Test Fast, Report Faster: Speed as a Beach Public Health Tool

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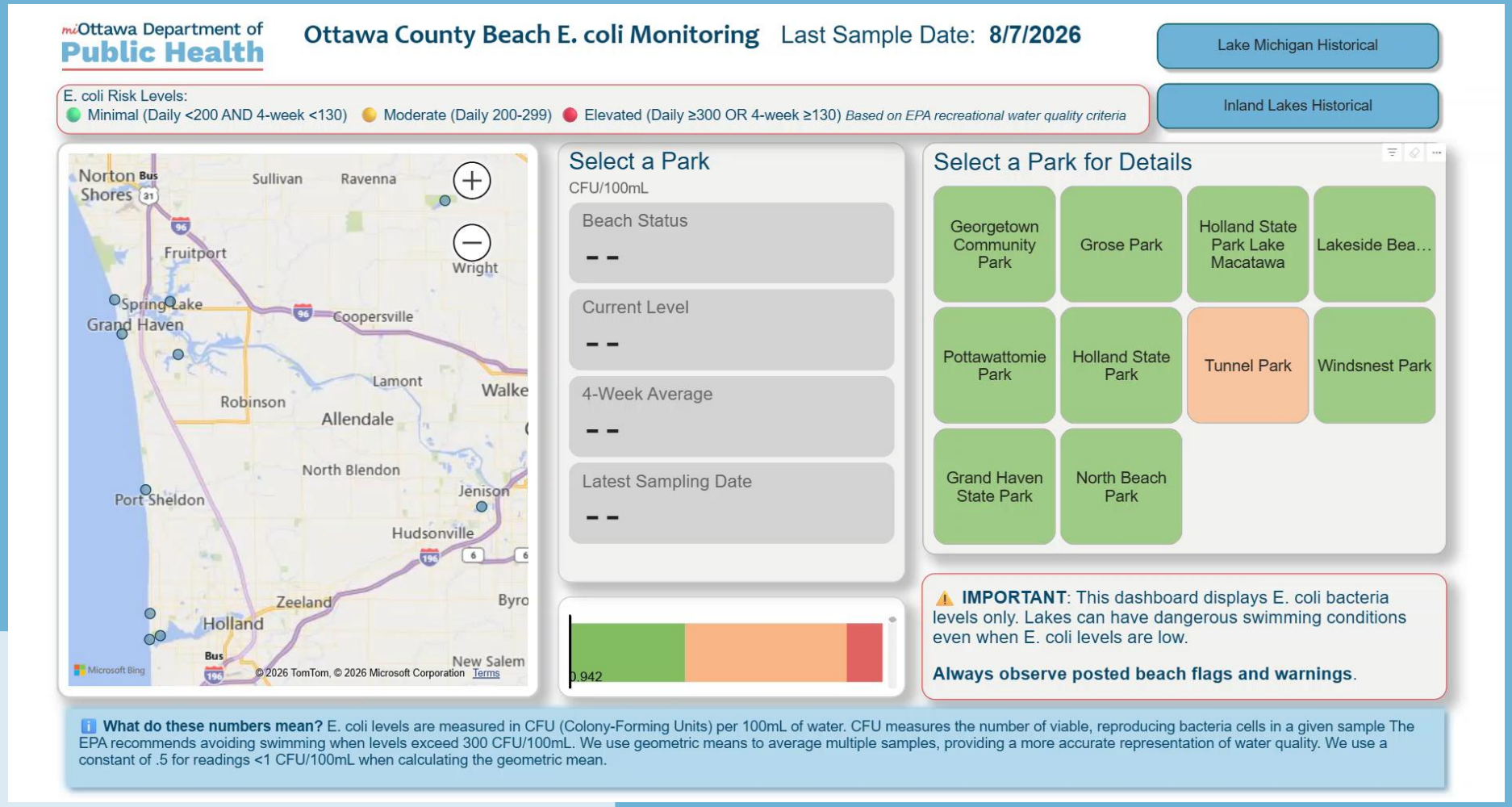
END TO END

Step by Step

6

Dashboard

Power BI refresh, public view updates



6

Results are published to our county website every three hours. The public have visibility to the most updated data 24/7 from Memorial Day to Labor Day.

WHY SPEED MATTERS

Speed in Action: 8/14/2026

1. **TECTA runs** — Instrument completes the chamber run
2. **Email arrives** — CSV lands in the shared mailbox
3. **Flow parses** — Power Automate reads the attachment
4. **Rows written** — Historical + 2026 Excel tables
5. **Alert fires** — Conditional email at ≥ 200 CFU
6. **Dashboard** — Power BI refresh, public view updates



Image courtesy of Michigan.gov/recsearch

Holland State Park – Holland, MI
Extremely popular beach – Averages 4,000-5,000 visitors per day
Samples Collected: 1:00 PM
Incubation Starts: 2:06 PM
Incubation Ends: 10:04 PM, 10:06 PM, 10:32 PM (~8hrs)
Results: 541 CFU/100, 511 CFU/100, 198 CFU/100
Staff receive immediate email notification
Published to Public Dashboard 1:00 AM
Staff retested 8/15, Results still elevated but within normal risk range **(INCLUDE NEXT RESULTS)**

WHY SPEED MATTERS

Lesson Learned: 7/29/2026 – The first high result of 2026

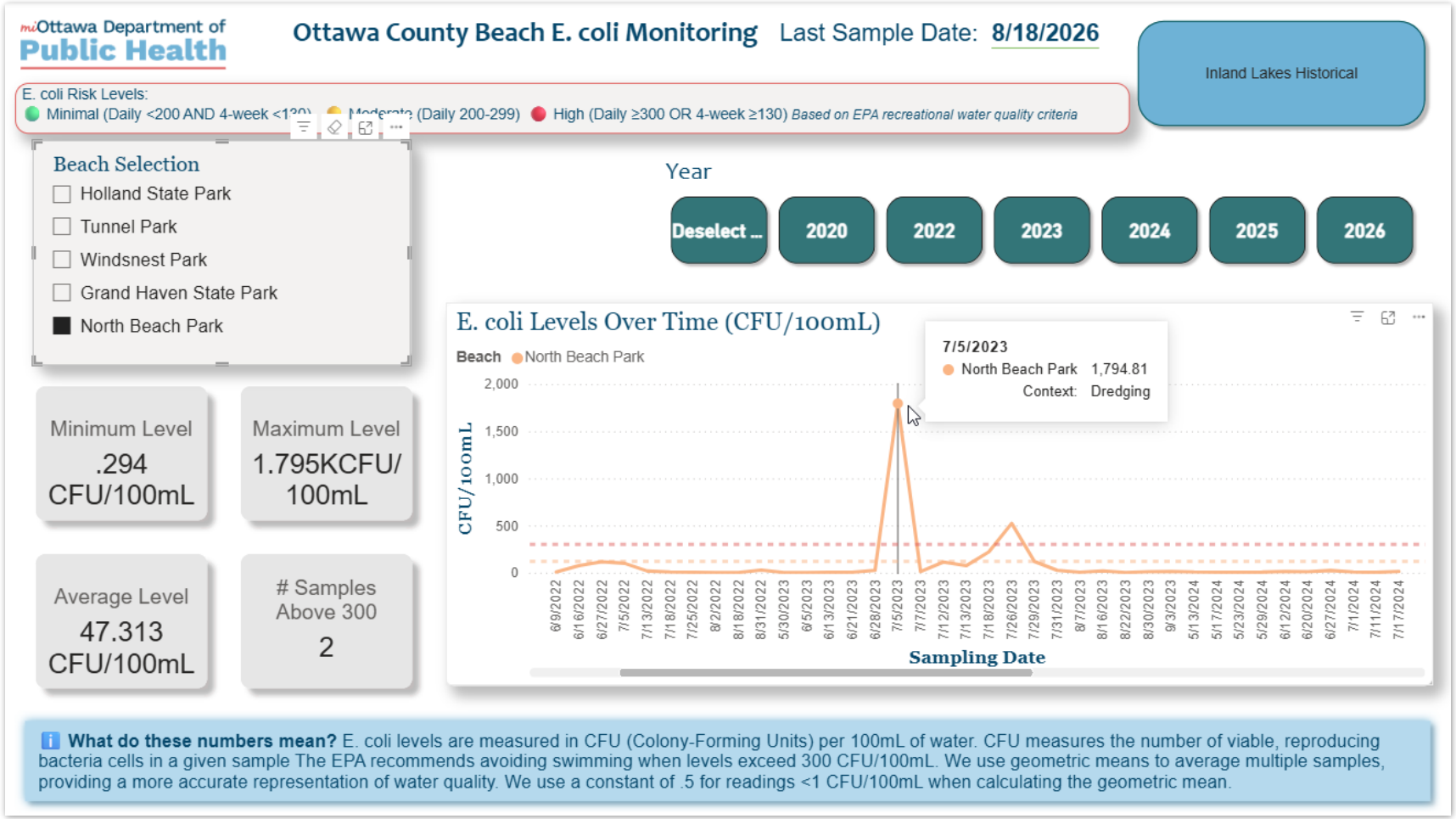
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   Historical + 2026 Excel tables
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   ~~Conditional email at ≥ 200 CFU~~
6. **Dashboard**
   Power BI refresh, public view updates



Grose Park – Chester Township, MI
Saw 1.51” Rainfall 7/28, last significant rainfall .67” on 6/11
Samples Collected: 8:15 AM
Incubation Starts: 9:22 AM
Incubation Ends: 5:22 PM, 5:27 PM, 5:37 PM (8hrs-8hr15m)
Results: 501 CFU/100, 420 CFU/100, 295 CFU/100
No Alert Notifications Setup
Published to Public Dashboard 11:00 PM
Staff reviewed results on the dashboard the next morning
Retesting completed afternoon 7/30, normal readings

DASHBOARD — HISTORICAL

Context is what builds trust



Year by year

Any Lake Michigan beach, any season back to 2020, on one chart.

Spikes in context

A single event reads as an event, not as a beach that is always dirty.

Same source

Nothing is re-keyed for this tab — it reads the same historical table the flow writes to.

Questions? Connect With Us!



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WHY THIS MATTERS

Yesterday's water, today's swimmers

4,000–5,000

visitors on a typical day at Holland State Park alone

18+ hrs

from bottle to result with our previous method

Next day

the earliest the public saw a result



Holland State Park · Image courtesy of Michigan.gov/recsearch

PROGRAM HISTORY

From an in-house lab to rapid testing

2009

In-house lab

Purchased IDEXX Quanti-Tray sealer, blacklight, and incubation oven. Staff and summer interns collected and analyzed samples.

2024

Aging equipment

Began looking at upgrading or replacing equipment and the whole beach monitoring process.

2025

EGLE grant

Funding awarded to move to IDEXX TECTA, expand beaches, and add source tracking.

2026

First full season

TECTA in use from Memorial Day to Labor Day, with automated public reporting.

THE GRANT

EGLE Rapid Testing & Source Tracking for Beaches

1

Upgrade the test

Replace Quanti-Tray with the IDEXX TECTA rapid testing system.

2

Monitor more beaches

Expand the number of actively monitored beaches in the county.

3

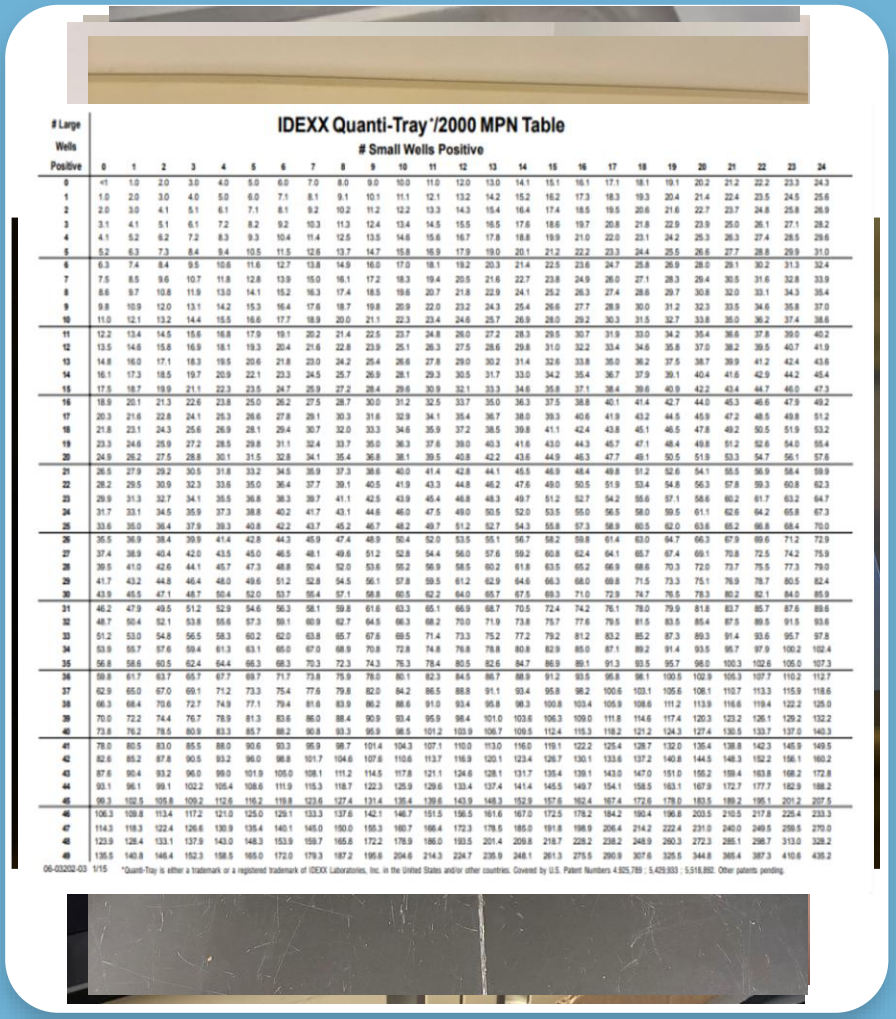
Find the source

Add source tracking capability to help identify where contamination comes from.

Awarded in 2025 by the Michigan Department of Environment, Great Lakes, and Energy (EGLE). 2026 was the first full season under the grant.

Previous Process

Quantitray System



IDEXX Quanti-Tray®/2000 MPN Table

# Large Wells Positive	# Small Wells Positive																							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
0	<1	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.1	15.1	16.1	17.1	18.1	19.1	20.2	21.2	22.2	23.3	24.3
1	1.0	2.0	3.0	4.0	5.0	6.0	7.1	8.1	9.1	10.1	11.1	12.1	13.2	14.2	15.2	16.2	17.3	18.3	19.3	20.4	21.4	22.4	23.5	24.5	25.6
2	2.0	3.0	4.1	5.1	6.1	7.1	8.1	9.2	10.2	11.2	12.2	13.3	14.3	15.4	16.4	17.4	18.5	19.5	20.6	21.6	22.7	23.7	24.8	25.8	26.9
3	3.1	4.1	5.1	6.1	7.2	8.2	9.2	10.3	11.3	12.4	13.4	14.5	15.5	16.5	17.6	18.6	19.7	20.8	21.8	22.9	23.9	25.0	26.1	27.1	28.2
4	4.1	5.2	6.2	7.2	8.3	9.3	10.4	11.4	12.5	13.5	14.6	15.6	16.7	17.8	18.8	19.9	21.0	22.0	23.1	24.2	25.3	26.3	27.4	28.5	29.6
5	5.2	6.3	7.3	8.4	9.4	10.5	11.5	12.6	13.7	14.7	15.8	16.9	17.9	19.0	20.1	21.2	22.2	23.3	24.4	25.5	26.6	27.7	28.8	29.9	31.0
6	6.3	7.4	8.4	9.5	10.6	11.6	12.7	13.8	14.9	16.0	17.0	18.1	19.2	20.3	21.4	22.5	23.6	24.7	25.8	26.9	28.0	29.1	30.2	31.3	32.4
7	7.5	8.5	9.6	10.7	11.8	12.8	13.9	15.0	16.1	17.2	18.3	19.4	20.5	21.6	22.7	23.8	24.9	26.0	27.1	28.3	29.4	30.5	31.6	32.8	33.9
8	8.6	9.7	10.8	11.9	13.0	14.1	15.2	16.3	17.4	18.5	19.6	20.7	21.8	22.9	24.1	25.2	26.3	27.4	28.6	29.7	30.8	32.0	33.1	34.3	35.4
9	9.8	10.9	12.0	13.1	14.2	15.3	16.4	17.6	18.7	19.8	20.9	22.0	23.2	24.3	25.4	26.6	27.7	28.9	30.0	31.2	32.3	33.5	34.6	35.8	37.0
10	11.0	12.1	13.2	14.4	15.5	16.6	17.7	18.9	20.0	21.1	22.3	23.4	24.6	25.7	26.9	28.0	29.2	30.3	31.5	32.7	33.8	35.0	36.2	37.4	38.6
11	12.2	13.4	14.5	15.6	16.8	17.9	19.1	20.2	21.4	22.5	23.7	24.8	26.0	27.2	28.3	29.5	30.7	31.9	33.0	34.2	35.4	36.6	37.8	39.0	40.2
12	13.5	14.6	15.8	16.9	18.1	19.3	20.4	21.6	22.8	23.9	25.1	26.3	27.5	28.6	29.8	31.0	32.2	33.4	34.6	35.8	37.0	38.2	39.5	40.7	41.9
13	14.8	16.0	17.1	18.3	19.5	20.6	21.8	23.0	24.2	25.4	26.6	27.8	29.0	30.2	31.4	32.6	33.8	35.0	36.2	37.5	38.7	39.9	41.2	42.4	43.6
14	16.1	17.3	18.5	19.7	20.9	22.1	23.3	24.5	25.7	26.9	28.1	29.3	30.5	31.7	33.0	34.2	35.4	36.7	37.9	39.1	40.4	41.6	42.9	44.2	45.4
15	17.5	18.7	19.9	21.1	22.3	23.5	24.7	25.9	27.2	28.4	29.6	30.9	32.1	33.3	34.6	35.8	37.1	38.4	39.6	40.9	42.2	43.4	44.7	46.0	47.3
16	18.9	20.1	21.3	22.6	23.8	25.0	26.2	27.5	28.7	30.0	31.2	32.5	33.7	35.0	36.3	37.5	38.8	40.1	41.4	42.7	44.0	45.3	46.6	47.9	49.2
17	20.3	21.6	22.8	24.1	25.3	26.6	27.8	29.1	30.3	31.6	32.9	34.1	35.4	36.7	38.0	39.3	40.6	41.9	43.2	44.5	45.9	47.2	48.5	49.8	51.2
18	21.8	23.1	24.3	25.6	26.9	28.1	29.4	30.7	32.0	33.3	34.6	35.9	37.2	38.5	39.8	41.1	42.4	43.8	45.1	46.5	47.8	49.2	50.5	51.9	53.2
19	23.3	24.6	25.9	27.2	28.5	29.8	31.1	32.4	33.7	35.0	36.3	37.6	39.0	40.3	41.6	43.0	44.3	45.7	47.1	48.4	49.8	51.2	52.6	54.0	55.4
20	24.9	26.2	27.5	28.8	30.1	31.5	32.8	34.1	35.4	36.8	38.1	39.5	40.8	42.2	43.6	44.9	46.3	47.7	49.1	50.5	51.9	53.3	54.7	56.1	57.6
21	26.5	27.9	29.2	30.5	31.8	33.2	34.5	35.9	37.3	38.6	40.0	41.4	42.8	44.1	45.5	46.9	48.4	49.8	51.2	52.6	54.1	55.5	56.9	58.4	59.9
22	28.2	29.5	30.9	32.3	33.6	35.0	36.4	37.7	39.1	40.5	41.9	43.3	44.8	46.2	47.6	49.0	50.5	51.9	53.4	54.8	56.3	57.8	59.3	60.8	62.3
23	29.9	31.3	32.7	34.1	35.5	36.8	38.3	39.7	41.1	42.5	43.9	45.4	46.8	48.3	49.7	51.2	52.7	54.2	55.6	57.1	58.6	60.2	61.7	63.2	64.7
24	31.7	33.1	34.5	35.9	37.3	38.8	40.2	41.7	43.1	44.6	46.0	47.5	49.0	50.5	52.0	53.5	55.0	56.5	58.0	59.5	61.1	62.6	64.2	65.8	67.3
25	33.6	35.0	36.4	37.9	39.3	40.8	42.2	43.7	45.2	46.7	48.2	49.7	51.2	52.7	54.3	55.8	57.3	58.9	60.5	62.0	63.6	65.2	66.8	68.4	70.0
26	35.5	36.9	38.4	39.9	41.4	42.8	44.3	45.9	47.4	48.9	50.4	52.0	53.5	55.1	56.7	58.2	59.8	61.4	63.0	64.7	66.3	67.9	69.6	71.2	72.9
27	37.4	38.9	40.4	42.0	43.5	45.0	46.5	48.1	49.6	51.2	52.8	54.4	56.0	57.6	59.2	60.8	62.4	64.1	65.7	67.4	69.1	70.8	72.5	74.2	75.9
28	39.5	41.0	42.6	44.1	45.7	47.3	48.8	50.4	52.0	53.6	55.2	56.9	58.5	60.2	61.8	63.5	65.2	66.9	68.6	70.3	72.0	73.7	75.5	77.3	79.0
29	41.7	43.2	44.8	46.4	48.0	49.6	51.2	52.8	54.5	56.1	57.8	59.5	61.2	62.9	64.6	66.3	68.0	69.8	71.5	73.3	75.1	76.9	78.7	80.5	82.4
30	43.9	45.5	47.1	48.7	50.4	52.0	53.7	55.4	57.1	58.8	60.5	62.2	64.0	65.7	67.5	69.3	71.0	72.9	74.7	76.5	78.3	80.2	82.1	84.0	85.9
31	46.2	47.9	49.5	51.2	52.9	54.6	56.3	58.1	59.8	61.6	63.3	65.1	66.9	68.7	70.5	72.4	74.2	76.1	78.0	79.9	81.8	83.7	85.7	87.6	89.6
32	48.7	50.4	52.1	53.8	55.6	57.3	59.1	60.9	62.7	64.5	66.3	68.2	70.0	71.9	73.8	75.7	77.6	79.5	81.5	83.5	85.4	87.5	89.5	91.5	93.6
33	51.2	53.0	54.8	56.5	58.3	60.2	62.0	63.8	65.7	67.6	69.5	71.4	73.3	75.2	77.2	79.2	81.2	83.2	85.2	87.3	89.3	91.4	93.6	95.7	97.8
34	53.9	55.7	57.6	59.4	61.3	63.1	65.0	67.0	68.9	70.8	72.8	74.8	76.8	78.8	80.8	82.9	85.0	87.1	89.2	91.4	93.5	95.7	97.9	100.2	102.4
35	56.8	58.6	60.5	62.4	64.4	66.3	68.3	70.3	72.3	74.3	76.3	78.4	80.5	82.6	84.7	86.9	89.1	91.3	93.5	95.7	98.0	100.3	102.6	105.0	107.3
36	59.8	61.7	63.7	65.7	67.7	69.7	71.7	73.8	75.9	78.0	80.1	82.3	84.5	86.7	88.9	91.2	93.5	95.8	98.1	100.5	102.9	105.3	107.7	110.2	112.7
37	62.9	65.0	67.0	69.1	71.2	73.3	75.4	77.6	79.8	82.0	84.2	86.5	88.8	91.1	93.4	95.8	98.2	100.6	103.1	105.6	108.1	110.7	113.3	115.9	118.6
38	66.3	68.4	70.6	72.7	74.9	77.1	79.4	81.6	83.9	86.2	88.6	91.0	93.4	95.8	98.3	100.8	103.4	105.9	108.6	111.2	113.9	116.6	119.4	122.2	125.0
39	70.0	72.2	74.4	76.7	78.9	81.3	83.6	86.0	88.4	90.9	93.4	95.9	98.4	101.0	103.6	106.3	109.0	111.8	114.6	117.4	120.3	123.2	126.1	129.2	132.2
40	73.8	76.2	78.5	80.9	83.3	85.7	88.2	90.8	93.3	95.9	98.5	101.2	103.9	106.7	109.5	112.4	115.3	118.2	121.2	124.3	127.4	130.5	133.7	137.0	140.3
41	78.0	80.5	83.0	85.5	88.0	90.6	93.3	95.9	98.7	101.4	104.3	107.1	110.0	113.0	116.0	119.1	122.2	125.4	128.7	132.0	135.4	138.8	142.3	145.9	149.5
42	82.6	85.2	87.8	90.5	93.2	96.0	98.8	101.7	104.6	107.6	110.6	113.7	116.9	120.1	123.4	126.7	130.1	133.6	137.2	140.8	144.5	148.3	152.2	156.1	160.2
43	87.6	90.4	93.2	96.0	99.0	101.9	105.0	108.1	111.2	114.5	117.8	121.1	124.6	128.1	131.7	135.4	139.1	143.0	147.0	151.0	155.2	159.4	163.8	168.2	172.8
44	93.1	96.1	99.1	102.2	105.4	108.6	111.9	115.3	118.7	122.3	125.9	129.6	133.4	137.4	141.4	145.5	149.7	154.1	158.5	163.1	167.9	172.7	177.7	182.9	188.2
45	99.3	102.5	105.8	109.2	112.6	116.2	119.8	123.6	127.4	131.4	135.4	139.6	143.9	148.3	152.9	157.6	162.4	167.4	172.6	178.0	183.5	189.2	195.1	201.2	207.5
46	106.3	109.8	113.4	117.2	121.0	125.0	129.1	133.3	137.6	142.1	146.7	151.5	156.5	161.6	167.0	172.5	178.2	184.2	190.4	196.8	203.5	210.5	217.8	225.4	233.3
47	114.3	118.3	122.4	126.6	130.9	135.4	140.1	145.0	150.0	155.3	160.7	166.4	172.3	178.5	185.0	191.8	198.9	206.4	214.2	222.4	231.0	240.0	249.5	259.5	270.0
48	123.9	128.4	133.1	137.9	143.0	148.3	153.9	159.7	165.8	172.2	178.9	186.0	193.5	201.4	209.8	218.7	228.2	238.2	248.9	260.3	272.3	285.1	298.7	313.0	328.2
49	135.5	140.8	146.4	152.3	158.5	165.0	172.0	179.3	187.2	195.6	204.6	214.3	224.7	235.9	248.1	261.3	275.5	290.9	307.6	325.5	344.8	365.4	387.3	410.6	435.2

06-03202-03 1/15 *Quanti-Tray is either a trademark or a registered trademark of IDEXX Laboratories, Inc. in the United States and/or other countries. Covered by U.S. Patent Numbers 4,925,789 ; 5,429,933 ; 5,518,892. Other patents pending.

1 Prepare the sample

Colilert reagent gets added to sample, transferred to Quanti-Tray, and then gets sealed

2 Incubate for 18 hours

The sealed Quanti-Trays incubate for 18 hours (Maximum 22 hours).

3 Interpret results

Quanti-trays are read under a blacklight, cross referenced with MPN Table to quantify results.

Key point: This method has multiple points of human failure.

MEET THE INSTRUMENT

How TECTA works



1 Load the sample

Sample goes into a cartridge and into one of up to 16 chambers.

2 Incubate and watch

The instrument incubates and reads each chamber on its own, with no one reading trays by eye.

3 Report when done

Each result is emailed as soon as its test finishes, day or night, even on the weekend.

Key point: The more E. coli in a sample, the faster TECTA finishes allowing us to act faster.

SIDE BY SIDE

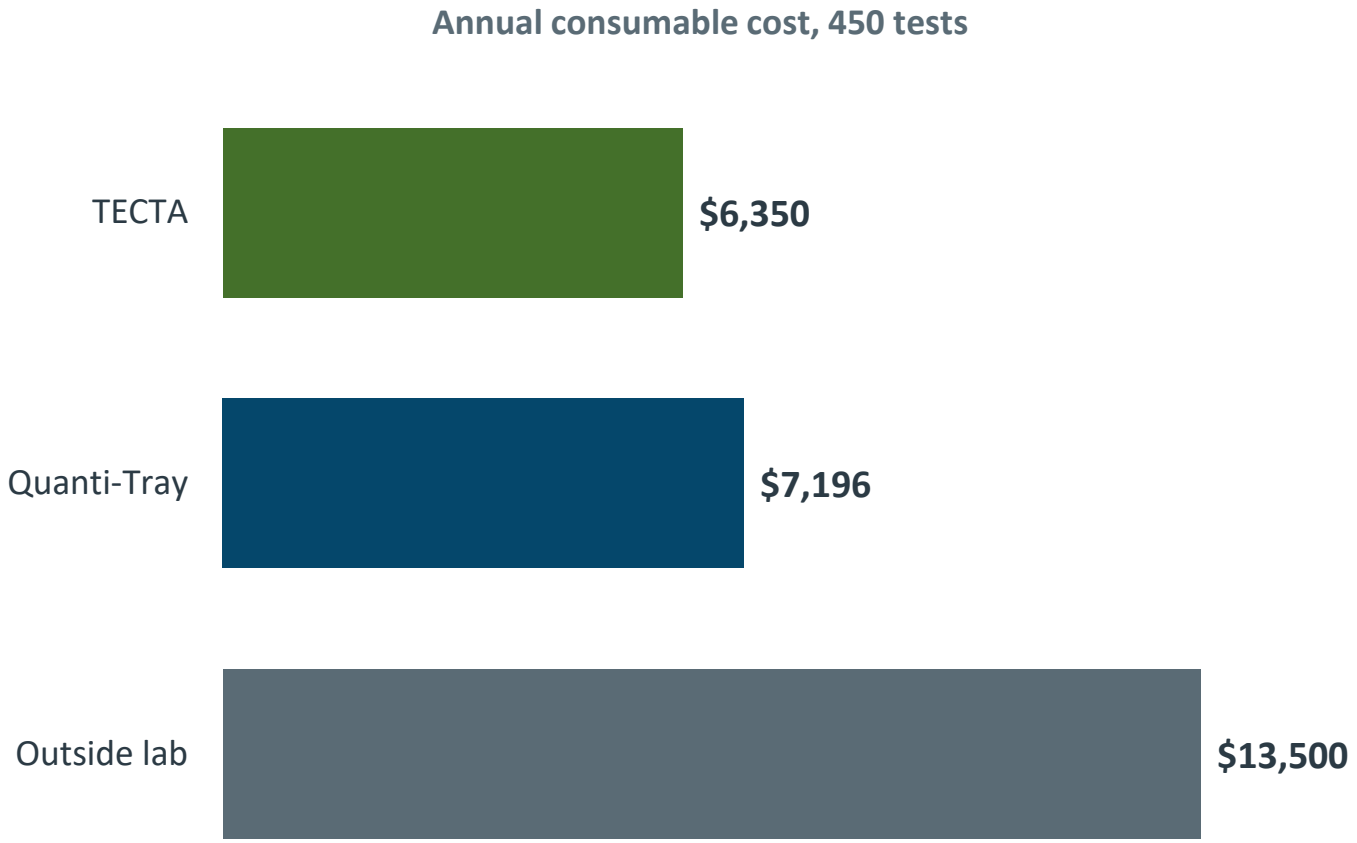
Three ways to get an E. coli result

	Quanti-Tray (in-house)	TECTA (in-house)	Outside lab
Method	Colilert-18 / Quanti-Tray 2000	Tectalert EC cartridge	E. coli membrane filtration
Who reads the result	Staff, by eye, back at the lab	The instrument, automatically	The lab
Typical time to result	18+ hours	**~8 hrs for high results**	Depends on the lab
Cost per test	$15.99	**$14.11**	$30.00
Annual cost (450 tests)	$7,195.50	**$6,349.50**	$13,500.00

Consumable costs only; per-test cost includes the 120 mL sample vessel. Annual cost assumes 450 tests per season.

COSTS

Faster, and cheaper per test



$846

less per year than Quanti-Tray

$7,150

less per year than an outside lab

$26,244.00

TECTA B16 Instrument cost in 2025

STAFFING AND COVERAGE

Time saved went back into surveillance

SUMMER INTERNS

1 vs. 2

One intern can now easily cover beach sampling, even with added beaches. Allows more capacity for other summer programs.

BEACHES

+5

The time we saved let us add five beaches to the sampling schedule. Planning to add more for 2027.



Field sampling stays the same.

HONEST ASSESSMENT

What TECTA does well

Reads itself

No one has to be in the lab to read results. Tests finish nights and weekends unattended.

High results first

Heavily contaminated samples finish fastest, so likely exceedances surface in about 8 hours.

Lower cost per test

$14.11 per test vs. $15.99 for Quanti-Tray and $30.00 at an outside lab.

Built to connect

Results arrive by email, which made the automation Kim will show possible.

HONEST ASSESSMENT

Where it falls short

THE "4 HOURS" CLAIM

4 hrs

is the best case, not the norm

~8 hrs	typical for our 2026 exceedances
11h 04m	mean across 334 TECTA samples
16 hrs	slowest sample of the season

Low results take the longest

Because low counts finish last, an all-clear is the slowest result to arrive.

Not a before-you-swim result

An afternoon sample reports that night, so results guide the next day, not the same one.

16 chambers per run

Sampling is limited by the number of available chambers.

FIRST SEASON

Lessons learned

1

Sample timing is critical

Samples with elevated results typically take 8 hours to complete. Be prepared to manage those results when you receive them.

2

Sample naming must be consistent

The automation depends on each sample to be labeled correctly. Naming discipline from start to finish keeps the whole chain working.

3

The workflow changes more than the testing

The biggest shifts were in who does what after collection, not in the field. Plan staff training around that.

SOURCE TRACKING

From "is it high?" to "where is it from?"

1

Detect

A rapid TECTA result flags an elevated beach.

2

Trace

Source tracking helps identify where the contamination is coming from.

3

Respond

Staff can target the response to the likely cause.

Speed tells us when to act. Source tracking tells us what to fix.

The Tools We Used

New: Tecta

Pre-Existing: Power Platform, Power BI

Tecta



Power Automate

Power BI

END TO END

The whole pipeline on one slide

1. **TECTA runs** — Instrument completes the chamber run
2. **Email arrives** — CSV lands in the shared mailbox
3. **Flow parses** — Power Automate reads the attachment
4. **Rows written** — Historical + 2026 Excel tables
5. **Alert fires** — Conditional email at ≥ 200 CFU
6. **Dashboard** — Power BI refresh, public view updates

Human touches in this chain: collect the sample, load the chamber, and read the alert email. Everything between the instrument and the public map runs unattended, including nights and weekends.

END TO END

Step by Step

1

TECTA runs

Instrument completes the chamber run

›

Email

CSV lar
shared

1

Up to 16 chambers are utilized, and reporting comes in as testing is completed, with highest readings generally completing fastest.



END TO END

Step by Step

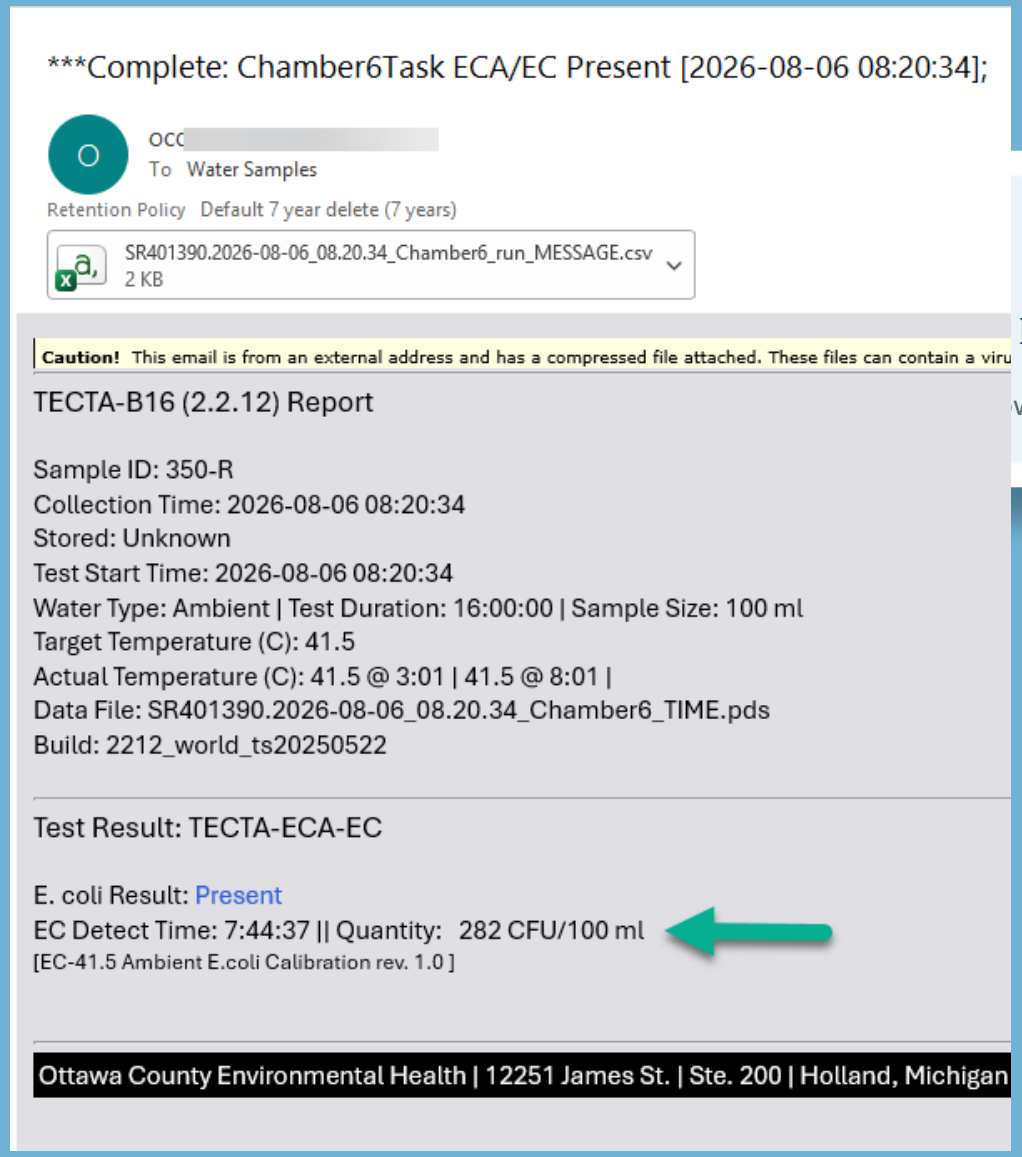
2

Email arrives

CSV lands in the shared mailbox

2

An automated email is received from the testing device to a shared mailbox. This is the trigger for the Power Automate workflow to begin processing the data.



END TO END

Step by Step

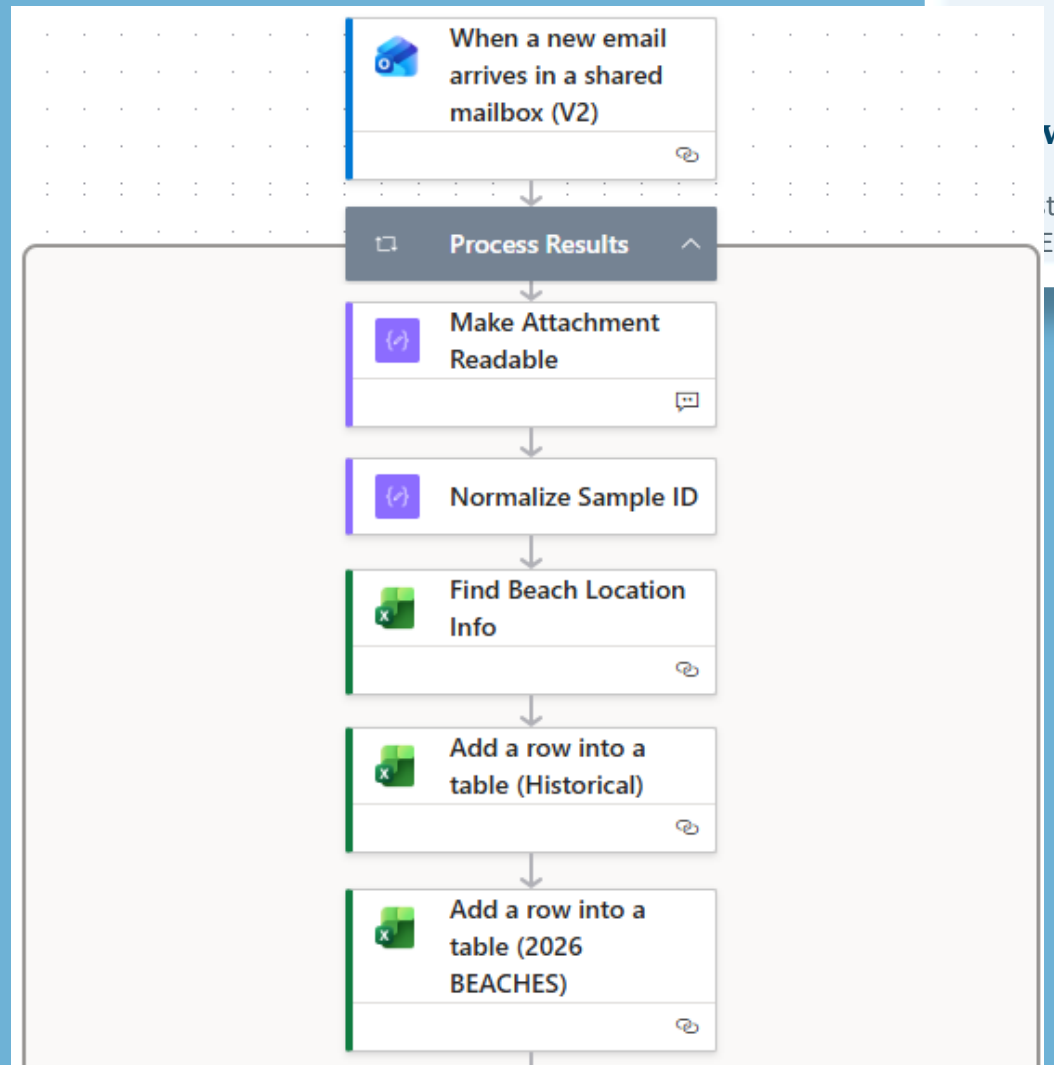
3

Flow parses

Power Automate reads the attachment

3

Power Automate retrieves the .csv file from the email. It parses the .csv file and then identifies the specific fields with the data desired. (5 out of 65 fields)



END TO END

Step by Step

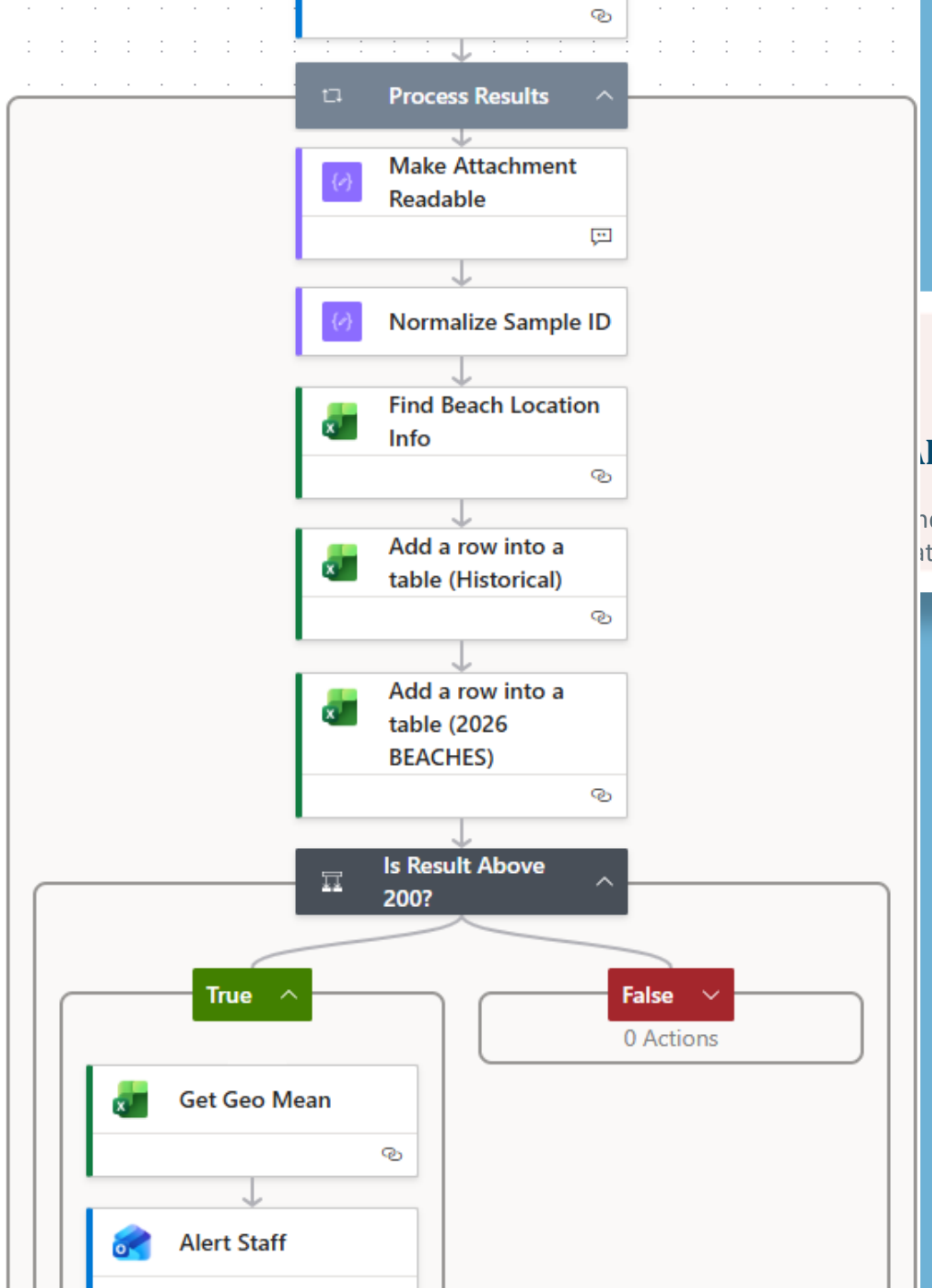
4

Rows written

Historical + 2026
Excel tables

4

Using the normalized sample ID, Power Automate checks Excel for beach information, including name and geographical location. The data is then added to 2 tables – one for the current testing year and one with historical data back to 2020.



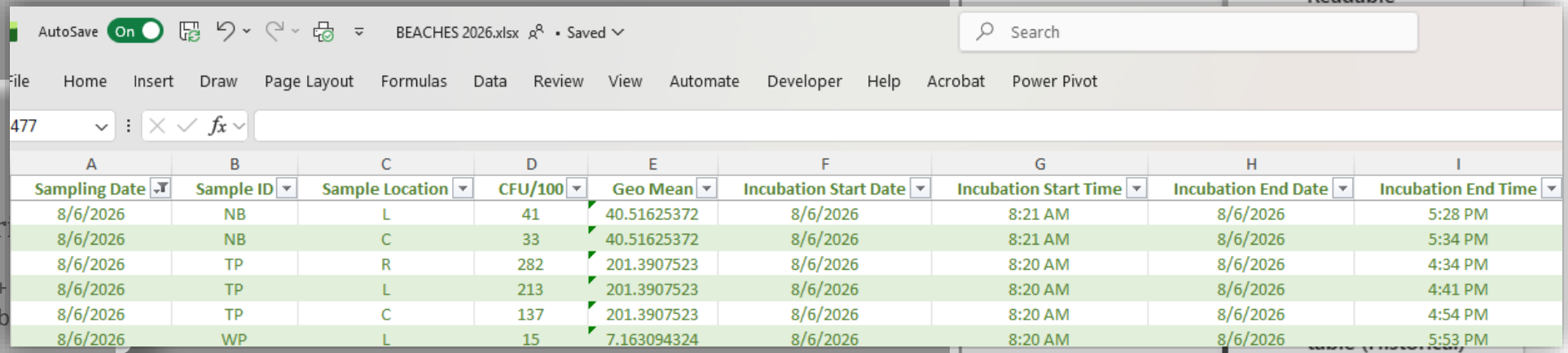
END TO END

Step by Step

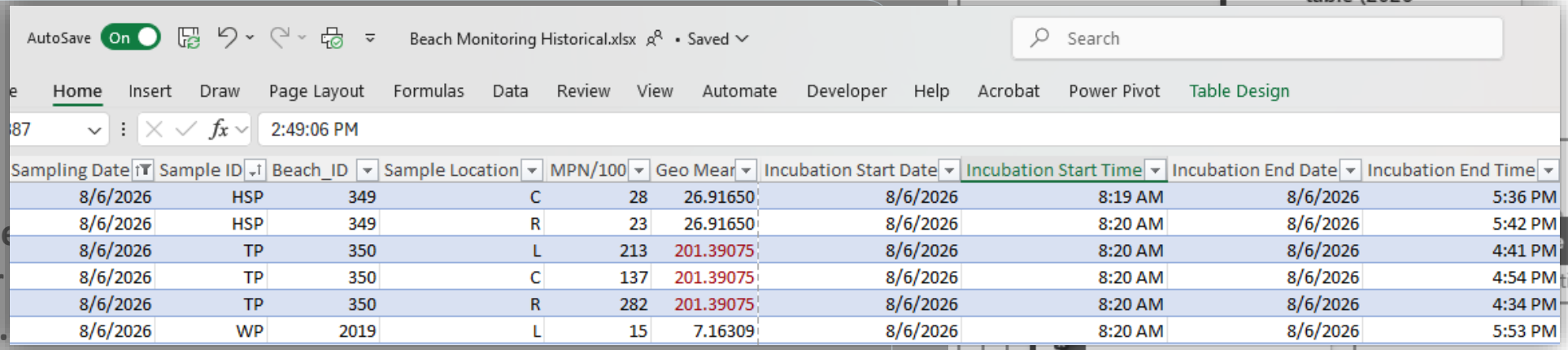
4

Rows wr

Historical +
Excel tab



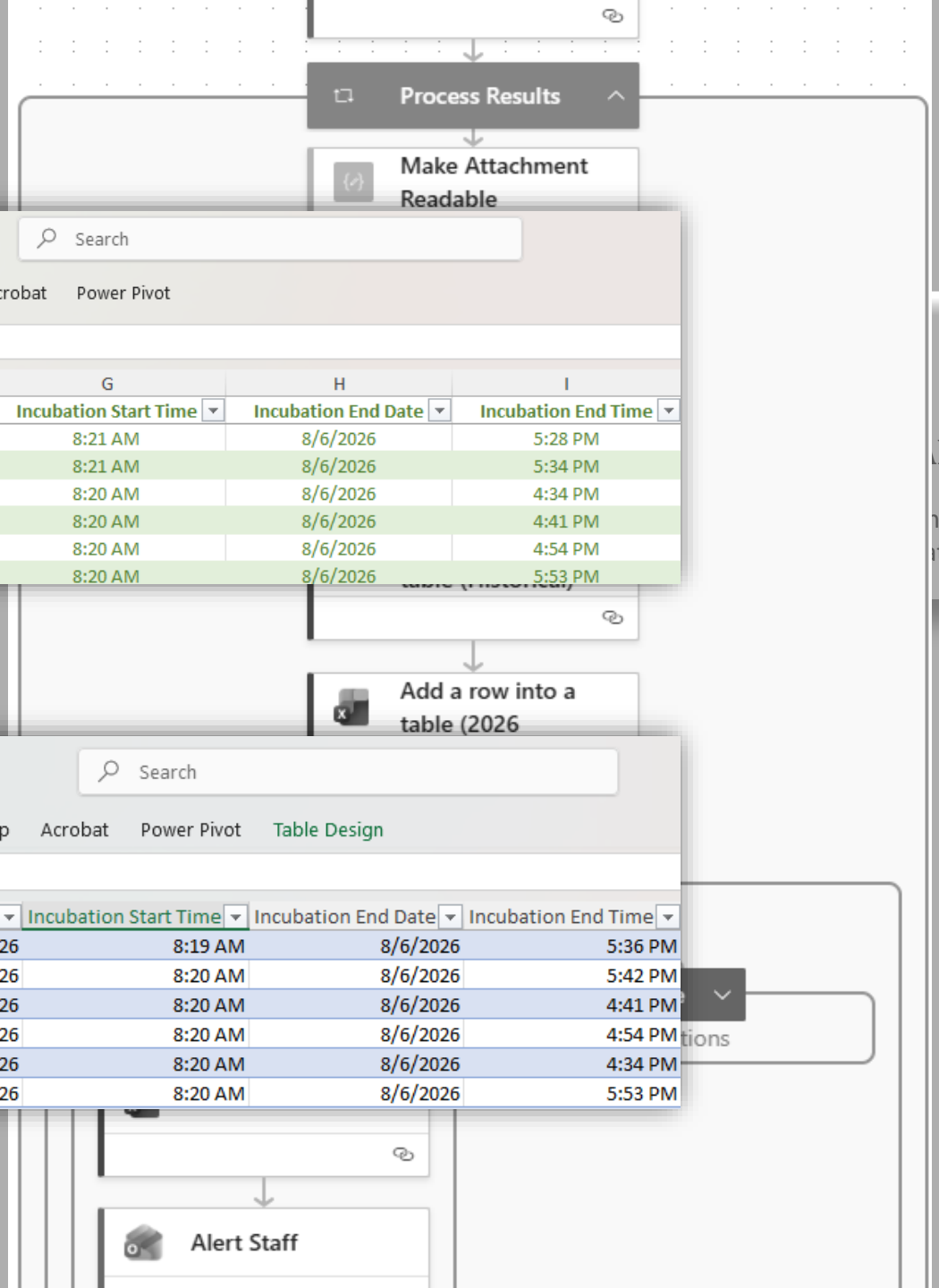
A	B	C	D	E	F	G	H	I
Sampling Date	Sample ID	Sample Location	CFU/100	Geo Mean	Incubation Start Date	Incubation Start Time	Incubation End Date	Incubation End Time
8/6/2026	NB	L	41	40.51625372	8/6/2026	8:21 AM	8/6/2026	5:28 PM
8/6/2026	NB	C	33	40.51625372	8/6/2026	8:21 AM	8/6/2026	5:34 PM
8/6/2026	TP	R	282	201.3907523	8/6/2026	8:20 AM	8/6/2026	4:34 PM
8/6/2026	TP	L	213	201.3907523	8/6/2026	8:20 AM	8/6/2026	4:41 PM
8/6/2026	TP	C	137	201.3907523	8/6/2026	8:20 AM	8/6/2026	4:54 PM
8/6/2026	WP	L	15	7.163094324	8/6/2026	8:20 AM	8/6/2026	5:53 PM



Sampling Date	Sample ID	Beach_ID	Sample Location	MPN/100	Geo Mean	Incubation Start Date	Incubation Start Time	Incubation End Date	Incubation End Time
8/6/2026	HSP	349	C	28	26.91650	8/6/2026	8:19 AM	8/6/2026	5:36 PM
8/6/2026	HSP	349	R	23	26.91650	8/6/2026	8:20 AM	8/6/2026	5:42 PM
8/6/2026	TP	350	L	213	201.39075	8/6/2026	8:20 AM	8/6/2026	4:41 PM
8/6/2026	TP	350	C	137	201.39075	8/6/2026	8:20 AM	8/6/2026	4:54 PM
8/6/2026	TP	350	R	282	201.39075	8/6/2026	8:20 AM	8/6/2026	4:34 PM
8/6/2026	WP	2019	L	15	7.16309	8/6/2026	8:20 AM	8/6/2026	5:53 PM

4

Using the
Excel for
location.
current testing year and one with historical data back to 2020.



END TO END

Step by Step

5

Alert fires

Conditional email
at ≥ 200 CFU

5

If a result is at or above 200 CFU, an email is sent to a list of staff.

