

The background of the slide features a light blue to medium blue gradient. Scattered across this background are numerous water droplets of various sizes. Some droplets are large and prominent, while others are small and subtle. They have realistic highlights and shadows, giving them a three-dimensional appearance as if they are floating or about to fall.

A BACTERIA STUDY FOR MS4 PURPOSES

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VILLAGE OF FOX POINT

SEPTEMBER 7, 2023

TMDL HISTORY

- BEGAN IN 2011 – PARTNERSHIP BETWEEN MMSD, SWWT, AND DNR
- MEETINGS CONTINUED THROUGHOUT 2012-2013 AND BEYOND
- INITIAL THOUGHT WAS A FINAL TMDL WOULD BE ISSUED IN LATE 2013
- FINAL DRAFT REPORT ISSUED IN MID 2016
- IDENTIFIED PERCENT REDUCTION FOR TSS AND TP
- CALCULATED ALLOWABLE LOAD CURVES FOR BACTERIA

303(D) IMPAIRED WATER BODIES

- INDIAN CREEK (MI-30) - 856 ACRES – DRAINS TO THE MILWAUKEE RIVER
- MILWAUKEE RIVER (MI-27) - 49 ACRES



SWMP HISTORY

- STRAND ASSOCIATES PERFORMED INITIAL SWMP – 2011
- UPDATED BY RUEKERT MIELKE – 2017-2018
- DISCOVERED ERROR IN DRAINAGE SHED 2020
 - THOUGHT AN AREA WAS TRIBUTARY TO LAKE MICHIGAN
 - DETERMINED THE AREA DRAINED TO THE MILWAUKEE RIVER
- UPDATED SWMP TO ACCOUNT FOR ERROR - 2022

ANNUAL POLLUTANT LOADINGS UNDER EXISTING CONDITIONS

TMDL Reachshed	Area (acres)	Actual TSS Reduction	Required TSS Reduction	Actual Phosphorous Reduction	Required Phosphorus Reduction
Indian Creek (MI-30)	856	83.72%	66%	80.50%	76%
Milwaukee River (MI-27)	49	83.04%	73%	79.47%	54%
Lake Michigan Direct	724	86.90%	-----	84.36%	-----

- Fox Point – predominantly rural cross section
- Strand performed double ring infiltrometer testing
- Assigned load allocations for bacteria based on a load duration curve

GREEN INFRASTRUCTURE & TMDL IMPROVEMENTS

- INCORPORATED 10 GI PROJECTS IN LAST 5 YEARS
 - GOODRICH LANE RSC PROJECT (2018)
 - GRAY LOG LANE BIOSWALE (2018)
 - CALUMET ROAD BIORETENTION BASIN AND SWALES (2019)
 - 6-ACRE DRAINAGE AREA
 - 47.4% TSS AND 41.9% TP REMOVAL
 - ACACIA ROAD BIORETENTION BASINS (2) (2020 AND 2021)
 - ACACIA AND LAKE – 1.4-ACRE DRAINAGE AREA, 74.0% TSS AND 52.4% TP REMOVAL
 - ACACIA AND SANTA MONICA – 1.7-ACRE DRAINAGE AREA, 70.9% TSS AND 69.2% TP REMOVAL
 - INDIAN CREEK BIOSWALE (2021)
 - 5-ACRE DRAINAGE AREA
 - 47.9% TSS AND 46.2% TP REMOVAL

GREEN INFRASTRUCTURE & TMDL IMPROVEMENTS (CON'T)

- INCORPORATED 10 GI PROJECTS IN LAST 5 YEARS
 - GREENVALE ROAD BIORETENTION BASIN (2021)
 - 58-ACRE DRAINAGE AREA
 - 58.3% TSS AND 39.9% TP REMOVAL
 - PORTAGE, LINKS, AND BOYD BIOSWALES (2022)
 - 13-ACRE DRAINAGE AREA
 - 33.0% TSS AND 28.6% TP REMOVAL
 - BYWATER BIOSWALES (2022)
 - 12-ACRE DRAINAGE AREA
 - 23.5% TSS AND 19.9% TP REMOVAL

CALUMET BIOBASIN



ACACIA BIOBASIN



SPOONER RAIN GARDEN



WHAT ABOUT BACTERIA?

- CURRENT PERMIT:
 - SECTION III (A) – PARAGRAPH 1 – TMDL POLLUTANT LOAD REDUCTION EVALUATION FOR TSS AND TP
 - PREPARE REPORT DOCUMENTING REDUCTION EFFORTS
 - MAPS, AREAS, CURRENT POLLUTANT LOADINGS WITHOUT BMPS, LOADINGS WITH BMPS, ETC.
 - PARAGRAPH 2 – PERFORM A WASTE LOAD ALLOCATION (WLA) ANALYSIS FOR TSS AND TP
 - PARAGRAPH 3 – ESTABLISH WLA BENCHMARKS FOR TSS AND TP
 - REQUIRED WHERE CURRENT BMP IMPLEMENTATION NOT ACHIEVING WLA
 - PARAGRAPH 4 – FECAL COLIFORM REDUCTION EFFORTS
 - “EACH PERMITTEE SHALL DEVELOP AN ACTION BENCHMARK FOR BACTERIA FOR THEIR ILLICIT DISCHARGE SCREENING PROGRAM AS DESCRIBED IN SECTION II.D.2.B) 4 BY JUNE 1, 2022.”

FECAL COLIFORM REDUCTION EFFORTS

- ACTION BENCHMARK REQUIRED – DUE JUNE 1, 2022
- INVENTORY AND MAP OF POTENTIAL FECAL COLIFORM SOURCES – DUE MAY 31, 2024
- FECAL COLIFORM SOURCE ELIMINATION PLAN – DUE NOVEMBER 30, 2025
- WHAT IS AN ACTION BENCHMARK?
 - NOTE THE COMMUNITY WILL INSTALL PET WASTE STATIONS?
 - VISUAL OBSERVATION OF MAJOR OUTFALLS (ODOR, COLOR, TURBIDITY, & CLOUDINESS)?
 - ADOPT AN ORDINANCE PROHIBITING THE FEEDING OF WILDLIFE AND WATERFOWL?
 - ESTABLISH A NUMERIC LIMIT?
 - HOW? BASED ON WHAT SCIENCE?
 - IF SO, WHAT VALUE? RANDOM SELECTION?

ACTIVE BACTERIA ELIMINATION EFFORTS

- INCORPORATE PET WASTE STATIONS
 - 10 LOCATIONS THROUGHOUT THE VILLAGE
 - 2 MORE ON PRIVATE PROPERTY/COUNTY PROPERTY
- ADOPTED AN ORDINANCE TO ALLEVIATE “GOOSE LADY” INCIDENTS
 - AT ONE TIME, DOZENS IF NOT HUNDREDS OF GEESE WOULD FLOCK TO THE AREA
 - HIRED A COMPANY WHO USED A DOG TO CHASE THE GEESE
 - LOOKING AT NATURALIZING THE AREA TO ELIMINATE THE REMAINING GEESE

GOOSE LADY



WHAT IS MEANT BY ACTION BENCHMARK?

- DEFINITION OF ACTION: “THE PROCESS OF ACTING OR DOING” OR “AN ACT OR DEED.”
- FOX POINT’S ACTION BENCHMARK: “THE ACTION BENCHMARK FOR THE VILLAGE OF FOX POINT WILL BE BASED ON A VISUAL OBSERVATION OF MAJOR OUTFALLS DURING DRY WEATHER SCREENING WHEREBY ANY FLOW IN THE OUTFALL WILL BE EVALUATED FOR THE PRESENCE OF ODOR, COLOR, TURBIDITY AND CLOUDINESS. IF THESE ELEMENTS ARE PRESENT, A SAMPLE WILL BE DRAWN TO DETERMINE WHETHER BACTERIA IS PRESENT IN THE SAMPLE. FURTHER, IF THERE IS A KNOWN ILLICIT DISCHARGE OR SPILL OF A BACTERIAL NATURE, A SAMPLE WILL ALSO BE DRAWN TO DETERMINE WHETHER BACTERIA IS PRESENT.”
- DNR’S RESPONSE: WELL, WE REALLY MEANT YOU NEEDED TO IDENTIFY A NUMERIC LEVEL/LIMIT – SET IT HIGH ENOUGH TO “TRACK DOWN BIG SOURCES, THEN AFTER BIG SOURCES HAVE BEEN ELIMINATED, LOWER THE ACTION LEVEL TO START TRACKING DOWN SMALLER SOURCES.”

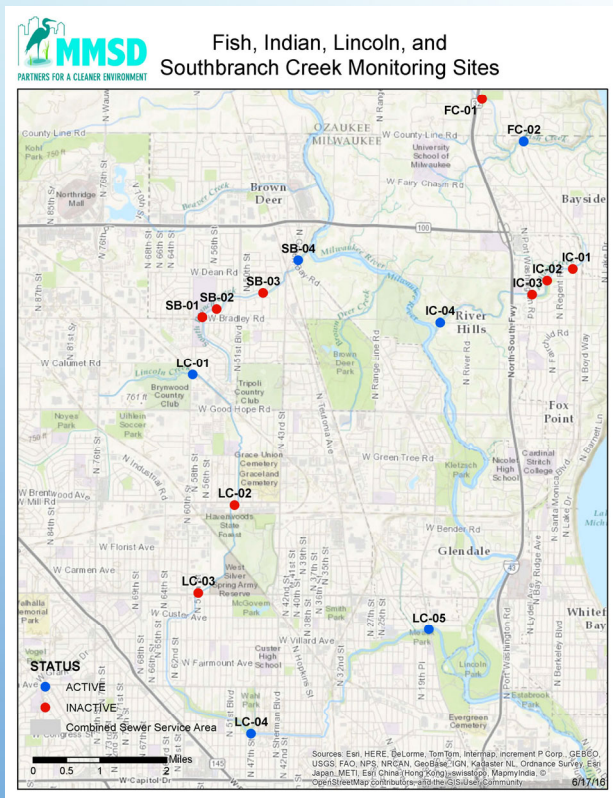
DEBATE ENSUED

- FOX POINT'S SWMP: SECTION 4.2.2 – “COMPLIANCE WITH THE BACTERIA COMPONENT OF THE TMDL WILL ULTIMATELY BE SHOWN THROUGH IN-STREAM MONITORING, AS OPPOSED TO A MODELED COMPLIANCE APPROACH.”
- DNR:
 - HOW WILL THIS BE DONE?
 - THOUGHT ESTABLISHMENT OF A NUMERIC LIMIT STILL APPROPRIATE
 - I OFFERED 1,000,000 MPN – RESPONSE WAS THAT WAS TOO HIGH
 - I NOTED THE RANDOMNESS OF SIMPLY PICKING A VALUE WITH OUT THE BENEFIT OF KNOWING THE NUANCES:
 - NO INVENTORY OF SOURCES
 - NO MAP
 - HOW DOES ONE KNOW THERE IS A PROBLEM IF YOU HAVEN'T DEVELOPED A POTENTIAL INVENTORY AND MAP?
 - PUTTING THE CART BEFORE THE HORSE?

PROPOSED COMPROMISE

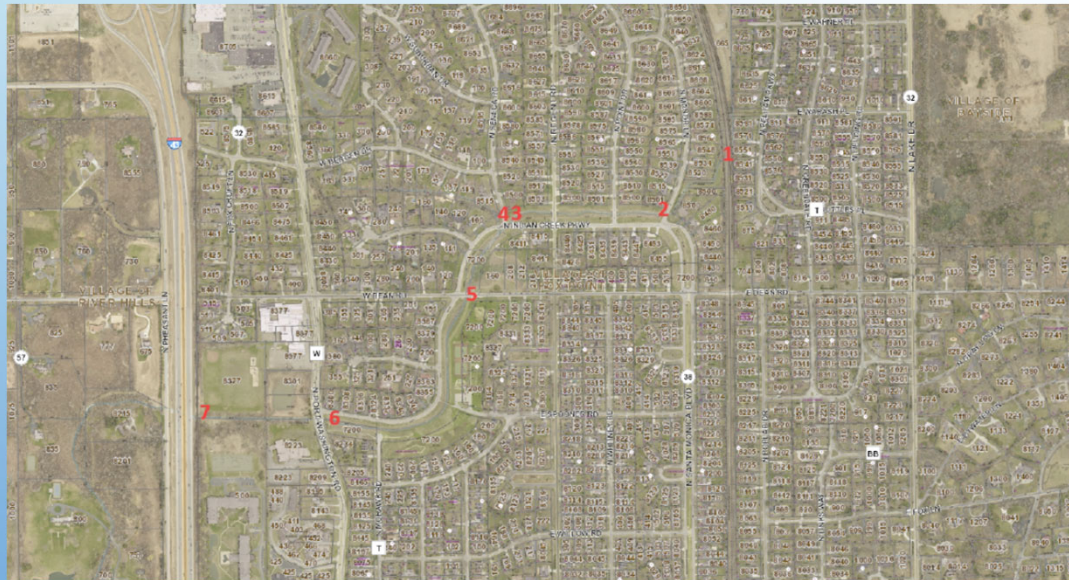
- STUDY INDIAN CREEK FOR BACTERIA
 - BREAK CREEK INTO DEFINED SECTIONS
 - EVALUATE HUMAN VS. ANIMAL/WATERFOWL SOURCES
 - WORK WITH SWWT AND UWM TO REDUCE COST
 - PARTNER WITH A CONSULTANT FOR PEER REVIEW
 - GOAL: RULE OUT HUMAN BACTERIODS AS A PROBLEM IN INDIAN CREEK
- ULTIMATE GOAL – DELIST INDIAN CREEK FOR TSS, TP AND BACTERIA

PAST STUDIES



- IC-01, 02 AND 03 – STUDIED FROM 2005 – 2011
- IC-04 – STUDIED FROM 2005 TO PRESENT
- EVALUATES THE E-COLI (MG/L OR MPN/100 ML)

PROPOSAL



- EVALUATE UP TO SEVEN DIFFERENT LOCATIONS
- AREA 1 – WHERE BAYSIDE MEETS FOX POINT (ESTABLISHES ANY BACTERIA LOADING FROM BAYSIDE)
- AREA 2 – DOWNSTREAM OF THE GOOSE LADY
- AREAS 3 AND 4 – SEPARATE TRIBUTARIES FROM THE NORTHWEST AND NORTH
- AREA 5 – CAPTURES ANYTHING FLOWING INTO THE BASIN
- AREA 6 – ANY FLOWS FROM DEAN SOUTH/SOUTHWEST
- AREA 7 – AS IT EXITS THE VILLAGE

KEY PLAYERS AND ROLES

- UWM – PROFESSOR NEAL O'REILLY
 - ADVISOR TO THE STUDENT THROUGH THE SUPPORT FOR UNDERGRADUATE RESEARCH FELLOWS (SURF) PROGRAM
 - MENTOR STUDENT, PROVIDE GUIDANCE ON SAMPLING DESIGN, ASSIST WITH DEVELOPMENT OF SOP'S, AND OVERSEE FINAL REPORTING
 - STUDENT WILL GRAB FIELD SAMPLES, MEASURE CONDUCTIVITY, CONDUCT DATA ANALYSIS, SUMMARIZE RESULTS IN FINAL REPORT
- SOUTHEASTERN WISCONSIN WATERSHEDS TRUST – JACOB FINCHER, BRIGID MEYERS AND ERIN POVAK
 - FACILITATE AND COORDINATION OF THE STUDY
 - ASSIST WITH SAMPLE COLLECTION WHILE AWAITING ONBOARDING OF THE UWM STUDENT
 - ASSIST IN DEVELOPING A PLAN FOR BACTERIA TESTING
 - COORDINATION WITH EXPERTS IN THE FIELD
- KAPUR & ASSOCIATES – JEREMY SCHWARTZ AND KATHRYN MCNELLY BELL
 - PEER REVIEW OF DATA, PLANS, SAMPLING, ETC.
- FOX POINT – SCOTT BRANDMEIER
- DNR – SAM KATT AND LEXI PASSANTE

PROPOSED TIMELINE

- SEPTEMBER – OCTOBER
 - SWWT WILL GRAB SAMPLES IN THE FALL DURING DRY AND WET WEATHER EVENTS
 - CONDUCTIVITY READINGS WILL BE MEASURED IN THE FIELD
- NOVEMBER – JANUARY
 - WORK WITH PROFESSOR O'REILLY TO OBTAIN AN UNDERGRADUATE FELLOW FOR TESTING AND ANALYSIS
- FEBRUARY – MARCH
 - UNDERGRAD WILL TEST FOR CONDUCTIVITY DURING WET AND DRY WEATHER EVENTS
- APRIL – AUGUST
 - UNDERGRAD WILL GRAB SAMPLES IN SPRING AND SUMMER DURING DRY AND WET WEATHER EVENTS
 - MEASURE CONDUCTIVITY READINGS IN THE FIELD
 - WORK UNDER THE SUPERVISION OF PROFESSOR O'REILLY TO DEVELOP A WRITTEN REPORT OF THE STUDY

GOALS AND THOUGHTS

- ELIMINATE BACTERIA AS A PROBLEM WITHIN INDIAN CREEK
- DOCUMENT TSS AND TP REDUCTION EFFORTS IN THE REACHSHEDS
- DELIST INDIAN CREEK
- POLLUTANT TRADING
 - WORK WITH ADJACENT COMMUNITIES TO SELL/TRADE CREDITS
 - ACHIEVE AN EQUITABLE TRADE - PROJECTS IMPLEMENTED IN FOX POINT, PAID FOR BY ADJACENT COMMUNITY BUT BENEFITS THAT COMMUNITY
- CHLORIDES
 - DNR REQUESTING A NUMERIC BENCHMARK FOR BACTERIA (FECAL COLIFORM)
 - REGULARLY REQUESTS SALT USAGE
 - FUTURE PERMITS WILL LIKELY REQUIRE REDUCTIONS

COMMENTS OR QUESTIONS?

