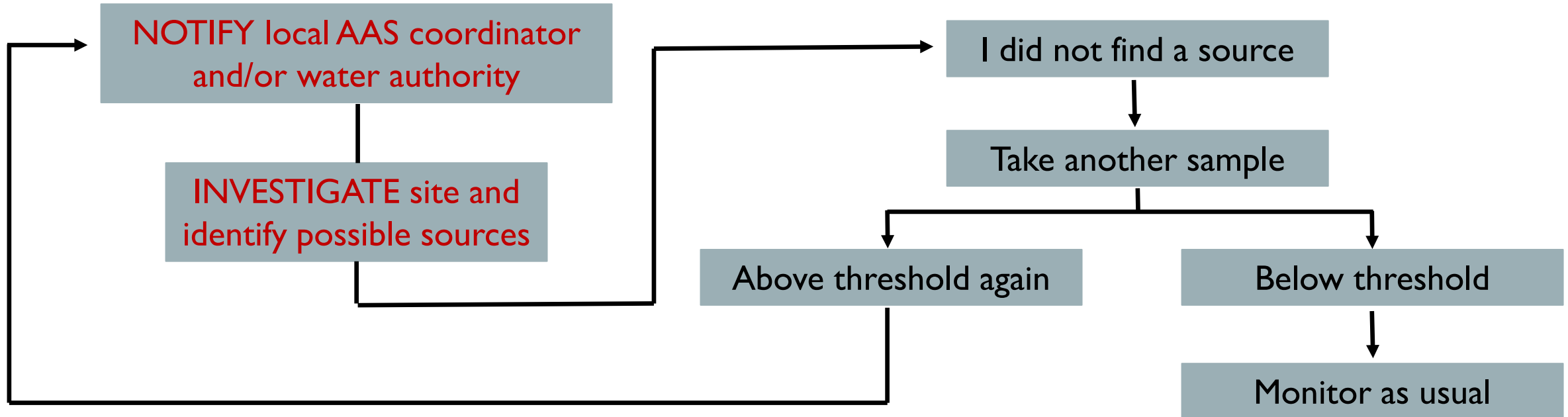
If your count exceeds this value and you did find a source:



HIGH *E. COLI* COUNTS

AAS Action Value: >1000 CFU/100 mL

If your count exceeds this value and you did not find a source:



SAFETY

- Try not to sample alone- take a monitoring buddy!
- Do not sample during high flows or after a heavy rain event
- Obtain permission if sampling on private property
- Wear PPE when sampling and plating
- Disinfect thoroughly before and after plating and counting



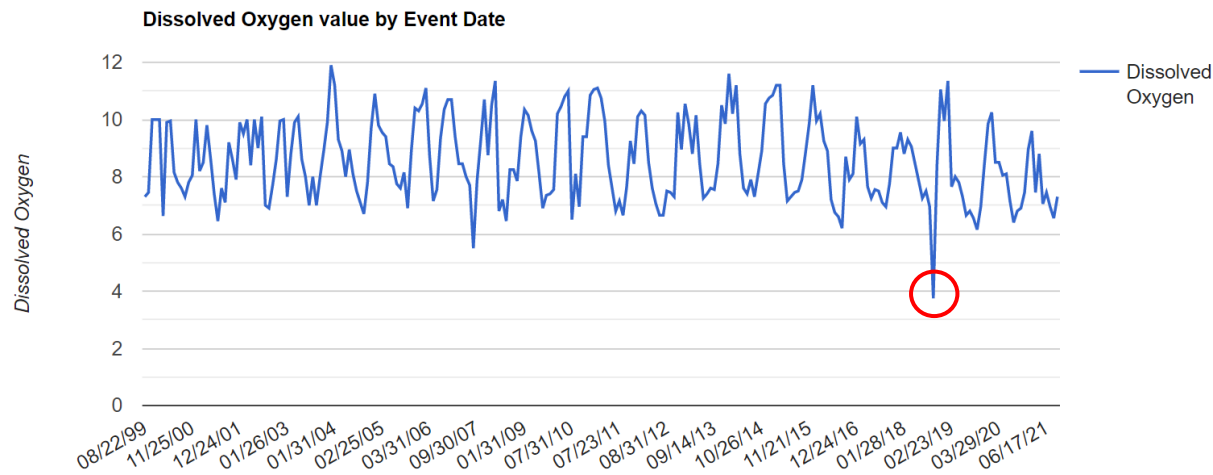
ONCE YOU'RE CERTIFIED

- You get an account to our online database!
- Only certified volunteers can submit data
- Certification is valid for one year
- Volunteers must attend an annual recertification workshop




HOW ARE YOUR DATA USED?

- Establish baseline conditions for waterbodies across the state
- Discover and report water quality issues
- Educate your community
- Help inform status of streams for 303d/305b list



DATABASE LOGIN

 Georgia Adopt-A-Stream
Volunteer Water Quality Monitoring

Search

Get Involved Confluence Citizen Monitoring Data Views Data Entry Materials & Resources **My Profile**

Sign in

User Name:

Password:

[Forgot your user name?](#)

Your **Email address** is the primary address we have on file.

- **If this is your first visit, or if you've forgotten your password:**
Enter your User Name and click **Email my password**. Your password will be sent to you immediately. If you don't see it, be sure to check your Junk Mail or Spam folder.
- **Did you get an "Unknown email address" warning?**
Contact your [local Adopt-A-Stream Coordinator](#), who can help you register.
- **Has your email address changed?**
Log in with your original user name, and then make changes in your **Profile**. We'll use your new email address for future communications.

The Adopt-A-Stream Database website is not recommended for use with Internet Explorer browsers.

If you have any questions, please [contact us](#).

From the AAS website's homepage, hover over the My Profile tab and click Sign In

DATA SUBMISSION FORM

The screenshot shows the Georgia Adopt-A-Stream website's navigation bar and a dropdown menu. The navigation bar includes the logo, a search bar, the user name 'User: Nachtmann', and several tabs: Get Involved, Confluence, Citizen Monitoring, Data Views, Data Entry, Materials & Resources, Outreach Staff, and My Profile. The 'Data Entry' tab is active, and its dropdown menu is open, showing options: Data Submission Form, Register Group, Trainers: Enter Workshop Data, Trainers: Certificates & Letters, and Trainer Workshop History. Below the navigation bar, there are tabs for Site, Chemical, Bacterial, Macroinvertebrate, and Stream. The 'Site' tab is selected. The main content area has a header 'GEORGIA ADOPT-A-STREAM' and a 'Submit All' button. A message states: '*Indicates a required field. You cannot submit a form that has Errors or missing Required Data. You can submit a form that has Warnings, but it will be flagged as out of compliance with the AAS quality assurance plan.' Below this is a section titled 'Site, Weather, and Observations' with a sub-header 'Site Information'. The 'Adopt-A-Stream Site' field has a search bar. A note says: 'Enter the site name or site number without the S-, and select from the list. Note that you must be a member of a group before you can submit data for its sites.' Below the note are six fields: '*Event date: MM/DD/YYYY', '*Time sample collected: hh:mm am/pm' (with a dropdown showing '10 : 56 AM'), '*Total number of participants: Number', '*Time spent sampling: Minutes', 'Total time spent traveling: Minutes', and 'Furthest distance traveled: Miles'.

Georgia Adopt-A-Stream
Volunteer Water Quality Monitoring

Search

User: Nachtmann

Get Involved Confluence Citizen Monitoring Data Views Data Entry Materials & Resources Outreach Staff My Profile

Site Chemical Bacterial Macroinvertebrate Stream

GEORGIA ADOPT-A-STREAM

Submit All

***Indicates a required field**
You *cannot* submit a form that has **Errors** or missing **Required Data**.
You *can* submit a form that has **Warnings**, but it will be flagged as out of compliance with the AAS quality assurance plan.

Site, Weather, and Observations

Site Information

*Adopt-A-Stream Site

Search Site

Enter the site name or site number without the S-, and select from the list. Note that you must be a member of a group before you can submit data for its sites.

*Event date: MM/DD/YYYY

*Time sample collected: 10 : 56 AM
hh:mm am/pm

*Total number of participants: Number

*Time spent sampling: Minutes

Total time spent traveling: Minutes

Furthest distance traveled: Miles

From the AAS website's homepage, hover over the Data Entry tab and click Data Submission Form

SITE, WEATHER, AND OBSERVATIONS

GEORGIA ADOPT-A-STREAM: Bacterial Form

To be conducted every month

SITE INFORMATION	Group Name: _____		Event Date: _____ (MMDDYYYY)	
	Group ID: G- _____	Site ID: S- _____	Time Sample Collected: _____ (HHMM am/pm)	
	Stream Name: _____		Time Spent Sampling: _____ (Min)	
	Monitor(s): _____		Total Time Spent Traveling (optional): _____ (Min)	
	Number of Participants: _____		Furthest Distance Traveled (optional): _____ (Miles)	
WEATHER	Present conditions (check all that apply)			Amount of rain, if known?
	<input type="checkbox"/> Heavy Rain <input type="checkbox"/> Steady Rain <input type="checkbox"/> Intermittent Rain <input type="checkbox"/> Overcast <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Clear/Sunny			Amount in Inches : _____ In Last Hours/Days: _____ *Refer to wunderground.com for rainfall data
OBSERVATIONS	Flow/Water Level: <small>(check all that apply)</small> <input type="checkbox"/> Dry <input type="checkbox"/> Stagnant/Still <input type="checkbox"/> Low <input type="checkbox"/> Normal <input type="checkbox"/> High <input type="checkbox"/> Flow (over banks)			
	Water Clarity: <input type="checkbox"/> Clear/Transparent <input type="checkbox"/> Cloudy/Somewhat Turbid <input type="checkbox"/> Opaque/Turbid			
	Water Color: <input type="checkbox"/> No Color <input type="checkbox"/> Brown/Muddy <input type="checkbox"/> Green <input type="checkbox"/> Milky/White <input type="checkbox"/> Tannic <input type="checkbox"/> Other: _____			
	Water Surface: <input type="checkbox"/> Clear <input type="checkbox"/> Oily Sheen: does it break when disturbed? Yes/No (circle one) <input type="checkbox"/> Algae <input type="checkbox"/> Foam <input type="radio"/> Greater than 3" high <input type="radio"/> It is white			
	Water Odor: <input type="checkbox"/> Natural/None <input type="checkbox"/> Gasoline <input type="checkbox"/> Sewage <input type="checkbox"/> Rotten Egg <input type="checkbox"/> Fishy <input type="checkbox"/> Chlorine <input type="checkbox"/> Other: . _____			
	Photos: Please take images to document your observations and changes in water quality conditions. Photo point directions can be found in the manuals. Send photos to AAS@gaepd.org .			
	Trash: <input type="checkbox"/> None <input type="checkbox"/> Yes, I did a cleanup <input type="checkbox"/> This site needs an organized cleanup			

BACTERIAL DATA

BACTERIAL	3M Petrifilm Method: <i>Escherichia coli</i>			
	Run three (3) plates/tests for each site, plus one (1) blank plate. Process within 6-24hrs, incubate at 35°C ±1° and read at 24 ± 1 hr			
	Plate	Colonies	Find AVG of Number of Colonies	cfu/100mL
	Blank		(total # colonies/total # of plates (do not include blank)	
	1		(/) x 100 =	
	2		Sample Holding Time (HH): _____	
	3		Date START(MMDDYYYY): _____	Date END (MMDDYYYY): _____
	Total # Colonies		Time START (HHMM): _____	Time END (HHMM): _____
		MIN Temp (°C): _____	MAX Temp (°C): _____	
COMMENTS	<p><i>Any changes since you last sampled at this site? If yes, please describe.</i></p>			

Please submit data to our online database at AdoptAStream.Georgia.gov

Submit data ASAP to online database

Access database via AdoptAStream.Georgia.gov

Fill out site data first, then
navigate to the chemical tab
to continue entering data

Save as Draft

Submit All

Site

Chemical

Bacterial

Macroinvertebrate

Stream Habitat Survey

GEORGIA ADOPT-A-STREAM Data Submission Form

***Indicates a required field**

You *cannot* submit a form that has **Errors** or missing **Required Data**.

You *can* submit a form that has **Warnings**, but it will be flagged as out of compliance with the AAS quality assurance plan.

Site, Weather, and Observations

Site Information

***Adopt-A-Stream Site**

Search Site

Enter the site name or site number without the \$-, and select from the list. Note that you must be a member of a group before you can submit data for its sites.

*Event date: MM/DD/YYYY	*Time sample collected: 10 : 56 AM hh:mm am/pm	*Total number of participants: Number	*Time spent sampling: Minutes	Total time spent traveling: Minutes	Furthest distance traveled: Miles
-----------------------------------	---	---	---	---	---

Participants

***Adopt-A-Stream monitors**

Search Contact

Enter one at a time, and select from the drop-down list.

Other participants

Weather

Present conditions

<input type="radio"/> Heavy Rain	<input type="radio"/> Steady Rain	<input type="radio"/> Intermittent Rain
<input type="radio"/> Overcast	<input type="radio"/> Partly Cloudy	<input type="radio"/> Clear/Sunny

Amount of rain, if known?

Amount in inches

In Last

Number

☒ Hours / ☐ Days

Refer to wunderground.com for rainfall data

Observations

Flow/Water Level:
Check all that apply

<input type="checkbox"/> Dry	<input type="checkbox"/> Stagnant/Still	<input type="checkbox"/> Low	<input type="checkbox"/> Normal	<input type="checkbox"/> High	<input type="checkbox"/> Flood (over banks)
------------------------------	---	------------------------------	---------------------------------	-------------------------------	---

Tides:
Check all that apply (coastal monitors)

Tide was: ☐ High ☐ Low | ☐ Incoming ☐ Outgoing

☐ Waterway was not influenced by tides

Water Conditions:
Check all that apply (coastal and lake monitors)

<input type="checkbox"/> Calm/Smooth	<input type="checkbox"/> Ripples	<input type="checkbox"/> Waves	<input type="checkbox"/> White Caps
--------------------------------------	----------------------------------	--------------------------------	-------------------------------------

Top

After entering all of your data, click “Submit All” to submit your data to the database

Save as DraftSubmit All

SiteChemicalBacterialMacroinvertebrateStream Habitat Survey

GEORGIA ADOPT-A-STREAMData Submission Form

***Indicates a required field**

You *cannot* submit a form that has **Errors** or missing **Required Data**.

You *can* submit a form that has **Warnings**, but it will be flagged as out of compliance with the AAS quality assurance plan.

Site, Weather, and Observations

Site Information

*Adopt-A-Stream Site

Search Site

Enter the site name or site number without the \$-, and select from the list. Note that you must be a member of a group before you can submit data for its sites.

*Event date: MM/DD/YYYY	*Time sample collected: 10 : 56 AM hh:mm am/pm	*Total number of participants: Number	*Time spent sampling: Minutes	Total time spent traveling: Minutes	Furthest distance traveled: Miles
----------------------------	--	--	----------------------------------	--	--------------------------------------

Participants

*Adopt-A-Stream monitors

Search Contact

Enter one at a time, and select from the drop-down list.

Other participants

Weather

Present conditions

<input type="radio"/> Heavy Rain	<input type="radio"/> Steady Rain	<input type="radio"/> Intermittent Rain
<input type="radio"/> Overcast	<input type="radio"/> Partly Cloudy	<input type="radio"/> Clear/Sunny

Amount of rain, if known?

Amount in inches

In Last Number ☒ Hours / ☐ Days

Refer to wunderground.com for rainfall data

Observations

Flow/Water Level:

Check all that apply

<input type="checkbox"/> Dry	<input type="checkbox"/> Stagnant/Still	<input type="checkbox"/> Low	<input type="checkbox"/> Normal	<input type="checkbox"/> High	<input type="checkbox"/> Flood (over banks)
------------------------------	---	------------------------------	---------------------------------	-------------------------------	---

Tides:

Check all that apply (coastal monitors)

Tide was: ☐ High ☐ Low | ☐ Incoming ☐ Outgoing

☐ Waterway was not influenced by tides

Water Conditions:

Check all that apply (coastal and lake monitors)

<input type="checkbox"/> Calm/Smooth	<input type="checkbox"/> Ripples	<input type="checkbox"/> Waves	<input type="checkbox"/> White Caps
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Top

Use “Save as Draft” to finish submitting data at a later time.
Data must be submitted within 7 days of saving as a draft.

Site

Chemical

Bacterial

Macroinvertebrate

Stream Habitat Survey

Save as Draft

Submit All

GEORGIA ADOPT-A-STREAM Data Submission Form

***Indicates a required field**

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You *can* submit a form that has **Warnings**, but it will be flagged as out of compliance with the AAS quality assurance plan.

Site, Weather, and Observations

Site Information

***Adopt-A-Stream Site**

Search Site

Enter the site name or site number without the S-, and select from the list. Note that you must be a member of a group before you can submit data for its sites.

*Event date: MM/DD/YYYY	*Time sample collected: 10:56 AM hh:mm am/pm	*Total number of participants: Number	*Time spent sampling: Minutes	Total time spent traveling: Minutes	Furthest distance traveled: Miles
-----------------------------------	---	---	---	---	---

Participants

***Adopt-A-Stream monitors**

Search Contact

Enter one at a time, and select from the drop-down list.

Other participants

Weather

Present conditions

<input type="radio"/> Heavy Rain	<input type="radio"/> Steady Rain	<input type="radio"/> Intermittent Rain
<input type="radio"/> Overcast	<input type="radio"/> Partly Cloudy	<input type="radio"/> Clear/Sunny

Amount of rain, if known?

Amount in inches

In Last

Number

☒ Hours / ☐ Days

Refer to wunderground.com for rainfall data

Observations

Flow/Water Level:
Check all that apply

<input type="checkbox"/> Dry	<input type="checkbox"/> Stagnant/Still	<input type="checkbox"/> Low	<input type="checkbox"/> Normal	<input type="checkbox"/> High	<input type="checkbox"/> Flood (over banks)
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Tides:
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Tide was: ☐ High ☐ Low | ☐ Incoming ☐ Outgoing

☐ Waterway was not influenced by tides

Water Conditions:
Check all that apply (coastal and lake monitors)

<input type="checkbox"/> Calm/Smooth	<input type="checkbox"/> Ripples	<input type="checkbox"/> Waves	<input type="checkbox"/> White Caps
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Top


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 AdoptAStream.Georgia.gov

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TEST REVIEW