

## Use Designation

- All surface waters within Indiana's Great Lakes drainage basin are designated for full-body contact recreation (swimmable) by state water quality rules. 327 IAC 2-1.5-5(a)(1)
- This recreational use designation applies to the St. Joseph, St. Mary's and Maumee Rivers (and tributaries)
- Recreation Season includes April – Oct.
- Water Quality Criteria for recreation based on *E. Coli* bacteria as indicator organism (maximum of 235 colony-forming units per 100 milliliters)



## Why is it necessary to change the designated use?

- Even after implementation of the City's costly LTCP, some overflows will still occur during the largest storms.
- High bacterial pollution levels from these infrequent storms will make the rivers unsuitable for swimming and other full body recreational contact at those times.
- State water quality rules allow no exceptions to compliance with bacterial criteria required for the current recreational use designation.



- 100% compliance with the water quality criteria for recreation would require additional CSO controls to capture overflows from the largest storms, which is not affordable.
- Recreation on area rivers during storm events occurs rarely, if at all.
- A revised use designation is needed that recognizes that recreation should not occur during times area rivers are impacted by overflows from the infrequent storms beyond the reach of the LTCP's control measures.
- Current Recreational Use Designation would apply except when LTCP's CSO controls cannot capture overflows from larger storms.



## Federal and State Law for Use Designation Changes

- The U.S. EPA adopted rules many years ago to govern the establishment and revision of water quality standards, including use designations, for the nation's waters. 40 CFR Part 131, Subpart B.
- In 2005, the Indiana legislature created a CSO wet weather limited use designation for waters affected by CSOs where a community has agreed to implement an approved LTCP that reduces but cannot totally eliminate discharges from combined sewer systems due to affordability or other constraints.



## UAA – a Prerequisite to Change in Use Designation

- Under the relevant federal and state law, a use designation, such as the current recreational use for waters impacted by the City's CSOs, cannot be changed without conducting a Use Attainability Analysis (UAA) to assess the feasibility of achieving the designated use.



## What is a UAA

- A UAA is defined under federal law as a "structured, scientific assessment of the factors affecting the attainment of the use, which may include physical, chemical, biological, and economic factors as described in 40 CFR 131.10(g)".
- Six factors may be considered when conducting a UAA.



## Basis of Draft UAA

- Fort Wayne's draft UAA is based upon the **substantial and widespread economic and social impacts** (factor six) that would be caused by a requirement to implement controls beyond those contained in the City's LTCP as approved by IDEM and U.S. EPA.



## Substantial and Widespread Social and Economic Impacts

- Complete Control of CSOs would still not meet Water Quality Criteria for *E. Coli* due to other, non-point sources.
- Fort Wayne's approved LTCP provides the best environmental benefit for the dollar. It will eliminate most overflows and capture some stormwater that otherwise would have gone to the river.
- Complete Control of CSOs would increase capital costs for the LTCP by more than 100% and would be unaffordable for the City and its rate payers under applicable state and federal criteria.



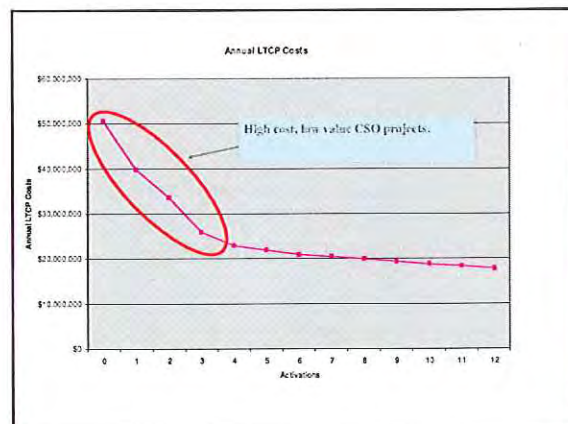
## Substantial and Widespread Social and Economic Impacts

UAA Table 4.3-1

Capital Costs for CSO Control Measures for Complete Capture and Control of CSOs

Program Element	Cost (millions)
Combined Sewer Capacity (partial sewer separation)	\$ 102.7
Interceptor sewers	213.1
Satellite storage/treatment	30.3
Combined sewer overflow pond storage improvements	170.5
Treatment plant improvements	25.8
<b>Total Cost</b>	<b>\$592.4</b>

(All cost estimates based on 2005 dollar value and Typical Year Conditions)



## Manufacturing Dependent

- Fort Wayne's economy remains highly dependent on manufacturing, which has been trending in a negative direction for over two decades.
- The area's largest employers:
  - General Motors – 2,484
  - ITT Corporation – 1,837
  - Raytheon Systems – 1,200
  - Navistar International Corp. – 1,150
  - B.A.E. Systems Platform Solutions – 1,000
  - Norfolk Southern Corp. – 983
  - Steel Dynamics Inc. – 914



## Current Status for Change in Use Designation

- Approved LTCP (December 2007)
- Draft UAA complete and ready for submittal to IDEM for approval
- Fort Wayne is one of the first cities in Indiana to proceed with the UAA /use designation revision process.





## Next Steps

- Indiana Water Pollution Control Board to conduct rulemaking to revise use designation for CSO-impacted waterways
- Approval by US EPA of UAA and Indiana rule to revise use designation to CSO wet weather limited use



## Send Comments to:

Indiana Department of Environmental Management  
c/o Todd Trinkle, Wet Weather Section  
MC 65-42 IGCN 1255  
100 N. Senate Avenue  
Indianapolis, Indiana 46204-2251

Brandi Wallace  
City Utilities Capital Asset Management  
1 E. Main Street  
Fort Wayne, Indiana 46802



Questions?



**FORT WAYNE UAA PUBLIC MEETINGS SUMMARY  
17 FEBRUARY 2010**

▪ **INDIANA INSTITUTE OF TECHNOLOGY (FORT WAYNE, IN) – 1300**

**Dick Beam – Sherwood Park**

1. What will be the cost of LTCP implementation on average to a home owner?

**Response:** The peak annual cost to residential customers, on average, is expected to be \$1138/year as the total sewer bill. This peak is projected to occur in 2023.

2. When will work start in Sherwood Park and what streets will be affected?

**Response:** Construction of the parallel interceptor is several years away. Partial sewer separation will be done in the first 10 years. The City is still evaluating that subbasin, but separation work will not start this year.

3. Will sewer separation work be done on individual properties or public properties?

**Response:** The majority of work will be done on City property. The City may need to obtain easements, but work will not be done on private sewer laterals in yards or in re-plumbing homes.

4. How much will the costs of LTCP implementation (and I think it's necessary) take away from street improvements?

**Response:** Different revenue streams apply to the two types of infrastructure improvements. Street improvements are funded from property taxes. LTCP projects are funded by user fees paid to the City sewer utility. As work is being done for LTCP purposes, some sidewalks and streets will be improved as part of the project.

5. Recommend that the City pass a law that says you can only fertilize the lawn 2 times a year. These pollutants have to be getting into the Maumee River. (His wife currently fertilizes 4 times a year and he feels it's unnecessary and harmful to the rivers.)

**Response:** City representatives encouraged Mr. Beam to contact his City Council representative about his concern. (Although the State Chemist will not allow limits to be placed on fertilizers).

**Dan Wire – River Advocate**

1. I support this project; the LTCP will eliminate 90% of the overflows currently going to the rivers.

- The UAA before you has been developed fairly and responsibly with adequate public input;
- The UAA is realistic and compatible with goals in the community for river use;
- The UAA will help to reduce any devastating economic and social hardship that could be a result in increased effort in capturing CSOs from more severe storms; it applies common sense;
- The UAA realistically and responsibly addresses extreme wet weather that this region experiences;
- As it has been stated and proven that total elimination of CSOs would not put our rivers in compatibility with state water quality standards and would put an undue burden on the community
- I strongly support and encourage IDEM to accept this UAA before you.

## **FORT WAYNE UAA PUBLIC MEETINGS SUMMARY 17 FEBRUARY 2010**

### **▪ WOODLAN HIGH SCHOOL (WOODBURN, IN) – 1830**

#### **Attendee Unknown**

1. Concerned that Dekalb County is dumping their sewage into the St. Joseph River which flows through Fort Wayne. Will Dekalb be required to comply in the same manner as Fort Wayne? Is 2010 the year communities are supposed to eliminate overflows?

**Response:** Yes, the largest communities are being targeted first for federal consent decrees, then smaller communities will most likely be under a State Judicial Agreement. IDEM's goal is to approve the remaining LTCPs by the end of 2010.

2. Is any of this being funded by Federal money?

**Response:** Yes, some stimulus/recovery money is going to "clean water" infrastructure. Fort Wayne has received a \$0.5 million grant and \$3.5 million in low interest loans. This, however, hardly puts a dent in the \$249 million capital cost of the LTCP.

#### **Patrick Callahan – Aqua Indiana**

1. What percent of Fort Wayne sewer utility revenue comes from industrial customers as opposed to residential?

**Response:** City representatives do not have that information at the public meeting and will have to look into that. [Subsequent research indicates that the percentage of revenue deriving from residential customers is approximately 60%.]

2. Has any other community been granted suspension of Water Quality Standards by the Indiana Water Pollution Control Board?

**Response:** No, not yet in Indiana. The first UAA from an Indiana community was submitted to IDEM and EPA by the City of Indianapolis but it has not gone through the entire process yet. State and federal law provide for approval of requests for relief from water quality standards subject to certain conditions being met.

3. Once Indiana approves the UAA, does it still go to EPA for approval under the Federal Rule?

**Response:** Yes.

4. If approval of the UAA is not granted to Fort Wayne, then the federal Consent Decree requires the City to meet existing Water Quality Standards. Under that scenario, would the City have to go back and modify its LTCP to zero overflows?

**Response:** That would be the worst case outcome. If the UAA were not approved, the City would be forced under terms of the Consent Decree to re-examine the Long-Term Control Plan for appropriate revisions. EPA could impress upon Fort Wayne a requirement to upgrade the wastewater treatment plant to result in zero overflows unless the City can convince EPA something less effective than that represents the limit of affordability. There would be a period of negotiations under such circumstances. However, the City anticipates EPA approval of the UAA.

5. Nationwide, has EPA approved anything like this?

**Response:** EPA has approved the Indiana rule establishing the CSO subcategory designation. We are not sure if a UAA relating to changes in recreational use has been approved in other states. Indiana is leading the way on this issue.

#### **Attendee Unknown**

1. Is it possible to separate pollutants from farms and fields versus CSO runoff? What percent of pollutants in the river comes from such sources?

**Response:** LTCP negotiations typically don't consider sources other than combined sewer overflows. Generally, the main focus is on the City's sewer system. There is a separate process called Total Maximum Daily Load (TMDL) that looks at all possible sources of pollution in a watershed. Few have been completed, they are even more complex than LTCPs and are difficult to establish.

**Patrick Callahan – Aqua Indiana**

1. How much of projected sewer rate the City is using here is for CSO cleanup and how much is for expansion of the City sewer system (as a “for instance,” the 54 inch sewer being constructed on the north side)?

**Response:** That sewer project is not part of the Long-Term Control Plan.

2. But is it part of the rate the City is using and saying it is unaffordable? How much is for growth and how much is for cleaning up CSOs? What percent is for normal sewage treatment and transportation?

**Response:** 1/3 of the City’s sewer system is combined and centrally located. As a general matter you could conclude that almost anything you do to the sewer system to improve it would incidentally improve capacity. The whole plan is addressed in containment and treatment of the CSO issue. No direct part of this LTCP or associated cost goes to expansion of capacity of the wastewater treatment plant.

3. Understood. The question is the rate you are using is 1.8% of MHL. How much of that rate is due to CSO improvement and how much is for normal sewer service? How much is the City spending expanding the sewer system to new customers as opposed to improving the existing system?

**Response:** When new development requires new sewers, the developer/homeowner is paying for that sewer infrastructure. An assessment is added to the sewer bill.

**Attendee Unknown**

1. I already have a \$165/month sewer bill from the (Allen County) Regional Sewer District (whose sewage is pumped to New Haven, which in turn is a contract customer of Fort Wayne). It’s just sewage, so will my bill increase under the LTCP as far as the portion I pay to the City?

**Response:** That depends on what is negotiated between the City and the contract customer providing your sewer service in the future.

2. So, what the Regional Sewer Board negotiates with the City is not reflected here in these costs?

**Response:** Part of the LTCP costs will be passed onto contract customers.

**Brandi Wallace**

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**From:** Mailing Server on behalf of Mary Jane Slaton  
**Sent:** Friday, February 12, 2010 11:40 AM  
**To:** Sag Listserv  
**Subject:** UAA public Meetings

All:

Submitting a Use Attainability Analysis to the EPA and IDEM is the next step in Fort Wayne's implementation of our long term control plan for combined sewer overflows. If approved by state and federal regulators, the UAA will provide an assurance that we will be in compliance with water quality mandates when the goals of our LTCP/Consent Decree are implemented.

As part of the UAA approval process, the City and IDEM are holding two public meetings during which the UAA will be explained and public comment will be accepted. The meetings will be held as follows:

Wednesday, February 17 at 1:00 PM  
Indiana Tech University (Fort Wayne, IN)  
Room 205 in Andorfer Commons  
1600 East Washington Boulevard  
Enter from parking lot on north side of the building

Wednesday, February 17 at 6:30 PM  
Woodlan Jr/Sr High School (Woodburn, IN)  
Presentation Room  
17215 Woodburn Road  
Enter through Door 6

Written comments may also be submitted by March 17, 2010 to the following

FORT WAYNE CITY UTILITIES  
ONE EAST MAIN STREET, ROOM 280  
FORT WAYNE, INDIANA 46802

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
C/O TODD TRINKLE, WET WEATHER SECTION  
MC 65-42 IGCN 1255, 100 N. SENATE AVENUE  
INDIANAPOLIS, IN 46204-2251

The UAA document is available for review at the office of the Fort Wayne Board of Public Works at 1 E. Main Street Room 420  
from 8:30 AM - 4:45 PM, Monday through Friday.

Mary Jane Slaton  
Fort Wayne City Utilities  
(260) 427-2683





**FORT WAYNE  
NEWSPAPERS**

600 West Main Street - P.O. Box 100 MAKE CHECKS PAYABLE TO:  
Fort Wayne, IN 46801-0100 Fort Wayne Newspapers, Inc.  
Agent: News Publishing Co. Journal-Gazette Co.

**LEGAL  
INVOICE**

Account #

Statement Date

1065830

2/18/2010

Terms: Upon Receipt

City Utilities  
1 E Main Street Room 280  
Fort Wayne IN 46802

ORDER NO.	BALANCE
0000793547	\$78.82

**AMT DUE**

\$78.82

AMOUNT PAID

78.82

CHECK NO.

Please Return Top Portion With Payment

**PUBLICATION OF LEGAL NOTICES**

DATE	ORDER NUMBER	DESCRIPTION	LINES & PT.	RATE	COST
1/5/10-2/12/10	0000793547	Journal Gazette USE ATTAINABILITY ANALYSIS	71	0.555	\$39.41
1/5/10-2/12/10	0000793547	News-Sentinel USE ATTAINABILITY ANALYSIS	71	0.555	\$39.41
57457403 5332					

CUSTOMER ACCOUNT # 1065830

City Utilities  
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\$78.82

TOTAL  
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**NOTICE OF PUBLIC MEETINGS  
REGARDING FORT WAYNE'S  
USE ATTAINABILITY ANALYSIS (UAA)  
FOR CSO-IMPACTED WATERS**

NOTICE IS HEREBY GIVEN THAT FORT WAYNE CITY UTILITIES WILL CONDUCT PUBLIC MEETINGS ON WEDNESDAY, FEBRUARY 17, 2010, AT 1:00 P.M. (LOCAL TIME) AT THE INDIANA INSTITUTE OF TECHNOLOGY AND ORFFER COMMONS, 1600 EAST WASHINGTON BOULEVARD, FORT WAYNE, INDIANA AND ON WEDNESDAY, FEBRUARY 17, 2010, AT 6:30 P.M. (LOCAL TIME) IN THE PRESENTATION ROOM AT WOODLAN JUNIOR/SENIOR HIGH SCHOOL, 17215 WOODBURN ROAD, WOODBURN, INDIANA, CONCERNING FORT WAYNE'S PROPOSED SUBMITTAL OF A USE ATTAINABILITY ANALYSIS TO THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY TO SUPPORT THE PROPOSED REVISION OF USE DESIGNATION FOR THOSE WATERWAYS AFFECTED BY THE CITY'S CSO DISCHARGES TO A CSO WET WEATHER LIMITED USE DESIGNATION PURSUANT TO STATE AND FEDERAL LAW.

AN EXPLANATION OF THE UAA DOCUMENT WILL BE PROVIDED AND PUBLIC QUESTIONS OR COMMENTS WILL BE ACCEPTED. COMMENTS MAY ALSO BE SUBMITTED BY MARCH 17, 2010 TO: FORT WAYNE CITY UTILITIES, ONE EAST MAIN STREET, ROOM 280, FORT WAYNE, INDIANA 46802 AND THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, C/O TODD TRINKLE, WET WEATHER SECTION, MC 65-42 JGCN 1255, 100 N. SENATE AVENUE, INDIANAPOLIS, IN 46204-2251.

THE DOCUMENT IS AVAILABLE FOR REVIEW IN THE OFFICE OF THE FORT WAYNE BOARD OF PUBLIC WORKS, FROM 8:30 A.M. UNTIL 4:45 P.M., MONDAY THROUGH FRIDAY AT ONE EAST MAIN STREET, ROOM 420, FORT WAYNE, INDIANA.

"REASONABLE ACCOMMODATION" FOR PERSONS WITH A KNOWN DISABLING CONDITION WILL BE CONSIDERED IN ACCORDANCE WITH STATE AND FEDERAL LAW. ANY PERSON NEEDING A "REASONABLE ACCOMMODATION" SHALL NOTIFY FORT WAYNE CITY UTILITIES AT (260) 427-1381, TTY (260) 427-1359, AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE MEETING.

KUMAR MENON DIRECTOR OF  
FORT WAYNE CITY UTILITIES  
2--5--12 793547.

**The News-Sentinel**Account # 1065830 - 793547  
City Utilities

Allen County, Indiana

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Head -- number of lines

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\$ 39.41

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Width of single column in picas . . . . 9.8    Size of type . . . . 7point.

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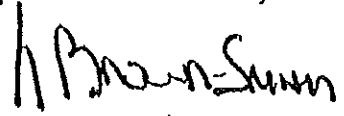
Pursuant to the provisions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

I also certify that the printed matter attached hereto is a true copy, of the same column width and type size, which was duly published in said paper 2 times.

The dates of publication being as follows:

2/5/20102/12/2010

Additionally, Newspaper has a Web site and this public notice was posted on the same day as it was published in The News-Sentinel.

  
 T. Brown-Smith  
 Legal Clerk

Date: February 12, 2010

ATTACH COPY OF ADVERTISEMENT HERE

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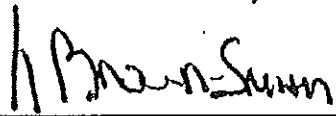
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Date: February 12, 2010

INVOICE

# FROST Illustrated

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DATE 2/10/10

• City of Fort Wayne  
Utilities Administration  
One Main Street, Room 280  
Fort Wayne, IN 46802

DATE	CHARGES and CREDITS	
2/10/10	Legal Notice-Notice of Public Meeting	\$ 145.13
	Total Amount Due	\$ 145.13
<div> <div>RECEIVED</div> <div>FEB 10 2010</div> <div>City Utilities Administration</div> </div> <div>Finance charge after 30 days: 1 1/2% monthly, annual percentage rate, 18% per annum.</div>		

57457463 5332 *Admission 5332*



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## PROOF OF PUBLICATION

### Legal Notice

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UMAR MENON  
DIRECTOR OF FORT WAYNE CITY UTILITIES

DIANA )  
 ) SS:  
ALLEN )

February 9, 2010

red before the undersigned Edna Smith  
a according to law, says that she is  
anager of Frost Illustrated, a weekly  
neral circulation, printed and published in  
state, and that the notice herewith attached  
1 said paper for one (1) time.

Edna M. Smith Publisher

sworn to before me this 9th

day, 2010.

[Signature]

Notary Public

My Commission Expires:

August 12, 2014

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City Utilities  
Administration

**Proof of Publication**  
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Defiance, Ohio 43512  
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Fax: (419) 784-1492

I, Paul Hinojosa, being first duly sworn, depose and say that I am Advertising Clerk of THE CRESCENT-NEWS (FED. ID 34-1842326) a newspaper printed and published in the city of Defiance, and of general circulation in the County of Defiance, State of Ohio, and have personal knowledge of the facts herein stated and that the notice hereto annexed was published in said newspaper for 2 insertions on the same day of the week from and after the 5th day of February, 2010 and that the fees charged are legal.

*Paul Hinojosa*  
Paul Hinojosa

Name of Account City of Fort Wayne Utilities Administration  
Ad Number: 10821820  
No. of Lines: 45

Day(s) Published: 02/05, 02/12.  
Printers Fee \$341.25

Sworn to and subscribed before this 12th day of February, 2010.

*Linda J. Ricker*  
Linda J. Ricker  
Notary Public  
Commission Expires September 17, 2012



LINDA L. RICKER  
Notary Public  
In and for the State of Ohio  
My Commission Expires  
September 17, 2012

57457403 5332  
09080019

516-666-6666

**NOTICE OF PUBLIC MEETINGS  
REGARDING FORT WAYNE SEWER TREATABILITY ANALYSIS  
(U.S. FOR CSO-IMPACTED WATERS)**

NOTICE IS HEREBY GIVEN THAT FORT WAYNE CITY UTILITIES WILL CONDUCT PUBLIC MEETINGS ON WEDNESDAY, FEBRUARY 17, 2010, AT 1:00 P.M. (LOCAL TIME) AT THE INDIANA INSTITUTE OF TECHNOLOGY, ANDORFER COMMONS, 1600 EAST WASHINGTON BOULEVARD, FORT WAYNE, INDIANA, AND ON WEDNESDAY, FEBRUARY 17, 2010, AT 5:30 P.M. (LOCAL TIME) IN THE PRESENTATION ROOM AT WOODMAN JUNIORSEN HIGH SCHOOL, 1715 WOODBURN ROAD, WOODBURN, INDIANA. CONCERNING FORT WAYNE'S PROPOSED SEWAGE TREATABILITY ANALYSIS TO THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY TO SUPPORT THE PROPOSED REVISION OF USE DESIGNATION FOR THOSE WATERWAYS AFFECTED BY THE CITY'S CSO DISCHARGES TO A CSO WET WEATHER LIMITED USE DESIGNATION PURSUANT TO STATE AND FEDERAL LAW.

AN EXPLANATION OF THE U.S. DOCUMENT WILL BE PROVIDED, AND PUBLIC QUESTIONS OR COMMENTS WILL BE ACCEPTED. COMMENTS MAY ALSO BE SUBMITTED BY MARCH 17, 2010 TO FORT WAYNE CITY UTILITIES, ONE EAST MAIN STREET, ROOM 30, FORT WAYNE, INDIANA 46802 AND THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, C/O TODD TRINKLE, WET WEATHER SECTION, MC 654216CN, 1255 100 N. SENATE AVENUE, INDIANAPOLIS, IN 46204-1251.

THE DOCUMENT IS AVAILABLE FOR REVIEW IN THE OFFICE OF THE FORT WAYNE BOARD OF PUBLIC WORKS FROM 8:30 A.M. UNTIL 4:30 P.M. MONDAY THROUGH FRIDAY AT ONE EAST MAIN STREET, ROOM 420, FORT WAYNE, INDIANA.

REASONABLE ACCOMMODATION FOR PERSONS WITH A KNOWN DISABLING CONDITION WILL BE CONSIDERED IN ACCORDANCE WITH STATE AND FEDERAL LAW. ANY PERSON NEEDING A REASONABLE ACCOMMODATION SHALL NOTIFY FORT WAYNE CITY UTILITIES AT (260) 427-1381, TTY: (260) 427-1359, AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE MEETING.

KUMAR MENON  
DIRECTOR OF FORT WAYNE CITY UTILITIES

# Meetings to talk sewer overflow

## City will explain Use Attainability Analysis.

From staff reports

The city of Fort Wayne will hold two public meetings as part of its process to be in compliance with regulations regarding combined sewer overflows.

The city must submit a Use Attainability Analysis to the Environmental Protection Agency and Indiana Department of Environmental Management.

The city will explain the analysis at these meetings:

- ◆ 1 p.m. Wednesday in Room 205 in Andorfer Commons, Indiana Tech, 1600 E. Washington Blvd. Enter from the parking lot on the north side of the building.
- ◆ 6:30 p.m. Wednesday in the presentation room at

Woodlan Junior-Senior High School, 17215 Woodburn Road. Enter through Door 6.

Written comments may be submitted by March 17 to:

- ◆ Fort Wayne City Utilities, Room 280, 1 E. Main St., Fort Wayne, IN 46802

- ◆ Indiana Department of Environmental Management, C/O Todd Trinkle, Wet Weather Section, MC 65-42 IGCN 1255, 100 N. Senate Ave., Indianapolis, IN 46204-2251.

Fort Wayne has many old sewer lines that carry both sewage and rainwater. During heavy downpours, excess sewage and water will go into the rivers.

The analysis is available for review 8:30 a.m.-4:45 p.m. Monday-Friday at the Fort Wayne Board of Public Works, Room 420, 1 E. Main St.

## Briefs

### Man's body found

A man's body was found outside in the 1300 block of East State Boulevard early Sunday morning, and the incident is under investigation by the Fort Wayne Police Department.

Allen County Deputy Coroner Becky Stuttle said today that the body is that of a white male in his late 20s to early 30s. No foul play is suspected.

more, including meals, drinks and tickets to events. The current threshold is \$100.

The Senate bill has similar provisions, and legislative leaders say they're confident that any differences in the bills can be worked out.

### New street signs in Bloomington

BLOOMINGTON — A new breed of street signs could make Bloomington

## SACS

Continued from Page 1A

that we raised for hearing, and she ordered remedies for those, including the use of outside individuals to come in and show the district how to do what the law requires them to do," Carol Laughlin said.

The hearing officer said the school failed to evaluate Matt in a timely manner, that staff did not know when to properly refer him for an evaluation, and that the staff's "inaccurate beliefs and lack of awareness" delayed Matt access to the "emotionally distressed" program by at least a month, among other violations, according to documentation provided by the family.

"Taken together, the delays in evaluating the student, failure to respond to the mother's request to look

at areas in addition (to the 'emotionally distressed' program) and the lack of critical information in a functional behavioral assessment effectively denied the student a free appropriate public education," the hearing officer said in her report.

The report did support the school in some areas, such as properly updating the parents on Matt's progress.

In June, even before due process began, the Laughlins enrolled Matt in Stone Mountain School, a residential program in North Carolina, because they did not feel his needs were being met at Summit. In the residential program, Matt is able to work at his own pace and one-on-one with an instructor, which was not happening on a regular basis at Summit.

While Carol Laughlin says Matt has improved immensely in the residential pro-

gram, student stoppage needed.

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## IRAN

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producing weapons of mass destruction.

The Revolutionary Guard has long been a pillar of Iran's regime as a force separate from the ordinary armed forces. The Guard now has a hand in every critical area, including missile

development, oil resources, dam building, road construction, telecommunications and nuclear technology.

It also has absorbed the paramilitary Basij as a full-fledged part of its command structure — giving the militia greater funding and a stronger presence in Iran's internal politics.

Asked if the U.S. is planning a military attack on

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## COUNTY

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can get the right project," said Brown, who acknowledged that the county, over time, would pay a premium of roughly 8 percent to get its hands on the \$38 million. "That (expense) would have to be offset by economic growth," he added.

leaseback idea currently "makes no sense for the county at any level."

Cash-strapped private companies often sign such deals, she said, to raise money while gaining tax advantages. But the county pays no taxes and doesn't need the money, she said, with a surplus of about \$8 million in its general fund and another \$18 million in





# INDIANA TECH

**Welcomes**

## **City of Fort Wayne Public Meeting**

**Rm 205**

*(upstairs)*

Tech Treasures Gift Shop and **Recreation Center** located in *Lower Level*.

Hours: 10:00am -1:00pm

Cinema Center @IndianaTech located in Magee O'Connor Theater on *Main Level*

Restrooms on each level left of elevator and **vending machines** on *Lower Level*.

For additional assistance please visit Student Life, Room 146 on *Main Level*.

Public Meeting on Fort Wayne Use Attainability Analysis  
Indiana Tech 1:00 PM February 17, 2010

Name	Address	Representing	Phone and/or e-mail
TINA WOLFE	418 DEEP WOOD COVE FTW, IN 46845	SELF	260-338-0403 TWOLFE@verizon.net
DICK BEAH	1345 W. SHERWOOD TERR.	SOUTHWOOD PARK BOARD	456-5471 DICK@SHERWOOD PARK BOARD
Kelly Basic	2021 Lamont Dr Ft. Wayne, IN 46805	SELF	260-471-2096 260-676-2205
Wendy Reust	6704 Spirea Ct Ft. Wayne, IN 46814	SELF	
Frank Sware	835 W. Wayne 46802 Ft. Wayne IN 46802	City of Ft. Wayne	
Matthew Witz	One Main St, Rm 400 Ft. Wayne IN 46802	City of FW	427-2690
DAN LUCE	3002 Normans Dr	Self - NINA	483-0205
Todd Trinkle	100 N. Senate Ave. MC65-42 Indianapolis, IN 46204	IDEM	trinkle@idem.in.gov 317-234-1003
GARY CHAPPEL	1 E MAIN ST FORT WAYNE, IN 46802	FW-AC DEPT OF HEALTH	260-449-7695 gary.chappel@co.allen.in.us
BRANDI WALLACE		City of Fort Wayne	260-427-5582

Public Meeting on Fort Wayne Use Attainability Analysis  
Woodlan Jr/Sr High School 6:30 PM February 17, 2010

Name	Address	Representing	Phone and/or e-mail
James Cooper	900 Rosamond Ave	ME	260-740-7467 work 260-749-2777
Mark Heber	7511 Wokana Drive		(260) 747-2677
Steve Miller	4814 N. WEBSTER RD. N.H 100 N. Senate Ave. MC 65-42		260-493-0957 trinkle@idem.in.gov
Todd Trinkle	Indianapolis, IN 46204	IDEM	317-334-1003
PAT CALAHAN	12320 BUEFLENGAS RUN		260-627-8344 pascal@hoganadegassandsons.com
Justin Brigger		CITY OF FW	427-1117
Andi Adams	1809 N State Lined	ME	632-5053
Deanne Miesle	Woodburn, IN 46797 19223 WOODBURN RD WOODBURN, IN 46797	SECF	632-5653
SCANDI WALLACE		CITY OF FW	427-5582

*COPY for City Utilities.*

1123 Ludwig Park Drive  
Fort Wayne, IN 46825  
February 19, 2010

Indiana Department of Environmental Management  
C/O Todd Trinkle, Wet Weather Section  
MC 65-42 IGCN 1255  
100 North Senate Avenue  
Indianapolis, IN 46204-2251

Dear Sir:

This letter supports the requested revision to the full body contact recreation use designation submitted as a Use Attainability Analysis (St. Marys River, St. Joseph River, and Maumee River) by City Utilities of the City of Fort Wayne.

I became involved with City Utilities (CU) in 2003 because of neighborhood flooding problems, which were solved years ago. I continued to interact with them and am a volunteer member of their Stormwater and Sewer Advisory Group (SAG) because of CU's integrity and genuine responses to citizen inputs. The City of Fort Wayne in general is by far the most responsive out of eleven places I've lived nationwide.

I boat infrequently for the time being because of family, volunteer, and financial demands, but own two square-backed rowing canoes with small outboard motors and trailers, plus a toy (9.5') kayak. In the past five years, about three-quarters of our time spent around water has been along the rivers in the area affected by this Use Attainability Analysis, and most of the other quarter just upstream (0.25-2.5 miles) on the St. Joseph River. My wife and I expect to boat much more in a few years, mostly in these same river segments because of their proximity to home and lack of fees or other expense. Therefore, we have a lot of self-interest in the projected usability of these waters.

I am a former PhD (Plant Pathology) field research scientist for Bayer. I quit my profession after our three middle school children nearly set the house on fire twice in 1996, in order to be home with them and free up my wife in her profession (industrial safety and environmental health). My Fort Wayne volunteer activities include SAG, Co-Chair of the Mayor's Northwest Area Partnership (an association of homeowner associations), and the 2010 Solid Waste Contract Committee in Public Works. A notable former volunteer commitment was the Curdes Avenue Task Force (report available by Googling), which was a citizen-involvement test case regarding how to deal with five adjoining combined sewer subsheds in preparation for the Consent Decree. I also attended, as an observer, almost every meeting of the Clean Rivers Task Force, which was charged with exploring all options by which to fund the Consent Decree (and significant associated ongoing projects).

I personally believe that the requested revision would have virtually no impact on recreational use of the rivers. The magnitude of the rain events probably associated with this requested revision would raise the river levels and speeds beyond the point where submerged shoreline obstacles (such as trees) make overall use of the rivers less attractive and unlikely. These obstacles and a number of bridges would also make boating significantly hazardous.

The Use Attainability Analysis is correct that the cost of a more stringent Long Term Control Plan would be a severe economic hardship to a City trying to reverse the classic economic decay being experienced for decades here in the Midwest. I would go further and believe that further controls would be economically inadvisable because individuals in impoverished areas (since the 1970's) tend to strip and punish their environments just in order to survive for the moment. No amount of policing can keep up with citizens acting *en masse*. To use an admittedly extreme but real scenario witnessed elsewhere at various times over decades, I have seen rivers and floodways become direct toilets when significant numbers of homeless lived along waterways because of fish and trash availability, plus strength in numbers. Pollution notwithstanding, crime (or lack of money for adequate policing) was a major reason that communities turned their backs on waterways during my younger years.

As someone who moved here from elsewhere, I also perceive a local culture and government that is putting resources into removing, replacing, and upgrading its buildings and other infrastructure. A greater burden for increased sewage control would certainly restrain these other private and public activities. I say this especially because most of the sewer overflows under the requested revision would occur from formidable rain events. The size of the extra pipes and storage, never mind the excess treatment capacity, strikes me as mind-boggling not just in scope but also in impact on the economic environment of Fort Wayne.

I perceive the current recreational uses, frequencies, and weather conditions reported in the Use Attainability Analysis to be realistic. Uses are increasing, but depend upon river conditions that should be covered by improvements mandated in the existing Long Term Control Plan.

I personally suspect that a sufficient amount of fecal waste must be coming from natural sources, on and upriver from the Analysis areas, to limit recreational use after significant storms regardless of sewer overflows. We stay off the St. Joseph, even upriver of Fort Wayne, after significant rains. This is substantiated in part by local IPFW research, which particularly implicated geese, although I question focusing on any one species of wildlife. Either way, the high water conditions which apply to the requested revision would typically involve extensive flushing of watershed and floodway habitats.

Thank you for your time and consideration.

Sincerely,

*Rod Vargo*

Rodney H. Vargo, PhD  
(260) 416-0986  
rodvargo@comcast.net

*This is a  
Copy for*

Copy sent to:

Fort Wayne City Utilities  
One East Main Street, Room 280  
Fort Wayne, Indiana 46802



**APPENDIX N-2: Public Participation Meetings April 15, 2019**

# City of Fort Wayne LTCP Update & Use Attainability Analysis



April 15, 2019

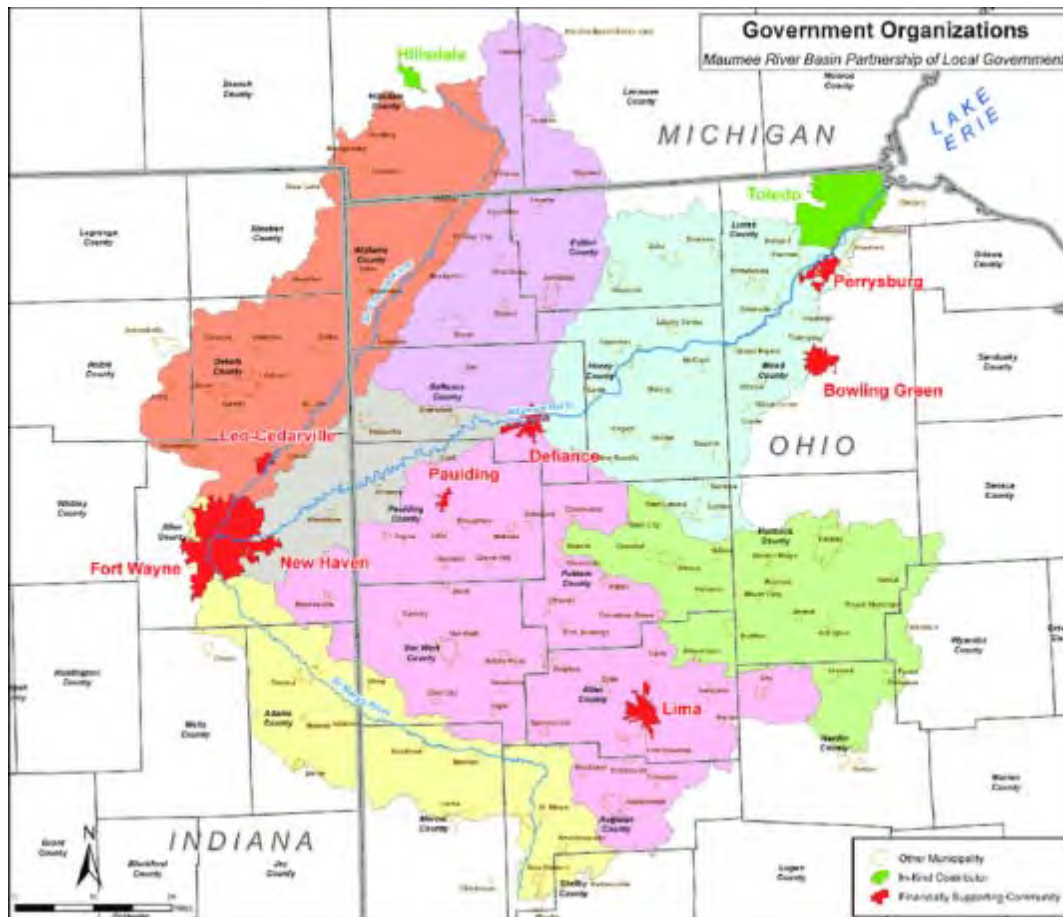
[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Presentation Outline



- LTCP Update
- Benefits of LTCP
- Use Change in Water Quality Standards
- Use Attainability Analysis factors
- Next Steps

# The Big Picture



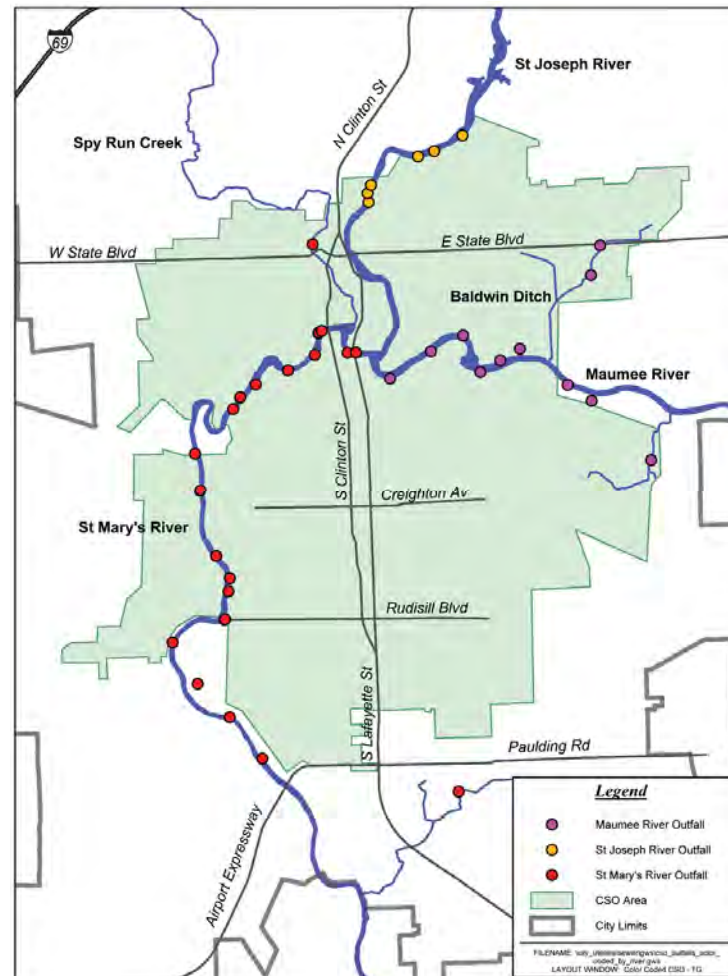
Impact of Land Use Activities in the Maumee River Watershed on Harmful Algal Blooms in Lake Erie - Scientific Figure on ResearchGate. Available from: [https://www.researchgate.net/Map-of-Maumee-River-Watershed-The-Maumee-River-watershed-which-contributes-most-of-the\\_fig2\\_317969632](https://www.researchgate.net/Map-of-Maumee-River-Watershed-The-Maumee-River-watershed-which-contributes-most-of-the_fig2_317969632) [accessed 27 Sep, 2018]

[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Where Sewers Overflow



- Maumee
- St. Joseph
- St. Marys
- Spy Run Creek
- Baldwin Ditch
- Other tributaries



[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)



# Original LTCP



Program Element	Cost (millions)
Combined Sewer Capacity (partial sewer separation)	\$68.3
Parallel Interceptor Sewers	\$72.4
Satellite storage/treatment	\$34.8
Combined sewer overflow pond storage improvements	\$53.9
Treatment plant improvements	\$10
<b>Total Cost</b>	<b>\$239.4</b>

(All cost estimates based on 2005 dollar value)

[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Updated LTCP



Program Element	Cost (millions)
Combined Sewer Capacity (partial sewer separation)	\$33.8
3RPORT & Foster Park Relief Sewer	\$230.0
Remote CSO Relief Sewers, Storage Facilities & Floatables	\$24.7
Wet Weather storage pond improvements	\$34.0
Treatment plant improvements	\$17.4
<b>Total Cost</b>	<b>\$339.9</b>

(All cost estimates based on 2005 dollar value)

[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Updated LTCP with Tunnel Solution



Capital Program	2008 Estimates	Current Estimates
LTCP	\$239.4 million	\$339.9 million
Wastewater Improvements CIP	\$454.6 million	\$326.6 million
Total 18 year CIP	\$694 million	\$666.5 million

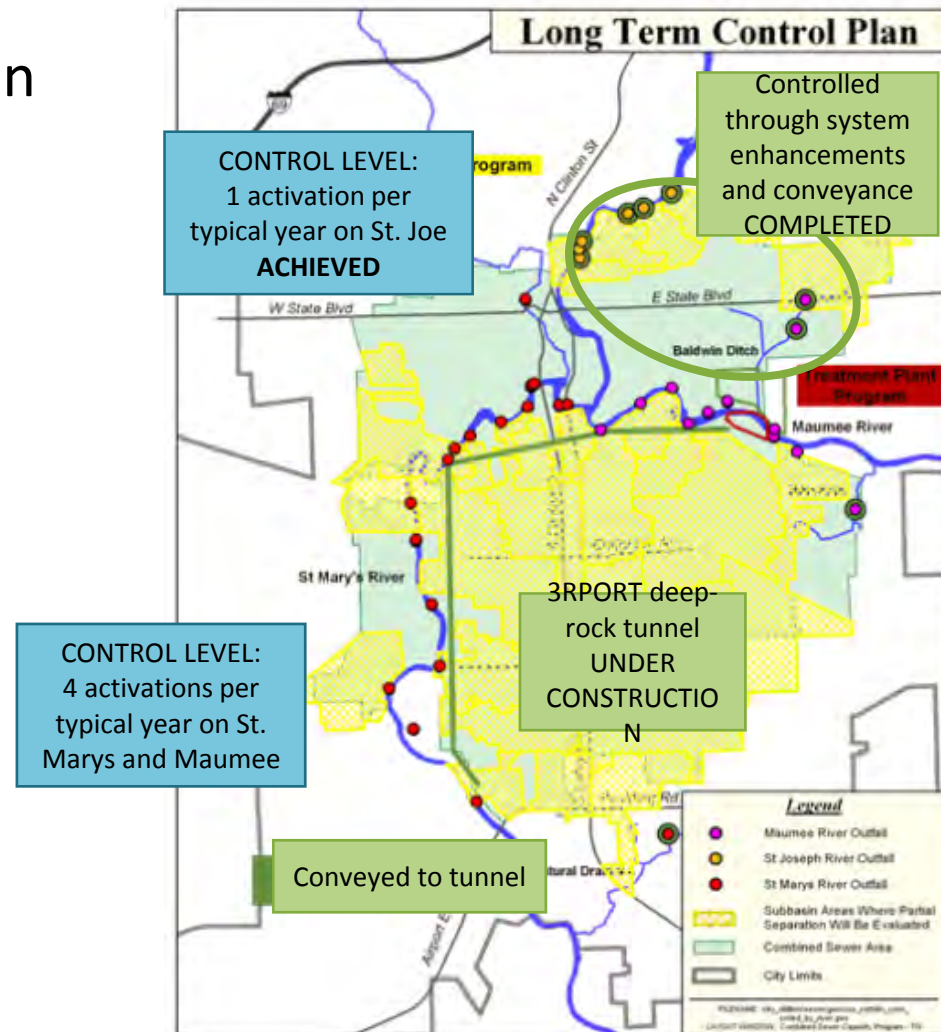
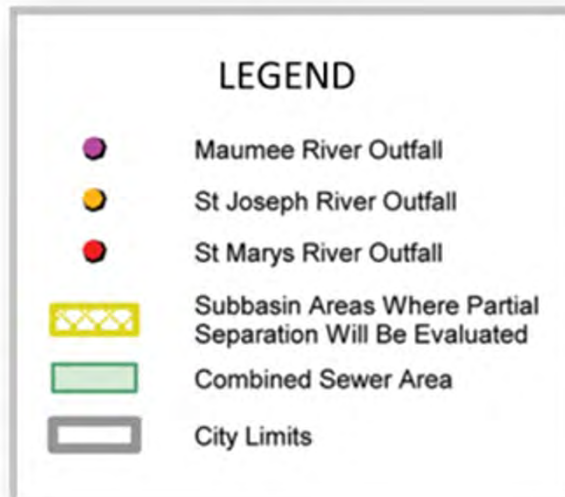
(All cost estimates based on 2005 dollar value)

[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Current LTCP Status



- ① Reduce Through Separation
- ② Collect More
- ③ Treat More

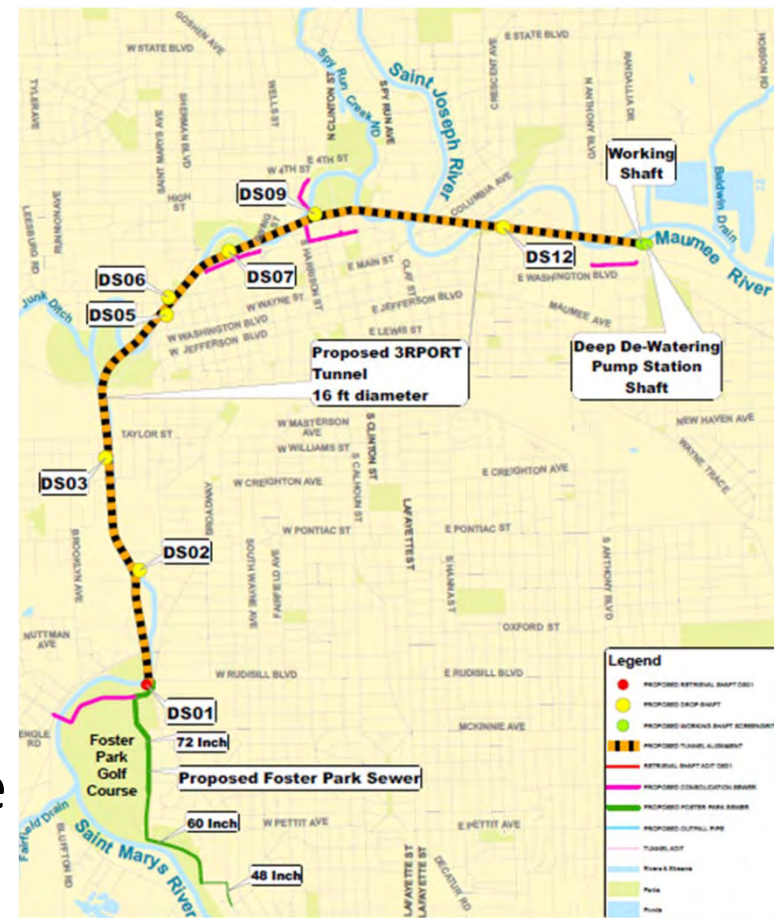


# 3RPORT Program Update



## Tunnel Works Program

- Scheduled completion: 2023
- Three Rivers Protection and Overflow Reduction Tunnel (3RPORT)
  - Deep-rock tunnel
  - Drop shafts & adits
- Deep dewatering pump station
- Near surface infrastructure
  - Consolidation sewers



[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)



# Tunnel Works



Citizens Energy Deep Rock Connector Tunnel – Indianapolis  
Courtesy of AECOM



[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Benefits of City's Plan



- Reduced odors, untreated sewage and trash in our rivers and streams
- Reduces annual sewer overflow volume by 91 percent
- Reduces overflow frequency from 71 times in a typical year to:
  - 1 storm per year causing overflows to St. Joseph River\*
  - 4 storms per year causing overflows to St. Mary's and Maumee rivers\*
- Reduced bacteria loading to our waterways



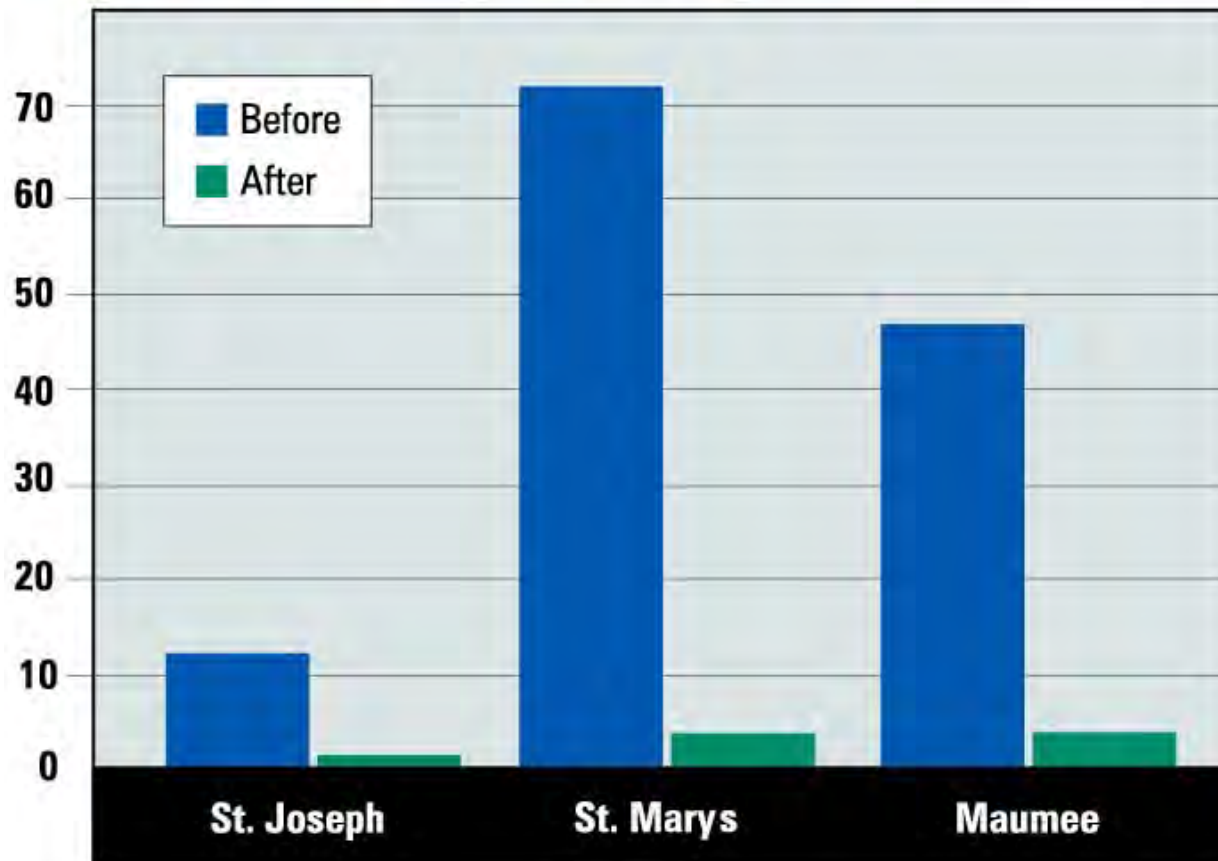
\*Predictions based on a year with average rainfall

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# Benefits: Reduced Overflow Frequency



**Annual Overflow Frequency in a Typical Year**



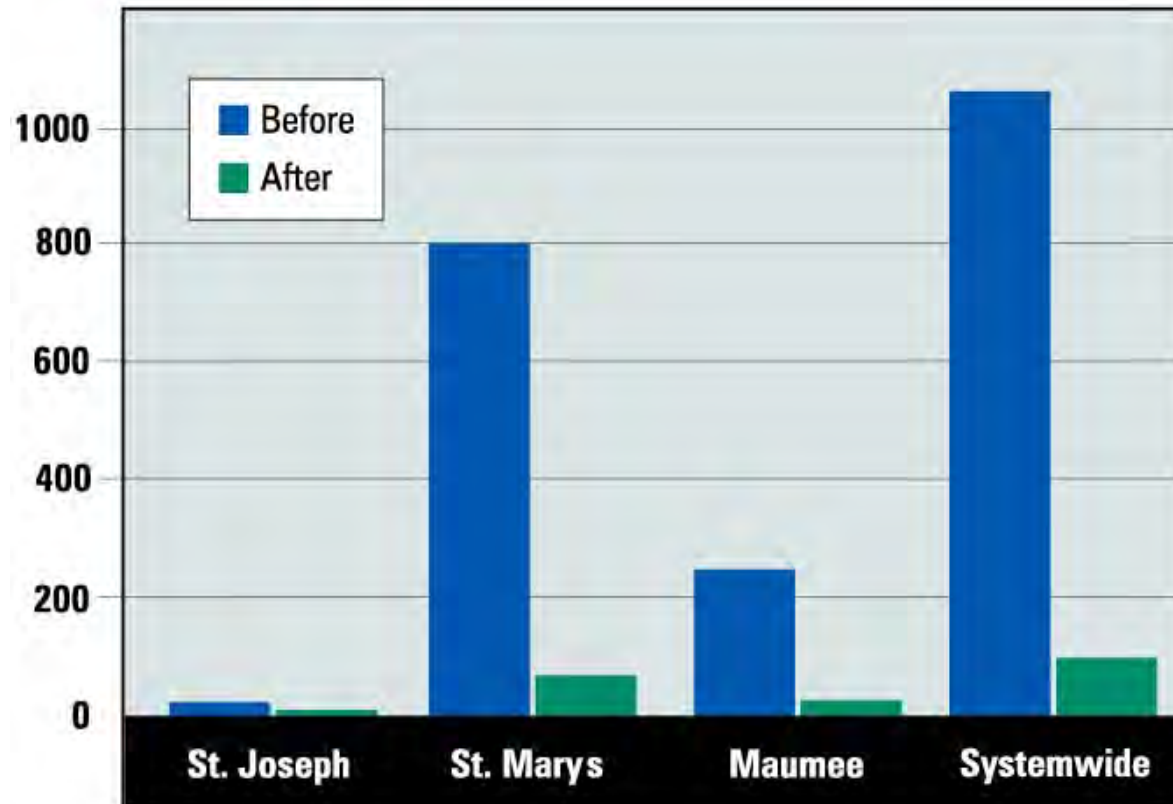
[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)



# Benefits: Reduced Overflow Volume



**Annual Overflow Volume in a Typical Year  
(million gallons)**



[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Use Designation



- All surface waters within Indiana's Great Lakes drainage basin are designated for full-body contact recreation (swimmable) by state water quality rules. 327 IAC 2-1.5-5(a)(1)
- This recreational use designation applies to the St. Joseph, St. Marys and Maumee Rivers (and tributaries)
- Recreation Season includes April – Oct.

# Why is it necessary to change the designated use?



- Even after implementation of the City's costly LTCP, a small number of overflows will still occur during the largest storms of a typical year.
- High bacterial pollution levels from these infrequent storms will make the rivers unsuitable for swimming and other full body recreational contact at those times (although rivers are already unsuitable for swimming due to nonpoint sources of bacteria).
- State water quality rules allow no exceptions to compliance with bacterial criteria required for the current recreational use designation.

- 100% compliance with the water quality criteria for recreation would require additional CSO controls to capture overflows from the largest storms, which is not affordable.
- Recreation on area rivers during storm events occurs rarely, if at all.
- A revised use designation is needed that recognizes that recreation should not occur during times area rivers are impacted by overflows from the infrequent storms beyond the reach of the LTCP's control measures.
- Current (swimmable) recreational use designation would apply except when LTCP's CSO controls cannot capture overflows from larger storms.

# Federal and State Law for Use Designation Changes



- The U.S. EPA adopted rules many years ago to govern the establishment and revision of water quality standards, including use designations, for the nation's waters. 40 CFR Part 131, Subpart B.
- In 2005, the Indiana legislature created a CSO wet weather limited use designation for waters affected by CSOs where a community has agreed to implement an approved LTCP that reduces but cannot totally eliminate discharges from combined sewer systems due to affordability or other constraints.

# UAA – a Prerequisite to Change in Use Designation



- Under the relevant federal and state law, a use designation, such as the current recreational use for waters impacted by the City's CSOs, cannot be changed without conducting a Use Attainability Analysis (UAA) to assess the feasibility of achieving the designated use.

# What is a UAA



- A UAA is defined under federal law as a “structured, scientific assessment of the factors affecting the attainment of the use, which may include physical, chemical, biological, and economic factors as described in 40 CFR 131.10(g)”.
- Six factors may be considered when conducting a UAA.

# Basis of Fort Wayne UAA



- Fort Wayne's draft UAA update is based upon three factors:
- Naturally occurring pollutant concentrations prevent attainment of the designated use;
- Human-caused sources of pollution that cannot be remedied prevent designated use attainment;
- **substantial and widespread economic and social impacts** would be caused by a requirement to implement controls beyond those contained in the City's LTCP as approved by IDEM and U.S. EPA.



# Sources of Water Quality Impairment

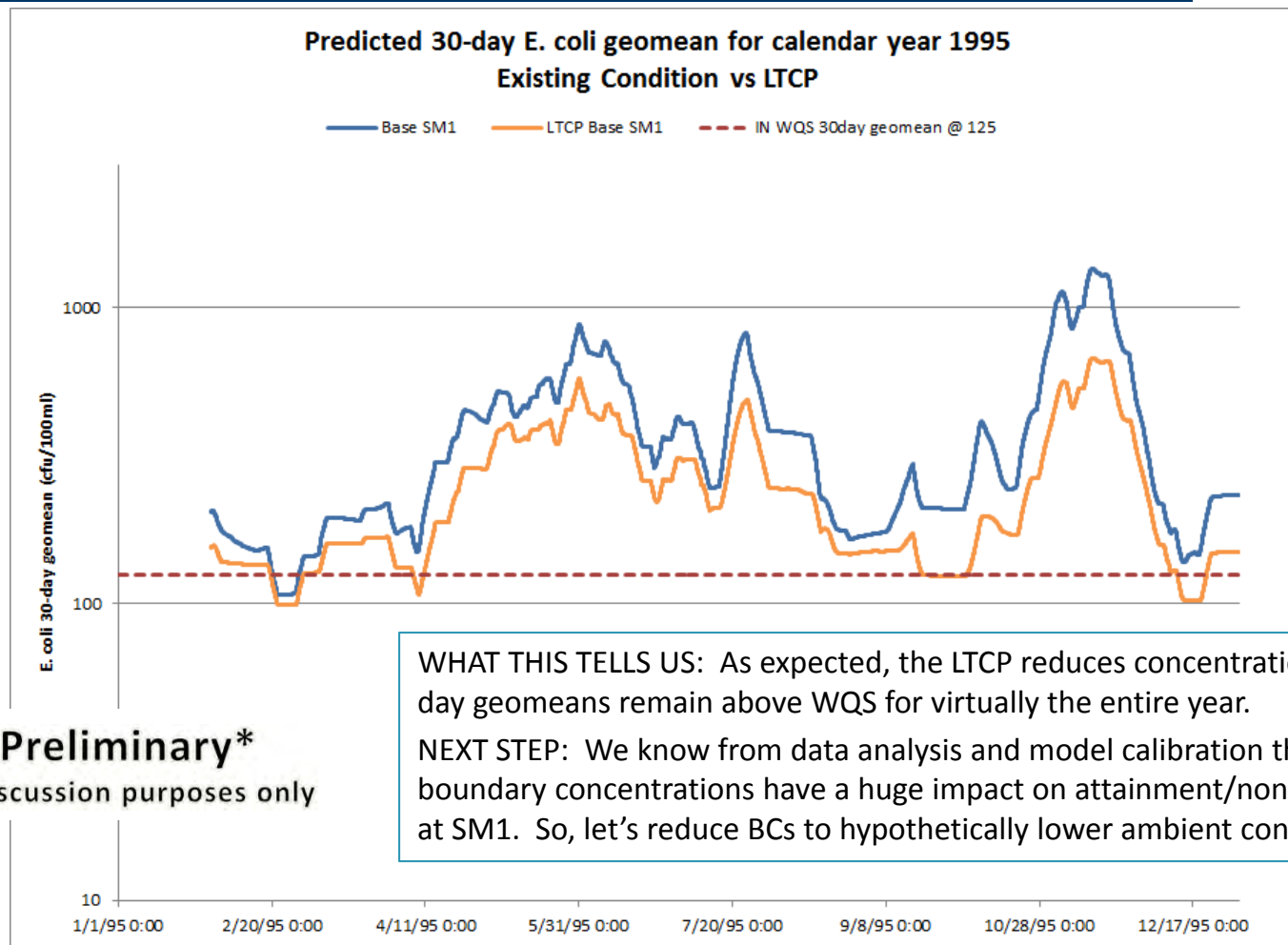


Not all from  
CSO's



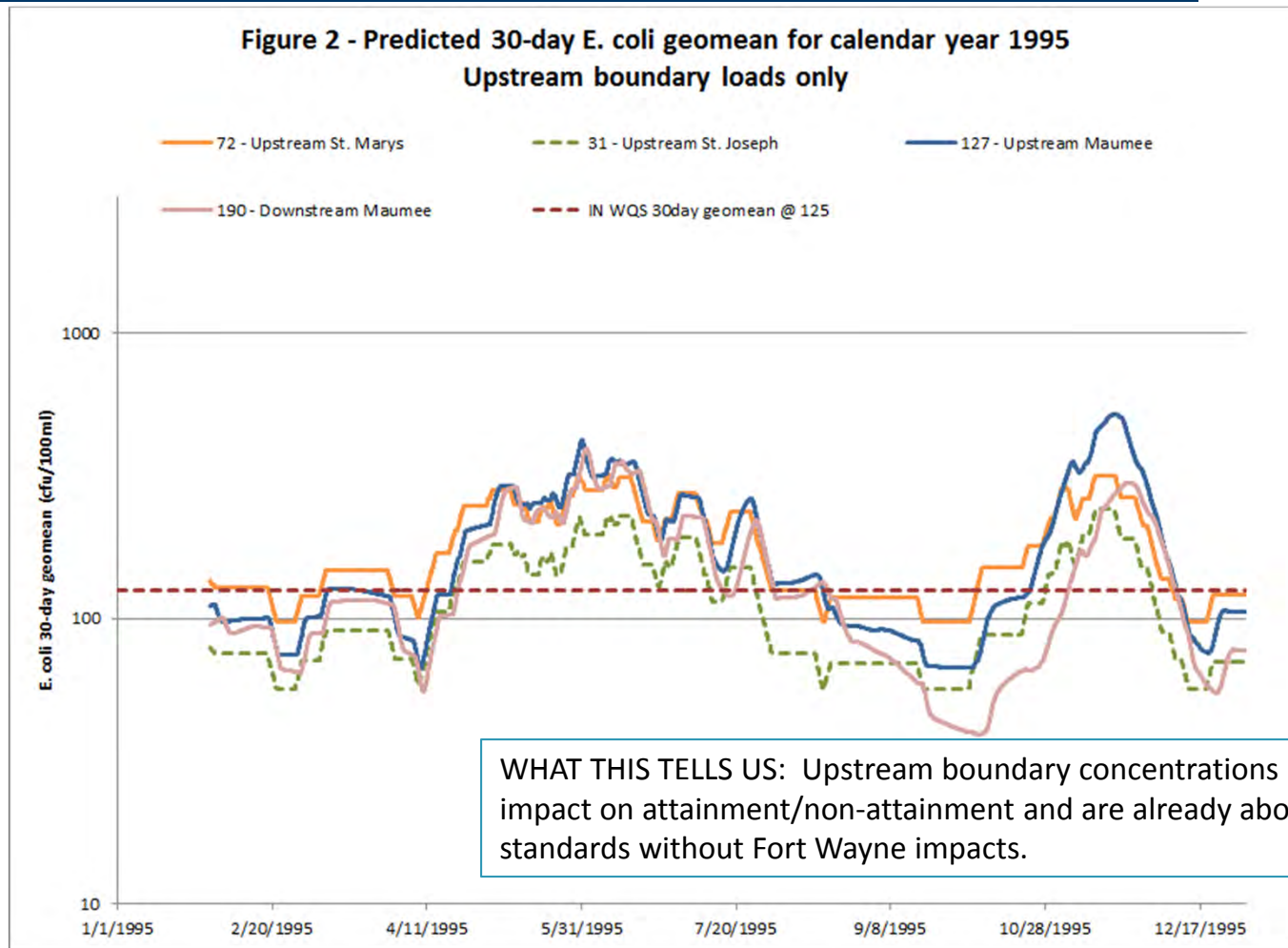
[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Will bacteria WQS be met after LTCP implementation?



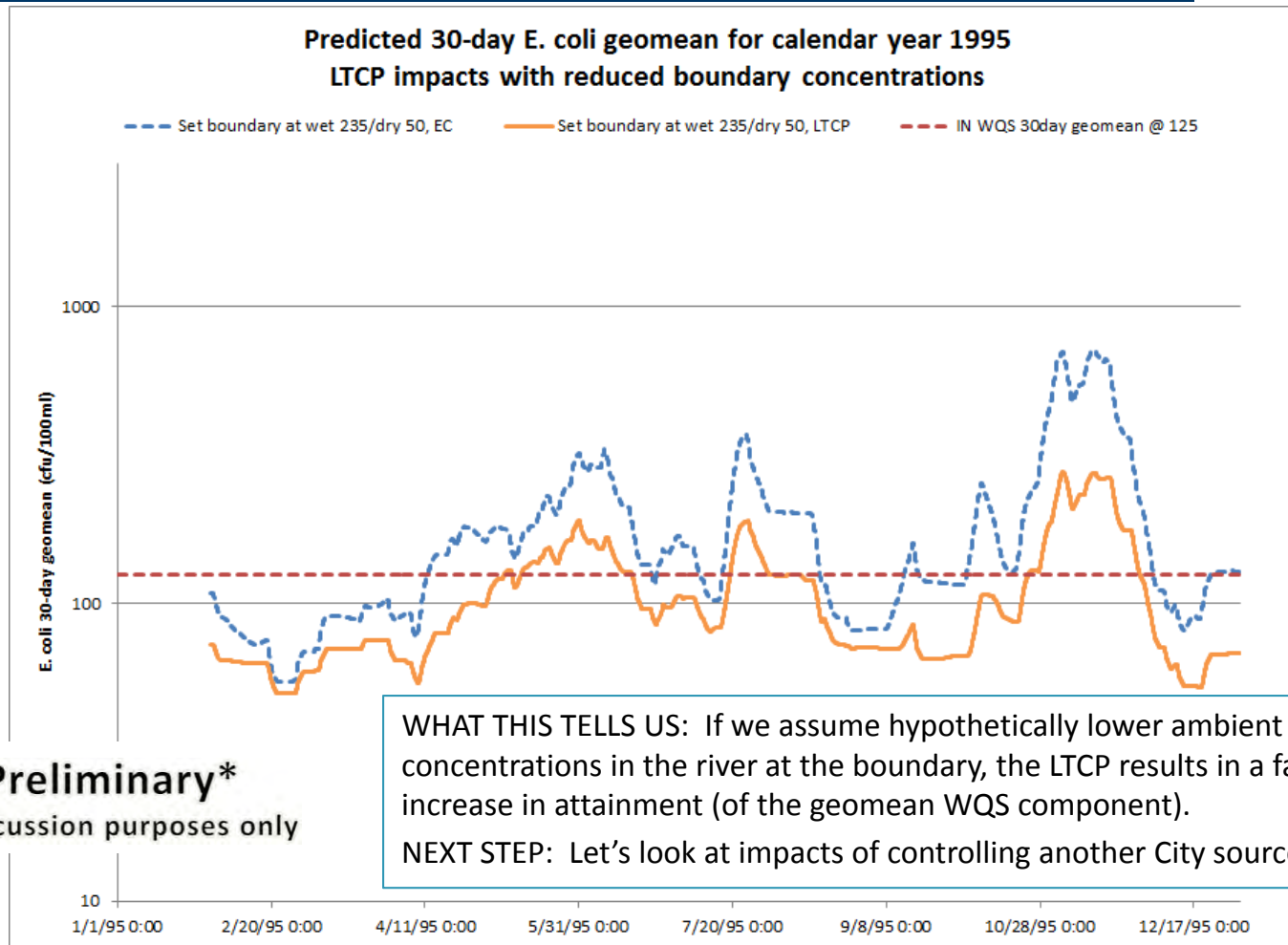
[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# What about sources beyond City control, from upstream watersheds?



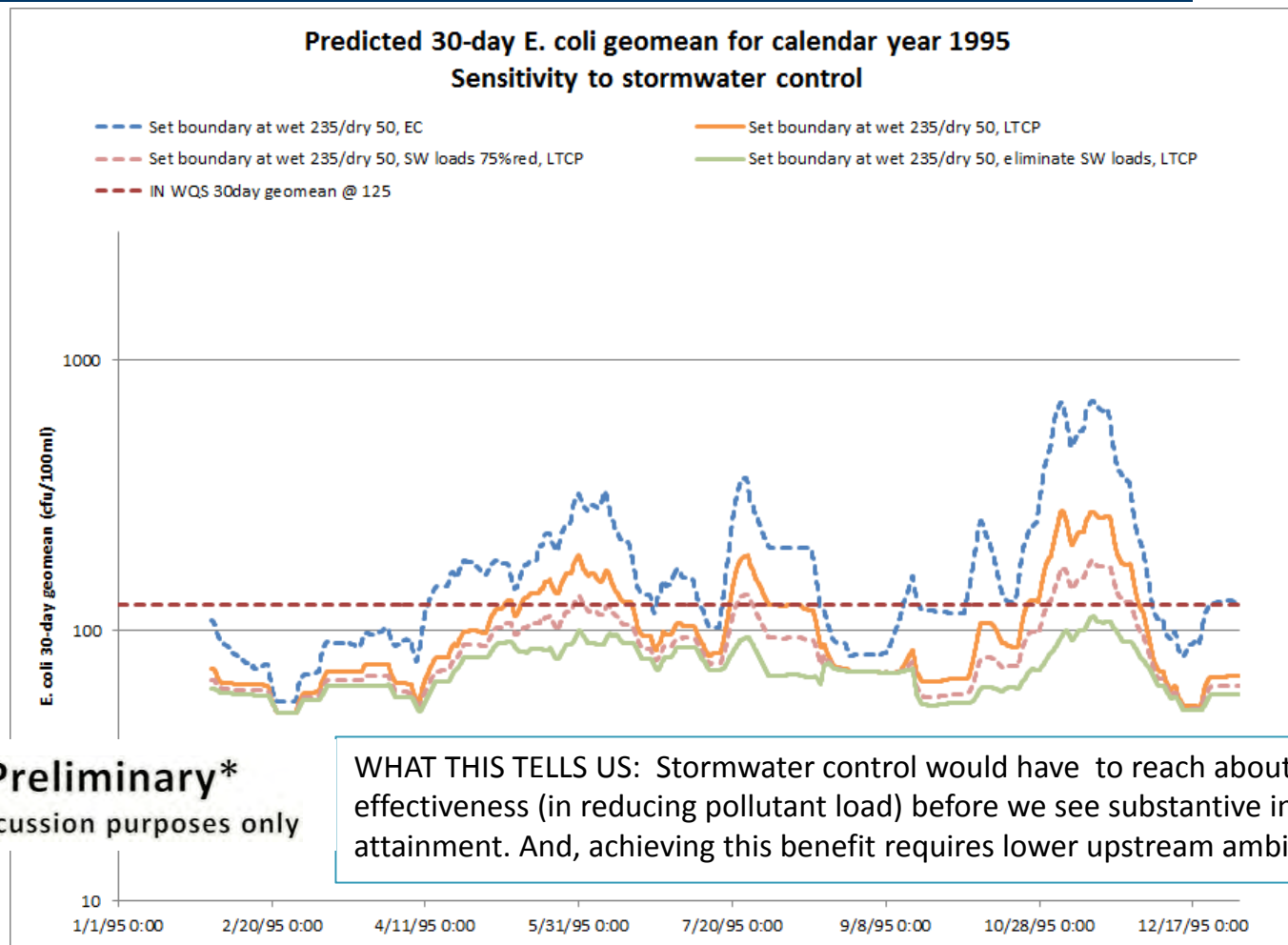
[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# What about sources beyond City control, from upstream watersheds?



[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# When and where should we invest in controlling other City sources, like stormwater?

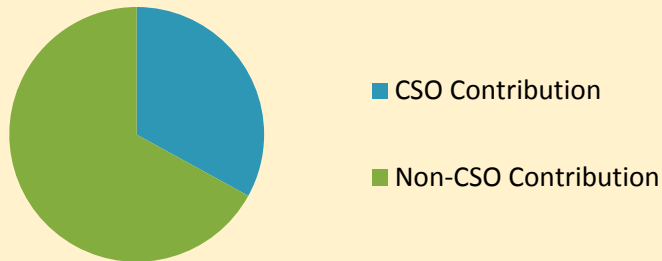


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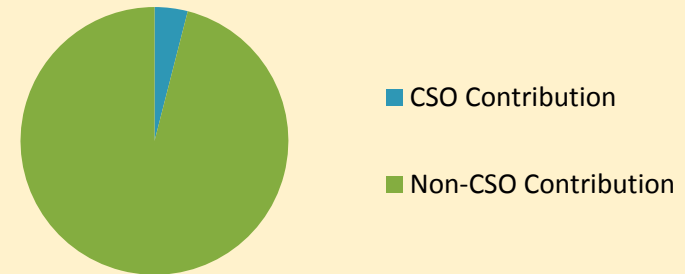
# What these scenarios tell us



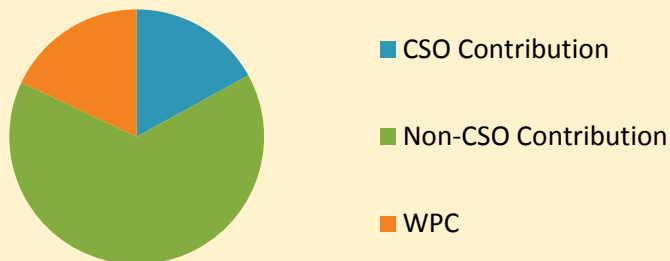
**St. Mary's River Pollutants CSO VS. Non CSO Sources**



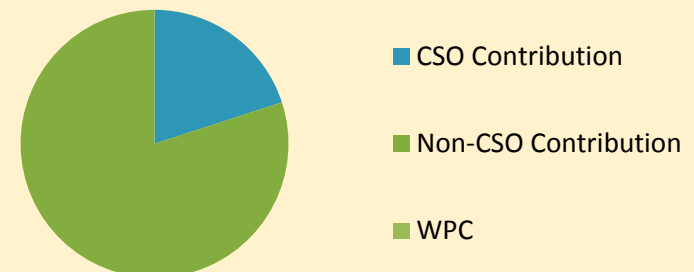
**St. Joseph River Pollutants CSO VS. Non-CSO Sources**



**Maumee River Pollutants (Non-Bacterial) CSO VS. Non-CSO Sources**



**Maumee River Pollutants (Bacterial) CSO VS. Non-CSO Sources**



[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)

# Substantial and Widespread Social and Economic Impacts



- Complete Control of CSOs would still not meet Water Quality Criteria for *E. Coli* in affected rivers due to other, non-point sources.
- Fort Wayne's approved LTCP provides the best environmental benefit for the dollar. It will eliminate most overflows and capture some stormwater that otherwise would have gone to the river.
- Complete Control of CSOs would increase capital costs for the LTCP by more than 100% and would be unaffordable for the City and its rate payers under applicable state and federal criteria.

# Substantial and Widespread Social and Economic Impacts - Original



**UAA Table 4.3-1**

## **Capital Costs for CSO Control Measures for Complete Capture and Control of CSOs**

<b>Program Element</b>	<b>Cost (millions)</b>
Combined Sewer Capacity (partial sewer separation)	\$ 102.7
Interceptor sewers	213.1
Satellite storage/treatment	30.3
Combined sewer overflow pond storage improvements	170.5
Treatment plant improvements	<u>75.8</u>
<b>Total Cost</b>	<b>\$592.4*</b>

(All cost estimates based on 2005 dollar value and Typical Year Conditions)

\*Total Complete Capture costs are in process of being updated. Projected to be higher than original estimate of \$592.4M, based on increased costs of LTCP.

[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)



# Current Status for Change in Use Designation



- Approved LTCP (December 2007)
- UAA approved by IDEM (2010)
- Update/Refresh of UAA information (2019)
- Request IDEM to move forward with UAA process and submitting UAA to EPA for EPA approval

# Next Steps



- Indiana Water Pollution Control Board to conduct rulemaking to revise use designation for CSO-impacted waterways to apply the CSO wet weather limited use designation during those infrequent periods of CSO discharge.
- Approval by US EPA of UAA and Indiana rule to revise use designation to CSO wet weather limited use during periods of CSO discharge

# Questions?

[cityoffortwayne.org/utilities](http://cityoffortwayne.org/utilities)



**APPENDIX O: IDEM Letter Approving 2010 UAA**



## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*  
Governor

*Thomas W. Easterly*  
Commissioner

100 North Senate Avenue  
Indianapolis, Indiana 46204  
(317) 232-8603  
Toll Free (800) 451-6027  
[www.idem.IN.gov](http://www.idem.IN.gov)

August 30, 2010

The Honorable Thomas C. Henry, Mayor  
City of Fort Wayne  
One Main Street  
Fort Wayne, Indiana 46802-1804

Dear Mayor Henry:

Re: Use Attainability Analysis  
City of Fort Wayne  
NPDES Permit IN0032191  
Allen County

The Indiana Department of Environmental Management (IDEM), Office of Water Quality (OWQ) has conducted a review of the City of Fort Wayne's (City) Use Attainability Analysis (UAA) for the current full body contact recreational designation use for the following CSO-impacted waters:

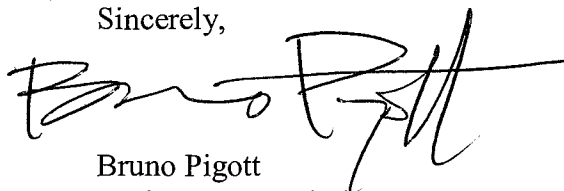
- St. Mary's River, from its junction with Natural Drain #4 near Tillman Road, to the confluence with St. Joseph River;
- Natural Drain #4; from CSO Outfall 054 near the intersection of Hollis Lane and Mercer Avenue, to its junction with the St. Mary's River;
- Spy Run Creek, from CSO Outfall 036, located north of W. State Street along Eastbrook/Westbrook Drive, to its junction with the St. Mary's River south of 4<sup>th</sup> Street;
- St. Joseph River, from CSO Outfall 052, located immediately south of Coliseum Blvd., near N. Anthony Blvd., to the confluence with St. Mary's River;
- Maumee River, from its origin at the confluence of the St. Mary's and St. Joseph Rivers in the City of Fort Wayne to the boundary between states of Indiana and Ohio;
- Baldwin Ditch, from CSO Outfalls 061 and 062 near the intersection of E. State Street and Barnhart Avenue, to its junction with the Maumee River near CSO Ponds 1 and 2; and
- Harvester Drain, from CSO Outfall 064 to its junction with the Maumee River.

Consistent with the Clean Water Act and Federal regulations at 40 CFR 131.10, States may remove designated uses applied to surface waters under their jurisdiction where it is shown that the designated use is not an existing use and that the designated use is not attainable. Based on the information contained in the City's UAA, IDEM finds that Fort Wayne has provided sufficient information to propose changing the designated recreational use for the above mentioned waters from "full body contact" to the "Combined Sewer Overflow (CSO) Wet Weather Limited Use" subcategory of Indiana's recreational use designation as provided in IC 13-18-3-2.5 during storm events that exceed the level of control in the City's approved Long Term Control Plan (LTCP).

IDEM will draft a proposed rule that changes the recreation uses to the CSO Wet Weather Limited Use subcategory for the abovementioned streams. The UAA prepared by the City will serve as the technical justification for the proposed rule revisions. This proposed rule will be posted to the Indiana Register for at least a 30-day review and comment period. Following the public comment period, the Indiana Water Pollution Control Board (WPCB) will hold a public hearing on the rulemaking. After the public hearing, if no comments are received that would lead the WPCB to modify or reject the proposed rule, the WPCB will vote on adopting the proposed rule. If adopted, the rule will first be submitted to the Office of the Attorney General for review, then to the Governor, and lastly, filed with the Publisher. The rule will be effective 30-days after filing with the Publisher. IDEM will submit the rule to EPA as a new or revised water quality standard for review and approval under section 303(c) of the Clean Water Act (CWA). The rule will not become effective for CWA purposes until it is approved by EPA.

Please contact Todd Trinkle at (317) 234-1003 or at [ttrinkle@idem.in.gov](mailto:ttrinkle@idem.in.gov), if you have questions regarding this letter.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bruno Pigott', with a long horizontal stroke extending to the right.

Bruno Pigott  
Assistant Commissioner  
Office of Water Quality

cc: Dave Pfeifer, USEPA Region 5  
Holly Wirick, USEPA Region 5  
Brandi Wallace, City of Fort Wayne  
Larry Kane, Bingham McHale LLP

**APPENDIX P: St. Joseph River Milestone Report (2017)**



# **City of Fort Wayne**

## **St. Joseph River Milestone Report**

**Consent Decree Case # 2:07 cv 00445**

**8/9/2017**



## 1. Introduction

The City of Fort Wayne has been actively implementing an approved Combined Sewer Overflow (CSO) Long-Term Control Plan (LTCP) since 2007. The requirements of the LTCP are outlined in the City's federal Consent Decree (CD), and include a detailed Post-Construction Monitoring Program (PCMP, Appendix 4 of the CD). Under the PCMP, the City is scheduled to submit a series of Milestone Reports, each one coinciding with monitoring and analysis of completed CSO controls in a river watershed. The timing and purpose of the Milestones is as follows, from the PCMP:

*"A milestone report will be prepared for each of the three river watersheds, when all the CSO controls in a particular river watershed are operational. The reports will provide documentation of facility performance relative to the Performance Criteria in Table 4.2.4.1, along with a presentation of observed water quality trends."*

The first river watershed to achieve full operation (AFO) of all CSO controls was the St. Joseph River watershed, with AFO reached on September 1, 2015. The Performance Criteria for the St. Joseph River CSOs, per Table 4.2.4.1 of the CD, is to achieve 1 overflow event in a "typical year." Once AFO was reached, the City completed a 1-year monitoring period in the St. Joseph watershed, followed by a 1-year analysis period, per the requirements of the PCMP. The results of that monitoring and analysis process are the basis for this Milestone Report, and confirm that the operational St. Joseph River CSO controls are complying with the performance criteria required by the CD.

## 2. Milestone Report Development Process and Report Outline

As required by the formal assessment protocol outlined in the CD, the Milestone Report development process is as follows:

- Collect 12 months of CSO activation and rainfall data following Achievement of Full Operation of all CSO controls in the river watershed.
- Analyze the 12 months of CSO activation data and compare to historical trends.
- Use the 12 months of CSO activation data to implement the Model-Based Approach to Assessing Compliance (CD Appendix 4, Section 4.6.4.1) and summarize results.
- Comment on compliance, or non-compliance, as demonstrated by the Model-Based Approach.
- Analyze in-stream bacteria data collected under the PCMP water quality sampling program and summarize long-term trends.

Each of these steps was completed for the St. Joseph River watershed. Further details on the approach under each step, along with results and discussion, are presented in the individual Milestone Report sections as outlined in Table 1.

**Table 1**  
**St. Joseph River Watershed Milestone Report Outline**

<b>Topic<sup>(1)</sup></b>	<b>Milestone Report Section</b>
Description of river and CSO controls being implemented	Section 3
CSO monitoring and rainfall monitoring results	Section 4
River water quality sampling results	Section 5
Evaluation of the effectiveness of CSO Control Measures, including results of analyses performed to assess whether the implemented controls are complying with the Performance Criteria in Table 4.2.4.1	Section 6
A discussion of any significant variances from the Performance Criteria, including impacting factors and associated water quality impacts (if observed)	Not applicable – Performance Criteria met
Re-evaluation and proposed corrective action (if necessary)	Not applicable – Performance Criteria met
Status of upcoming CSO Control Measures in other watersheds (reporting on status of construction schedules, etc.)	Section 7

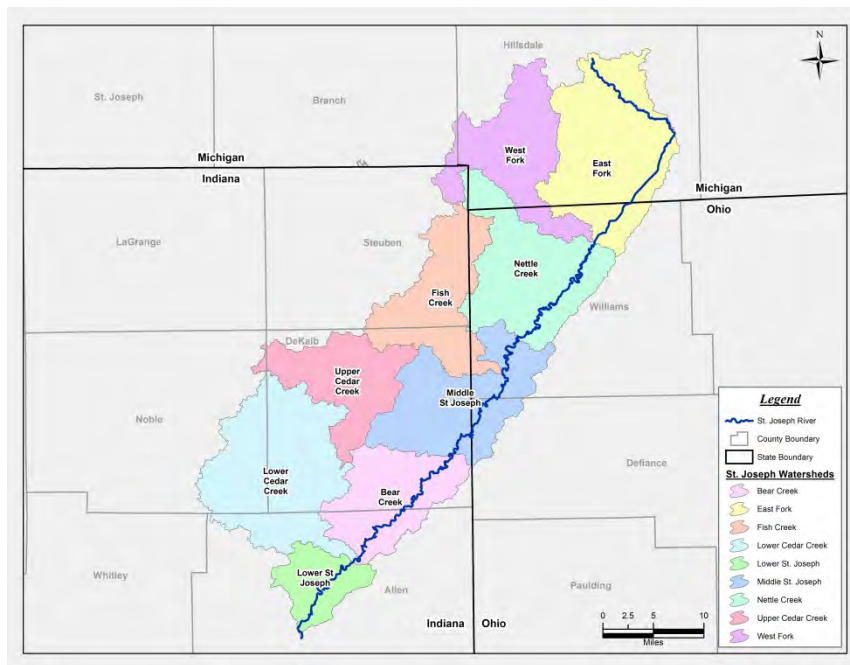
(1) The topics in Table 1 represent the full set of information expected in a Milestone Report, as presented in CD Appendix 4, Section 4.6.6.1.

### **3. Description of River and CSO Controls Being Implemented**

The St. Joseph River watershed, shown in Figure 1, drains approximately 700,000 acres in Michigan, Ohio and Indiana. Flowing through primarily rural agricultural areas in northeast Indiana, the river enters metropolitan Fort Wayne approximately 9 miles upstream of its confluence with the St. Marys River. The St. Joseph and St. Marys Rivers converge in the City’s downtown area to form the Maumee River, which flows northeast as a major tributary to Lake Erie.

The interaction between metropolitan Fort Wayne and the St. Joseph River tributary areas is limited primarily to the “Lower St. Joseph” subwatershed, at the far lower end of the river as shown in Figure 1. This is illustrated further in Figure 2, which shows a detailed view of the Lower St. Joseph subwatershed only, along with the extent of the City’s interceptor system.

**Figure 1**  
**Overall St. Joseph River Watershed**



Source: <http://www.sjrwi.org/content/watershed-information-maps>

**Figure 2**  
**Lower St. Joseph Subwatershed and Overlap with Metropolitan Fort Wayne**

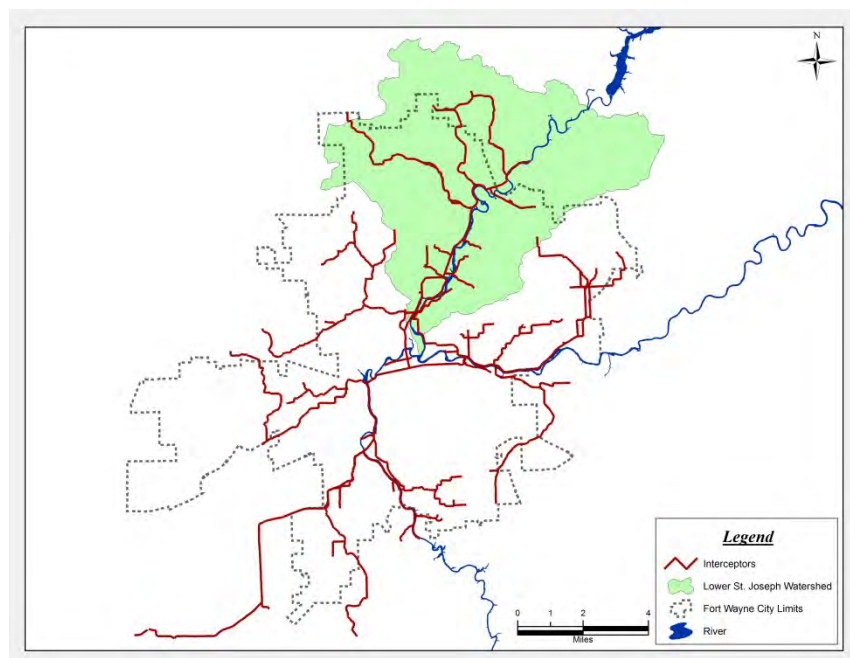
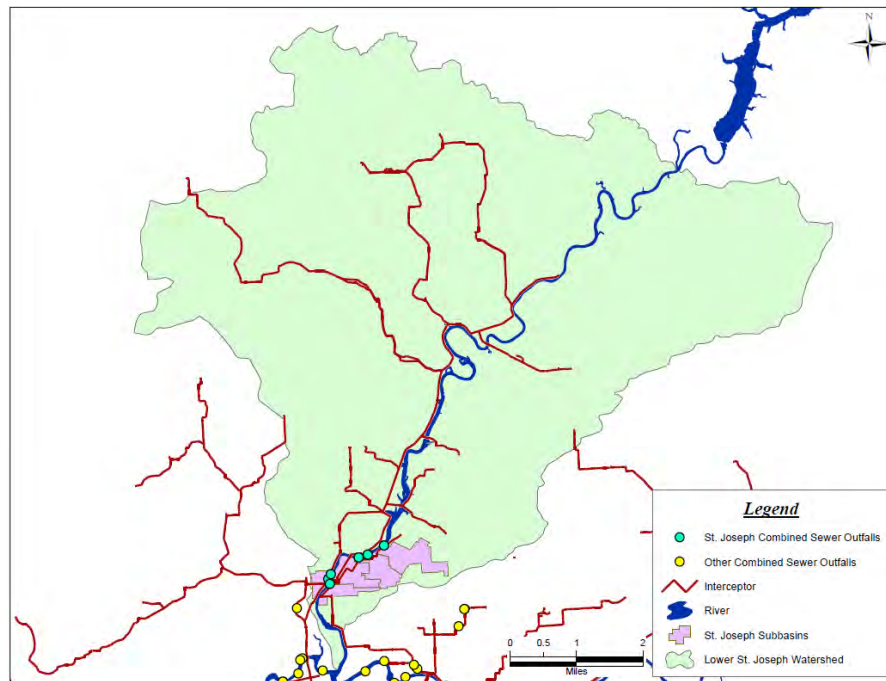


Figure 3 shows the location of the St. Joseph River CSOs and tributary subbasins within the lower St. Joseph River subwatershed. As can be seen, a) the St. Joseph CSO subbasins are a very small part of the smallest subwatershed in the overall St. Joseph River tributary area, and b) the St. Joseph CSOs discharge to the St. Joseph at the far downstream end of the river. This means that well over 690,000 acres of tributary area have introduced loads to the river before the St. Joseph CSOs add their minimal contribution.

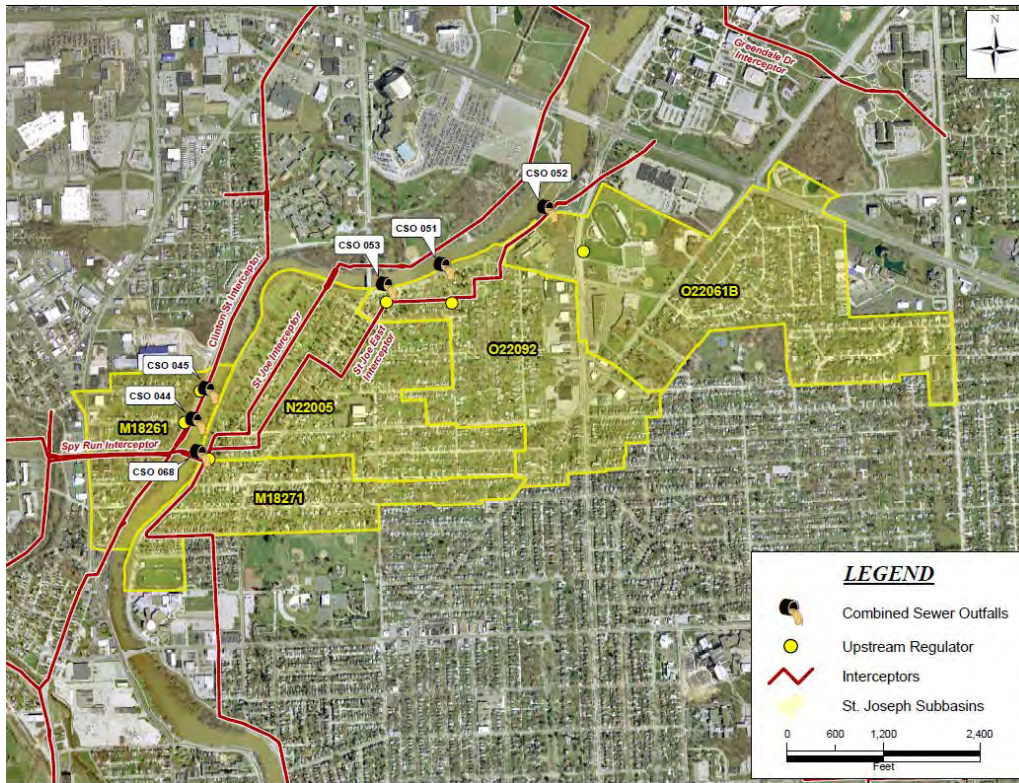
**Figure 3**  
**Lower St. Joseph Subwatershed With St. Joseph CSOs and Tributary Subbasins**



There are six CSOs on the St. Joseph River, as shown in more detail in Figure 4. Four of these overflows, CSOs 51, 52, 53, and 68, are on the east side of the river – these CSOs serve the area typically referred to as the “St. Joe Subbasins.” The remaining two overflows, CSOs 44 and 45, are small discharges that result from rather minor subbasins on the west side of the river. The compliance requirement for all six CSOs per Table 4.2.4.1 (CD Appendix 3) is to have untreated overflows limited to once per year during a typical year.



**Figure 4**  
**Detailed View of St. Joseph CSOs**



The first control measure required by the LTCP for the St. Joseph River CSOs was identification and implementation of cost-effective partial separation for the St. Joe Subbasins under the Combined Sewer System Capacity Improvement Program, prior to finalization of full CSO controls. The partial separation work was completed on schedule by 2010. Following this work, and with the support of refined collection system modeling tools developed since completion of the original LTCP, the City developed a revised and improved solution for the St. Joseph River CSOs. This improved solution was presented to the U.S. EPA and the IDEM (the “regulatory agencies”) in May 2013 (see previously submitted “Submittal in Support of Request for Approval of Revision of Certain Control Measures Specified by Approved Long-Term Control Plan,” dated May 15, 2013), and approved as a CD revision in January, 26, 2015 (see CSOCM 7&8 Approved Consent Decree Modifications in Attachment 1).

The improved solution for control of the St. Joseph River CSOs is made up of the following components:

- The St. Joe Control Structure, to increase the effective hydraulic capacity of the St. Joseph Interceptor during wet weather conditions by allowing flows from this interceptor to be conveyed directly to the Wet Weather Pump Station at times when the Water Pollution Control Plant is at full capacity, thus lowering the hydraulic grade line at the downstream end of the St. Joseph Interceptor; and
- The St. Joe Relief Sewer, to capture additional wet-weather flows prior to discharge from the eastern St. Joseph River CSOs and convey these flows to the St. Joseph Interceptor, thus taking

advantage of the increased effective hydraulic capacity in the St. Joseph Interceptor provided by the St. Joe Control Structure.

- Miscellaneous local improvements for the western St. Joseph CSOs to achieve required control levels.

In summary, these constructed components replaced the plan for satellite treatment and storage facilities (as proposed in the original LTCP) with a regional solution to control of the St. Joseph River CSOs through increased capture and conveyance of wet weather flows that otherwise would have been discharged at multiple CSOs for regional storage at the CSO Ponds.

#### **4. CSO Monitoring and Rainfall Monitoring**

The City has been collecting system-wide CSO outfall flow data since 2004, with 33 of 41 CSO locations (including the St. Joseph CSOs) monitored with continuous depth/velocity meters. In addition, the City has maintained a network of 10 rain gauges to measure rainfall across the service area since 1983. These monitoring programs provide a strong dataset for understanding baseline conditions, with 13 years of combined CSO and rainfall data on record.

As explained in the PCMP, these in-place programs provided an ideal platform to collect the requisite 12 months of rainfall and activation data following AFO for the St. Joseph CSOs. This 12-month post-construction monitoring period began on September 1, 2015, and was completed on September 1, 2016. A key purpose for this data was to support the model-based compliance assessment approach (see Section 6 below), but it can also be used for an informative comparative data analysis of pre- and post-construction behavior. With this analysis, however, it is important to emphasize that a single 12-month post-construction dataset presents only limited insight into long-term performance of CSO controls.

The flow monitoring data and rainfall data were analyzed for calendar years 2010 – 2014 (inclusive) to represent pre-construction conditions; calendar year 2015 was eliminated from consideration given that construction of controls was underway. Relevant metrics from these five pre-construction 12-month periods were then compared to the same metrics for the 12-month post-construction monitoring period. The results of the comparison are shown in Table 2, included at the end of this document.

Several pertinent observations from this comparison are as follows:

- The annual rainfall in the pre-construction years ranges from a low of 33.1 inches to a high of 49.6 inches, compared to the typical year average of 35.4 inches. This wide range illustrates the fact that in any given real calendar year, in-place CSO controls may experience rainfall that is dramatically different from a “typical” year, resulting in greater (or fewer) activations than a target “typical” year compliance level.
- The distribution of 6-hour duration events shown in the third column provides a summary of the actual number of events experienced as compared to a statistical return period expectation, and provides another indication of whether a given year was “wet” or “dry” relative to the long-term average. For example, in 2011, there were 18 real events with a 6-hour duration that equaled

or exceeded the depth associated with a statistically-based 1-month return period – this is an indication that 2011 was a wetter-than-typical year relative to this type of event.

- In terms of CSO metrics, the post-construction monitoring data shows a dramatic decrease in activations and volumes across all St. Joseph CSOs, with 0 monitored activations in the 12-month period at all but one location (CSO 052). While this data comparison is not the mechanism specified by the Consent Decree to assess compliance with Performance Criteria, it does provide an initial suggestion of the success of the LTCP solution in the St. Joseph River Watershed.
- Although 2 true wet-weather activations were detected at CSO 052 over the 12-month post-construction monitoring period, this monitoring period is only a single real year and does not constitute a “typical” year. While the monitored total rainfall for this 12-month period (34.55 inches) was slightly less than the typical year average (35.4 inches), the number of 6-hour duration events was higher, indicating a higher-than-typical proportion of larger events with the potential to trigger CSO activations. As shown in Section 6, below, the model-based compliance determination method specified by the Consent Decree shows the St. Joseph River CSOs to be in compliance with the Performance Criteria.

## **5. River Water Quality Sampling Results**

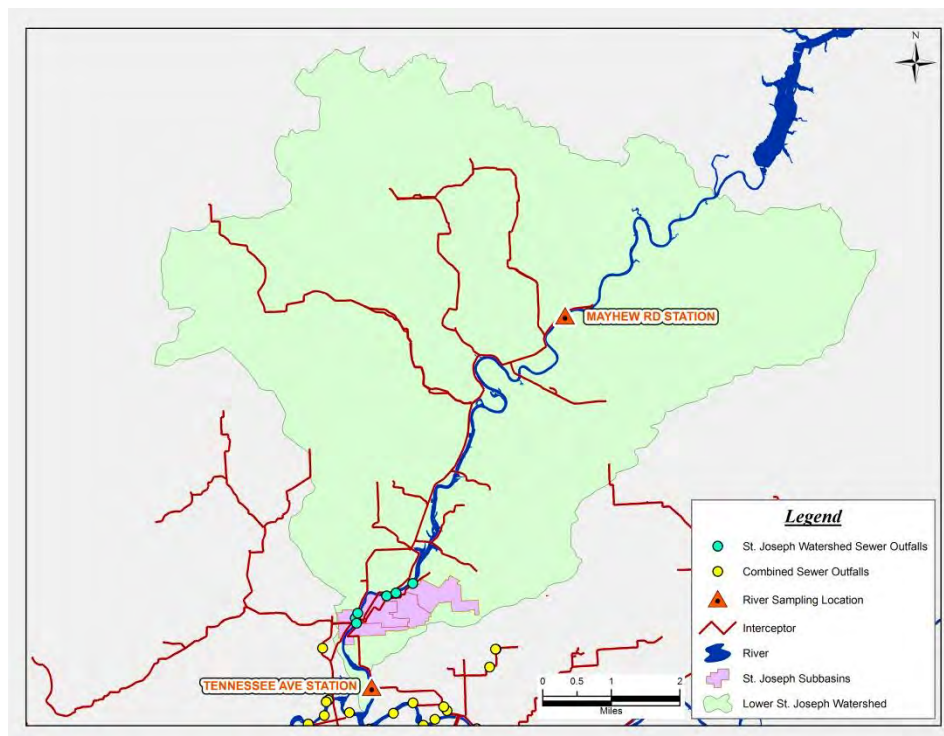
During the LTCP system characterization effort (Chapter 2 of LTCP) and through subsequent discussions with U.S. EPA and IDEM, the City identified *E. coli* bacteria as the parameter of concern in local waterbodies. The City utilized water quality sampling data collected from 2001 – 2016 in order to analyze trends in both dry-weather and wet-weather *E. coli* levels during pre- and post-construction periods.

In U.S. EPA’s December 2001 Report to Congress: Implementation and Enforcement of the Combined Sewer Overflow Control Policy, the agency noted that “In practice, it is often difficult, and in some instances impossible, to link environmental conditions or results to a single source of pollution, such as CSOs. In most instances, water quality is impacted by multiple sources, and trends over time reflect the change in loadings on a watershed scale from a variety of environmental programs.” As explained further below, the noted watershed-scale impacts on *E. coli* levels is clearly a factor in the St. Joseph River, with the St. Joseph CSOs having a minor effect with or without control.

The City utilized data from its cooperative river water quality sampling program with IDEM, which has been ongoing since 2001, to perform the water quality analysis for this Milestone Report. Under this program, the City collects water quality samples at six locations, including two locations on the St. Joseph River. The two locations on the St. Joseph River are shown in Figure 5; one is located at Mayhew Road, which is effectively an upstream boundary for impacts from City sources, and the other is located at Tennessee Avenue, just downstream of the St. Joseph CSO outfalls. Samples are collected once per month on a year-round basis in support of the IDEM program; the City increases the frequency to weekly sampling during the period April 1 to October 31



**Figure 5**  
**Location of Water Quality Sampling Locations on St. Joseph River**

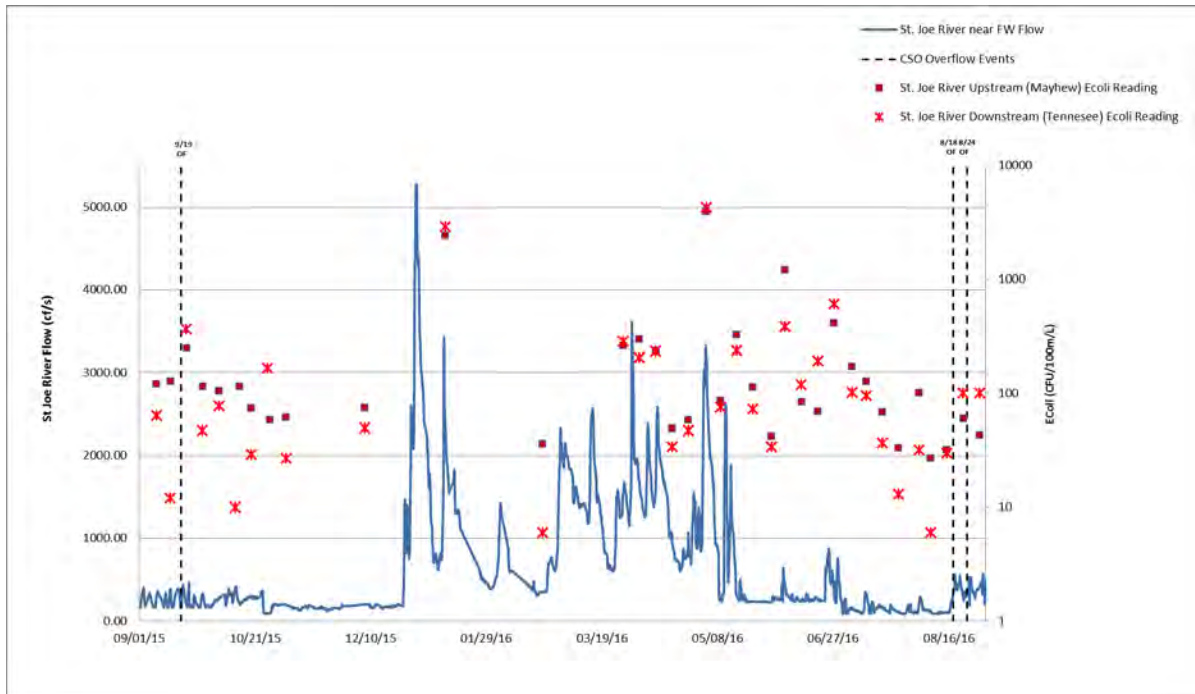


Data from the City's sampling program was used in two ways to examine *E. coli* levels in the St. Joseph River, each described below.

*E. coli* trends during the 12-month post-construction monitoring period: Figure 6 displays the *E. coli* sampling results from the St. Joseph River over the 12-month post-construction monitoring period from both the upstream (Mayhew) and downstream (Tennessee) sites, along with river flow (from USGS Gauge #04180500 at Mayhew Rd. Bridge) and the timing of monitored CSO 052 overflow events. Several conclusions can be drawn from this figure:

- *E. coli* levels are often higher at the upstream City boundary than at the location downstream of St. Joseph River CSO outfalls. Specifically for this 12-month period, out of 34 comparisons based on real sampling data, the upstream site had higher *E. coli* levels on 22 occasions.
- Second, the highest *E. coli* readings at the downstream site do not correlate to CSO activations. *E. coli* levels at the downstream Tennessee site were consistently less than 1000 cfu/100ml after each of the monitored CSO 052 activations (and as low as 100 cfu/100ml after two of the activations), compared to levels well over 1000 cfu/100ml at other times of the year. No activation occurred at any St. Joseph River CSO other than CSO 052.

**Figure 6**  
**E. coli Sampling Results During the 12-Month PCMP Monitoring Period**



Note: The CSO overflow event on 09/19/15 is being shown for completeness, but as explained in Section 4 this overflow was due to a temporary blockage and so is not a wet-weather activation. The temporary blockage was removed immediately.

*Informal assessment of E. coli water quality standards (WQS) attainment 2001 – 2016:* The weekly E. coli sampling results from April to October of each year provide an informal mechanism to assess whether current E. coli WQS would have been attained over the historical sampling period. With weekly sampling, the City collects at least 4, and sometimes 5, samples every calendar month. Grouping the samples by calendar month, and treating each calendar month as a 30-day period, provides 100 “sample sets” from each sampling location that can be used to assess compliance with Indiana’s E. coli WQS. The assessment is considered “informal” because it is not a strict application of the Indiana E. coli WQS, as many of the monthly sample sets include 4, rather than the minimum of 5, E. coli samples. However, it is still a valuable indicator of potential attainment based on an impressively long-term dataset.

Each monthly E. coli sample set was analyzed to determine the geometric mean and 90<sup>th</sup> percentile value, the two metrics used in the Indiana WQS. For the 90<sup>th</sup> percentile value, a simple linear interpolation method was used to estimate the value that represents the 90<sup>th</sup> percentile of the statistical distribution represented by the dataset.

Attachment 2 includes yearly plots of all the results, comparing geomeans and 90<sup>th</sup> percentile values at the upstream and downstream sites. The results of this analysis are consistent with the

conclusions drawn above from the individual *E. coli* sample values obtained during the 12-month post-construction monitoring period. From visual review, the results for any given year show that the downstream site (downstream of the St. Joseph CSOs) often has lower *E. coli* measures than the upstream site. Summarizing across all years, of the 100 available sample sets from 2001-2016, 71 (or 71%) showed non-attainment for *E. coli* at the upstream site (before City sources enter the river), and 76 (or 76%) showed non-attainment at the downstream site. The 90<sup>th</sup> percentile value controlled the non-attainment count, but the sample sets were often in violation of the geomean criterion as well.

In conclusion, both the individual *E. coli* samples from the 12-month post-construction monitoring and an analysis of monthly sample results for the 2001 – 2016 period reveal similar trends. The St. Joseph River is commonly in non-attainment of *E. coli* WQS upstream of the City boundary, before CSOs or other City sources contribute bacteria loads to the river. Further, there is no apparent trend suggesting that *E. coli* levels in the river downstream of the St. Joseph CSO discharges are consistently any higher than upstream of the CSO discharges, even before CSO controls were implemented (i.e. in the period from 2001 – 2014). These observations are consistent with the approved PCMP, which stated that it was unlikely that CSO controls alone will result in attainment of Indiana’s *E. coli* standards for primary contact recreation due to numerous *E. coli* sources in the environment.

## **6. Evaluation of the Effectiveness of CSO Control Measures**

Section 4.6.4.1 of CD Appendix 4 provides a detailed workplan for the Model-Based Approach to Assessing Compliance, which represents the required methodology for evaluating the effectiveness of CSO control measures. This workplan is summarized below, with the full text of Section 4.6.4.1 included in Attachment 3 for reference.

- Collect CSO outfall data for 12-months following AFO and QA/QC the data.
- Compare the CSO outfall data to a 12-month model simulation.
- “Model re-calibration will not be needed if the model achieves at least the same degree of calibration as was achieved for pre-CSO Long-Term Control conditions during the LTCP development process, and there is a high degree of agreement between the model output and CSO monitoring data for activation frequency.”
- If necessary, re-calibrate the model with two or more appropriate events.
- Verify the re-calibration with a final 12-month simulation.
- Apply the final model for the 5-year (1998-2002) typical year period.
- Assess compliance with the performance criteria as 24 or fewer simulated CSO events on the Maumee and St. Mary’s Rivers, and 6 or fewer simulated CSO events on the St. Joe River, over the simulated 5-year typical period.
- The overflow frequency performance criterion is based upon a “typical year,” calculated using the 5-year continuous simulation of the collection system model, as described above. If the modeled average annual overflow frequency is less than or equal to 1.2 for the St. Joseph River and 4.8 for the Maumee and St. Mary’s Rivers, the system is deemed to be in compliance with the performance criteria of 1 and 4 overflow events per year.

The City began the compliance assessment process by completing the model calibration check, using the 12 months of post-construction monitoring data collected after AFO of the St. Joseph River CSOs. A full description of the model calibration check is included as a Technical Memorandum in Attachment 4. The conclusion from the model calibration check was that the collection system model achieves at least the same degree of calibration for AFO conditions as was achieved for pre-CSO Long-Term Control conditions during the LTCP development process, and there is a high degree of agreement between the model output and CSO monitoring data for activation frequency. Therefore, the model was confirmed as an appropriate calibrated tool to perform the 5-year typical period simulation.

Following confirmation of the model calibration, the 5-year typical period simulation was performed for the 1998-2002 period, and activation counts at the St. Joseph CSOs were tabulated from the results. The predicted activation counts are shown in Table 4.6.2.1 (the approved summary format from CD Appendix 4), included at the end of this document. The results shown in the table confirm that the St. Joseph CSOs meet the required Performance Criteria in Table 4.2.4.1 and so are in compliance with the requirements of the CD.

## **7. Status of Upcoming CSO Control Measures in Other Watersheds**

This section provides an overview of upcoming CSO Control Measures in other watersheds, reporting on status of construction schedules, etc. Please note that regular updates of this information are provided every six months in Appendix 1 of the City's Consent Decree Status Reports.

CSO Control Measure 6 – Combined Sewer System Capacity Improvement Programs (CSSCIP) – Basins Tributary to 3RPORT (formerly Parallel Interceptor), all river watersheds: This Control Measure identifies and implements cost-effective sewer separation in combined sewer subbasins in order to reduce the amount of wet-weather flow reaching regulator structures. Much of the work under this control measure has been completed, but remaining work is ongoing for the following CSO outfalls:

- CSO Outfalls 027 & 033 – final design is underway.
- CSO Outfall 48 – construction has been initiated.

CSO Control Measure 9 – Conveyance and/or Storage (formerly Satellite Disinfection, approved as a CD revision on November 2, 2016, see CSOCM 9 approval letter in Attachment 1), Maumee River Watershed and St. Marys River Watershed: Under this Control Measure, flows from CSO 061 and 062 up to the required control level will be conveyed to the Wet-Weather Ponds for storage, and a satellite storage facility will be constructed as necessary to achieve the required control level at CSO 054. The status of these improvements is as follows:

- CSO Outfalls 061 and 062 – final design has been completed, and bids received.
- CSO Outfall 054 – Advanced facilities planning is underway to optimize the final control technology, accounting for flow reduction at CSO 054 resulting from implementation of the CSSCIP under CSO Control Measure 4.

CSO Control Measure 10 – Morton Street/O10101 Reroute, Maumee River Watershed: Under existing conditions, CSO 048 is a pumped discharge to the Maumee River. Under CSO Control Measure 10, this pumped discharge up to the required control level will be rerouted to storage at the Wet-Weather Ponds. The design for these required improvements is currently ongoing.

CSO Control Measures 11 & 12 – Wayne Street and St. Marys Parallel Interceptors, Maumee River and St. Marys River Watersheds: As the agencies are aware, the City has submitted a request to modify these Control Measures to provide improved CSO control. The improved solution is made up of the 3RPORT Tunnel and Foster Park Relief Sewer. The status of the 3RPORT Tunnel and Foster Park Relief Sewer is as follows:

- The City's public outreach program for the 3RPORT is ongoing, to provide information to and solicit input from ratepayers.
- Final design of the Tunnel and Drop Shafts Package has been completed, and bids received.
- Final design of the Consolidation Sewers Package is ongoing.
- Final design of the Deep Dewatering Pump Station Package is ongoing.
- Construction of solution components east of the Water Pollution Control Plant (surface sewers and regulator modification) is ongoing.
- Final design of the Foster Park Relief Sewer is ongoing.

CSO Control Measure 13 – Late Floatables Control, all river watersheds: Under this Control Measure, overflow-specific controls are implemented at CSOs where solids and floatables controls are not being addressed as part of a broader Control Measure. Current projects under this Control Measure are addressing CSO Outfall 060 (construction ongoing) and CSO Outfalls 061 & 062 (final design completed, bids received).

CSO Control Measure 14 – Satellite Storage, Maumee River Watershed: Under this Control Measure, satellite storage is proposed for CSO 064. Advanced facilities planning is underway to optimize the final control technology, accounting for flow reduction at CSO 064 resulting from implementation of the CSSCIP under CSO Control Measure 4.

Table 2  
Summary of Rainfall and Flow Monitoring Data Analysis

Year	Total Rainfall Depth (in)	Distribution of 6-Hour Duration Events				Monitored CSO Metrics											
						CSO 44		CSO 045		CSO 051		CSO 052		CSO 053		CSO 068	
		1-Month	3-month	6-month	1-Year	Activations	OF Volume (MG)	Activations	OF Volume (MG)	Activations	OF Volume (MG)	Activations	OF Volume (MG)	Activations	OF Volume (MG)	Activations	OF Volume (MG)
2010	33.1	13	7	1	0	5 <sup>(1)</sup>	0.146	6	0.162	24	3.778	28	4.754	12	1.677	8	0.575
2011	49.59	18	5	2	2	5	0.063	4	0.09	18	0.95	35	12.05	6	0.62	19	3.12
2012	28.58	10	4	1	0	0	0	0	0	7	0.078	19	2.546	2	0.019	4	0.071
2013	42.21	15	8	2	1	9	0.431	1	0.056	23 <sup>(1)</sup>	1.282	41	16.121	10	2.108	10	1.887
2014	42.81	13	7	5	4	6	0.039	1	0.028	23	0.991	48	20.218	9	0.45	11	0.503
2015	CONSTRUCTION PERIOD																
Sep 1, 2015 - Sep 1, 2016 (PCMP Monitoring Period)	34.55	13	4	3	2	0	0	0	0	0	0	3 recorded, 2 true <sup>(2)</sup>	0.100	0	0	0	0
Expected Return Period Depth (in)																	
Ideal Number of Events in 1-Year Period		0.63	1.04	1.36	1.64												
		12	4	2	1												

Notes:  
(1) These activation counts have been corrected since submittal of DMRs, based on additional data review.  
(2) One recorded activation at CSO 052 (on September 19, 2015) was due to a blockage in the regulator and not due to excess wet-weather flows. This blockage was immediately cleared.

**Table 4.6.2.1**  
**Post-Construction Monitoring for CSO Control Measures by River Watershed**

Watershed	CSO Control Measure		CSOs Controlled (By Overflow Permit ID)	Monitoring Data		Typical Year Performance		Overflow Frequency Performance Criteria Achieved (Yes/No) <sup>(1)</sup>	Comments
				CSO Volume (MG)	Overflow Frequency By Watershed	CSO Volume (MG)	Overflow Frequency By Watershed		
St. Joseph River	7, 8 <sup>(2)</sup>	Conveyance and Regional Storage	51, 52, 53, 68	0.1	2	0.02	0.6	Yes	2 activations in the 12-month PCMP monitoring period can be explained by a higher-than-typical proportion of larger events - see Section 4 for additional details.
		Miscellaneous Improvements	44, 45						

- Notes:
- (1) Typical Year Performance Criteria of 1 overflow event (for the St. Joseph River) is based on average annual statistics over a representative five-year period (with 1.2 overflow events per year allowed based on raw model results). The methodology used for assessing compliance with this criterion is presented in Section 6.
- (2) Original CSO Control Measures 7 and 8 were replaced with an improved solution as part of the approved CD revision dated abc, 20xx. Please see Section 3 for details.

## **ATTACHMENT 1**

**CD Revisions for CSOCM 7 and 8:  
Agreed Consent Decree Modifications dated January 26, 2015**

**CD Revisions for CSOCM9  
Approval Letter dated November 2, 2016**



IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF INDIANA  
FORT WAYNE DIVISION

UNITED STATES OF AMERICA

and

THE STATE OF INDIANA,

Plaintiffs,

v.

THE CITY OF FORT WAYNE,  
INDIANA,

Defendant.

Civil Action No. 2:07-cv-00445-PPS-APR

**AGREED CONSENT DECREE MODIFICATION**

WHEREAS:

A. On April 1, 2008, the United States District Court for the Northern District of Indiana approved and entered a Consent Decree between the United States and State of Indiana (collectively “Plaintiffs”) and the City of Fort Wayne, Indiana (“Fort Wayne” or “Defendant”) in a case captioned *United States, et al. v. City of Fort Wayne*, Civil Action No. 2:07-cv-00445-PPS-APR (Doc. No. 4).

B. The objective of the Consent Decree is for Defendant to achieve and maintain full compliance with the Clean Water Act, applicable state law, and Fort Wayne’s Current National Pollution Discharge Elimination System Permit issued pursuant to the Clean Water Act for Defendant’s Wastewater Treatment Plant and Sewer System.

C. Paragraphs 14 and 16 of the Consent Decree require the Defendant to construct the Combined Sewer Overflow Control Measures set forth in Appendix 3 to the Consent Decree in accordance with the descriptions, Design Criteria, and schedule set forth in Appendix 3, and to achieve the specified Performance Criteria in accordance with the schedule set forth in Appendix 3.

D. In the course of implementing the Consent Decree, Fort Wayne has determined that certain of the Combined Sewer Overflow (“CSO”) Control Measures (requiring satellite storage and disinfection) that it had previously selected and agreed to are not ideal, and that better solutions exist for the affected CSOs. Fort Wayne has proposed, and the U.S. Environmental Protection Agency (“EPA”) and the Indian Department of Environmental Management (“IDEM”) have agreed to, an alternative approach for CSO Control Measures 7 and 8, and Fort Wayne is developing a proposed alternative approach for Control Measure 9 for consideration and, if appropriate, approval by, EPA and IDEM.

E. Paragraph 81 of the Consent Decree provides that any modification of the Consent Decree, including any attached appendices, may be made only by the written approval of all Parties. Where a modification also constitutes a “material change” to the Consent Decree, it shall be effective only upon approval by the Court. At least some of the modifications that the Parties propose herein constitute “material changes” and require judicial approval.

Changes to Appendices 3 and 4 concerning CSO Control Measures 7 and 8

F. EPA and IDEM have agreed to Defendant’s proposal to combine and modify CSO Control Measures 7 and 8. Instead of using remote storage and disinfection to control the overflow from CSO Outfalls 45, 51, 52, 53 and 68, covered by Control Measures 7 and 8, as originally specified by Consent Decree Appendix 3, Fort Wayne shall expand the St. Joseph

Interceptor to accommodate the flow from Outfalls 45, 51, 52, 53 and 68. This “St. Joseph Interceptor” Control Measure is designated as Control Measure 7 in the Revised Appendix 3 (which is attached in redlined format as Attachment 1). CSO Control Measure 8 has been eliminated.

G. This modification extends one interim deadline applicable to Outfall 52 (which had been in the prior Control Measure 8) by one year, from December 2014 to December 2015, but the completion schedule for all of the CSO Control Measures for the St. Joseph River CSO Outfalls (45, 51, 52, 53 and 68) will be considerably accelerated with the revised approach (Revised Control Measure 7 in Revised Appendix 3, Attachment 1 hereto). The deadline for completion will move up from December 2019 to December 2015.

H. The proposed modification to these Control Measures is required and expected to achieve the Performance Criteria originally specified in Appendix 3 for the St. Joseph Combined Sewer Overflows (CSOs) (one overflow per typical year) and is expected to provide water quality benefits that meet or exceed those that would be obtained by the measures that were originally required for these CSOs. Revised CSO Control Measure 7 also costs less.

I. A modification is also proposed for Paragraph 4.6.2 in Appendix 4 to the Consent Decree (attached in redlined form here to as Attachment 2) to reflect the earlier deadline by which the St. Joseph River Interceptor Control Measure will achieve final operation (by December 2015, instead of December 2019).

Changes to Appendices 3 and 4 and Consent Decree Section XXI.G/Paragraph 103

Concerning CSO Control Measure 9

J. The Parties also take this opportunity to build some flexibility into the Consent Decree for Control Measure 9, to allow Fort Wayne to propose for EPA and IDEM approval

a Control Measure other than those that are currently specified in Appendix 3. As entered by the Court, Appendix 3, footnote 8, provides:

The preferred CSO Control Measure for these CSOs is Satellite Disinfection based on the technology screening and selection process conducted by the City. The City will proceed as described in Section 4.6 of Appendix 4 to conduct a Satellite Disinfection Pilot Study if it ultimately elects to construct one or more Satellite Disinfection facilities. Alternatively, the City may elect to construct Satellite Storage facilities that will achieve the same Level of Control. The City will construct Satellite Storage facilities in lieu of Satellite Disinfection facilities if it comes to acquire, by January 1, 2010, the wastewater collection and treatment systems currently owned or operated by Utility Center, Inc. (a/k/a AquaSource or Aqua Indiana, Inc.) and connected to the Main Aboite and Midwest wastewater treatment facilities (for which the State has issued NPDES Permit Nos. IN0035378 and IN0042391).

K. EPA and IDEM have been in discussions with Fort Wayne concerning CSO Control Measure 9, and EPA and IDEM agree that satellite disinfection may not be the optimal remedy for the outfalls on the St. Marys and Maumee Rivers that are to be addressed by this Control Measure. The City may develop an alternative solution for these outfalls and has indicated that it may wish to propose a relief sewer approach (not dissimilar from the improved solution now set forth in proposed CSO Control Measure 7). However, the City's plans for a possible improved solution for CSO Control Measure 9 are not as developed as those for CSO Control Measures 7 and 8. Rather than specifying an alternative approach now, the Parties propose to allow the City the flexibility to propose its solution subject to EPA and IDEM approval, when it has been sufficiently developed. Any such proposed Alternative Control Measure must meet the Level of Control/Performance Criteria and Critical Milestones previously agreed to for Control Measure 9 (but see Paragraph P, below) and as currently set forth in proposed Revised Appendix 3 (Attachment 1 hereto). If the City fails to propose, or EPA does not approve, an Alternative Control Measure, the City remains obligated to

construct the Satellite Disinfection system that was originally required by the Consent Decree and that remains the specified CSO Control Measure for these CSOs in Revised Appendix 3 (Attachment 1).

L. Finally, footnote 8 of Appendix 3, as set forth above, specifies that the City may elect to construct Satellite Storage facilities in lieu of the Satellite Disinfection facilities, and that it would in fact construct them (“The City will construct . . .”) if the City acquired certain necessary property and facilities by January 1, 2010. EPA and IDEM do not currently believe that Satellite Storage is in fact an optimal approach for the St. Marys and Maumee Rivers CSOs, and, in any event, despite its efforts, the City was unable to timely acquire the necessary property and facilities. Thus, this aspect of the footnote is now moot.

M. Accordingly, the Parties propose to revise footnote 8 of Appendix 3 as follows (and as shown in Revised Appendix 3, Attachment 1 hereto):

The preferred CSO Control Measure for these CSOs is Satellite Disinfection based on the technology screening and selection process conducted by the City. The City will proceed as described in Section 4.6 of Appendix 4 to conduct a Satellite Disinfection Pilot Study if it ultimately elects to construct one or more Satellite Disinfection facilities. ~~Alternatively, the City may elect to construct Satellite Storage facilities that will achieve the same Level of Control. The City will construct Satellite Storage facilities in lieu of Satellite Disinfection facilities if it comes to acquire, by January 1, 2010, the wastewater collection and treatment systems currently owned or operated by Utility Center, Inc. (a/k/a AquaSource or Aqua Indiana, Inc.) and connected to the Main Aboite and Midwest wastewater treatment facilities (for which the State has issued NPDES Permit Nos. IN0035378 and IN0042391).—~~Alternatively, the City may pursue construction of an Alternative Control Measure, including one or more satellite storage or other facilities, in lieu of satellite disinfection facilities as the CSO Control Measure for Outfalls 54, 61 and/or 62. Any such proposed Alternative Control Measure must meet the Level of Control/Performance Criteria and Critical Milestones previously agreed to for Control Measure 9 and as currently set forth in this Revised Appendix 3. If Fort Wayne pursues the selection of other facilities in lieu of satellite disinfection it shall submit an Alternative Control Measure Proposal by December 15, 2016 for approval under Paragraph 103 of the Consent Decree. The Proposal shall include a full discussion of the justification for the selection.

N. The Parties also propose minor revisions to the Consent Decree to bring the Alternative Control Measure Proposal within the ambit of the existing EPA/IDEM approval process set forth in Section XXI.G (Paragraphs 103-109, pp. 47-49) the Decree (Doc. 4, pp. 50-52). Specifically, the Parties propose that the Paragraph heading for Section XXI.G and Paragraph 103 be revised as follows:

G. EPA and IDEM Approval of Submissions Pursuant to Sections XXI.A-F and Appendix 3, note 8

103. For all plans, reports, and other documents that Fort Wayne is required to submit to EPA and IDEM for approval in accordance with Sections XXI.A-F and Appendix 3, note 8, EPA and IDEM shall, in writing: (i) approve the submission . . . .

O. The Parties also agree to modify Paragraph 4.6.3.4.2 of Appendix 4, the Post Construction Monitoring Plan, to acknowledge that satellite disinfection at Outfalls 54, 61 and 62 may not occur, because Fort Wayne, as discussed above, may propose a Control Measure other than satellite disinfection. *See* Attachment 2, hereto.

Change to Appendix 3 to Correct Typographical Error Concerning Performance Criteria for CSO Control Measure 9

P. The Parties also take this opportunity to correct a longstanding typographical error in Appendix 3 concerning the Performance Criteria for CSO Control Measure 9, which addresses the Maumee River Outfalls (CSOs 54, 61 and 62). As correctly stated in footnote 7 of Appendix 3, “CSO Control Measure [9] will be designed to achieve Performance Criteria of 4 CSO events for the St. Marys and Maumee Rivers . . . in a ‘typical year.’” This was also discussed in the United States’ Motion to Enter Consent Decree and Memorandum in Support, which stated that CSO Control Measure 9 “is expected to reduce the number of CSOs from

roughly 60 per year currently to four per typical year on the Maumee [River] . . . .” Doc. 3, p. 8.

However, the Performance Criteria for Control Measure 9 set forth in the text box of Appendix 3 mistakenly calls for Outfalls 54, 61 and 62 to be controlled to one overflow in a typical year.

Therefore, the Parties have agreed that the Performance Criteria in the text box for Control Measure 9 should be corrected from one overflow event per typical year to four overflow events per typical year, as correctly set forth in footnote 7 and as previously explained to the Court.

This correction is shown in the Revised Appendix 3 (Attachment 1).

.....

The Parties hereto agree, and the Court by entering this Agreed Consent Decree Modification finds, that entry of this Modification is fair, reasonable, and in the public interest;

NOW, THEREFORE, upon consent of the Parties hereto, before the taking of testimony, and without any adjudication of issues of fact or law, it is hereby ORDERED, ADJUDGED AND DECREED as follows:

1. The Consent Decree shall remain in full force and effect in accordance with its terms, except as follows:

a. The attached Revised Appendix 3 (Attachment 1) shall be substituted for the Appendix 3 currently filed with the Decree.

b. The attached Revised Appendix 4 (Attachment 2) shall be substituted for the Appendix 4 currently filed with the Decree.

c. Section XXI.G (Paragraphs 103-109, pp. 47-49) the Consent Decree (Doc. 4, pp. 50-52) shall be revised as follows:

G. EPA and IDEM Approval of Submissions Pursuant to Sections XXI.A-F and Appendix 3, note 8

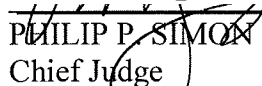


103. For all plans, reports, and other documents that Fort Wayne is required to submit to EPA and IDEM for approval in accordance with Sections XXI.A-F and Appendix 3, note 8, EPA and IDEM shall, in writing: (i) approve the submission . . . .

2. This Agreement may be executed in counterparts.

3. This Agreed Consent Decree Modification shall be lodged with the Court for a period of not less than 30 days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding this First Amendment to the Consent Decree disclose facts or considerations indicating that the Amendment is inappropriate, improper, or inadequate. Defendant hereby agrees not to withdraw from, oppose entry of, or to challenge any provision of this Consent Decree, unless the United States has notified Defendant in writing that it no longer supports entry of the Consent Decree.

This First Amendment to the Consent Decree is entered and approved this 26<sup>th</sup> day of Jan., 2014.

s/Philip P. Simon  
  
PHILIP P. SIMON  
Chief Judge





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

NOV 02 2016

REPLY TO THE ATTENTION OF:  
WC-15J

**BY ELECTRONIC MAIL AND BY CERTIFIED MAIL** 7014 2870 0001 9580 7887  
**RETURN RECEIPT REQUESTED**

Mr. Matthew Wirtz  
Deputy Director, Engineering  
Citizens Square  
200 E. Berry St.  
Fort Wayne, Indiana 46802

Subject: Approval of Alternative to Combined Sewer Overflow Control Measure (CSOCM) #9,  
for Combined Sewer Overflows (CSOs) #54, #61 and #62  
Pursuant to Consent Decree #2:07cv00445-PPS-APR as Modified

Dear Mr. Wirtz:

The U.S. Environmental Protection Agency and Indiana Department of Environmental Management (IDEM) have received and reviewed the City of Fort Wayne's (City's) September 15, 2015 request for the approval of alternative control measures to satellite disinfection for CSOs #54, #61, and #62.

For CSO #54, the proposed alternative consists of the construction of a proposed .20 million gallon storage basin in lieu of satellite disinfection. For CSOs #61 and #62, the proposed alternative consists of the construction of a 54 inch diameter relief sewer from the CSOs to convey those flows to the wastewater wet weather excess flow ponds for full treatment in lieu of satellite disinfection.

EPA and IDEM reviewed the City's request and subsequent technical engineering submittals pursuant to Paragraph M, Page 5 of the Third Consent Decree Modification in *United States of America and State of Indiana v. The City of Fort Wayne, Indiana* (#2:07cv00445-PPS-APR).

Pursuant to Paragraph 103 of the Consent Decree, EPA in consultation with IDEM, approves the City's alternative Control Measure #9 (CM#9) for CSOs #54, #61 and #62 as meeting the obligations set forth in the aforementioned paragraph.

The Design Criteria for Control Measure #9 is:

- For CSO #54, "To construct a .20 million gallon storage basin."
- For CSOs #61 and #62, "To construct a 54 inch diameter relief sewer for conveyance from these CSOs to the wet weather excess flow ponds."

The Performance Criteria for Control Measure #9 remains the same.

The Critical Milestones, are that the City must meet the following dates:

- For CSO 54: Operation - December 31, 2020
- For CSO # 61 and # 62: Operation - December 31, 2018

The City must complete construction and have operational Control Measure #9 consistent with the above Design Criteria, the Performance Criteria as previously agreed and in accordance with the approved Long Term Control Plan and terms of the Consent Decree.

If you have any questions or concerns regarding this letter, contact John "Jack" J. Bajor, Jr., of my staff at 312-353-4633 or via email at [bajor.john@epa.gov](mailto:bajor.john@epa.gov).

Sincerely,



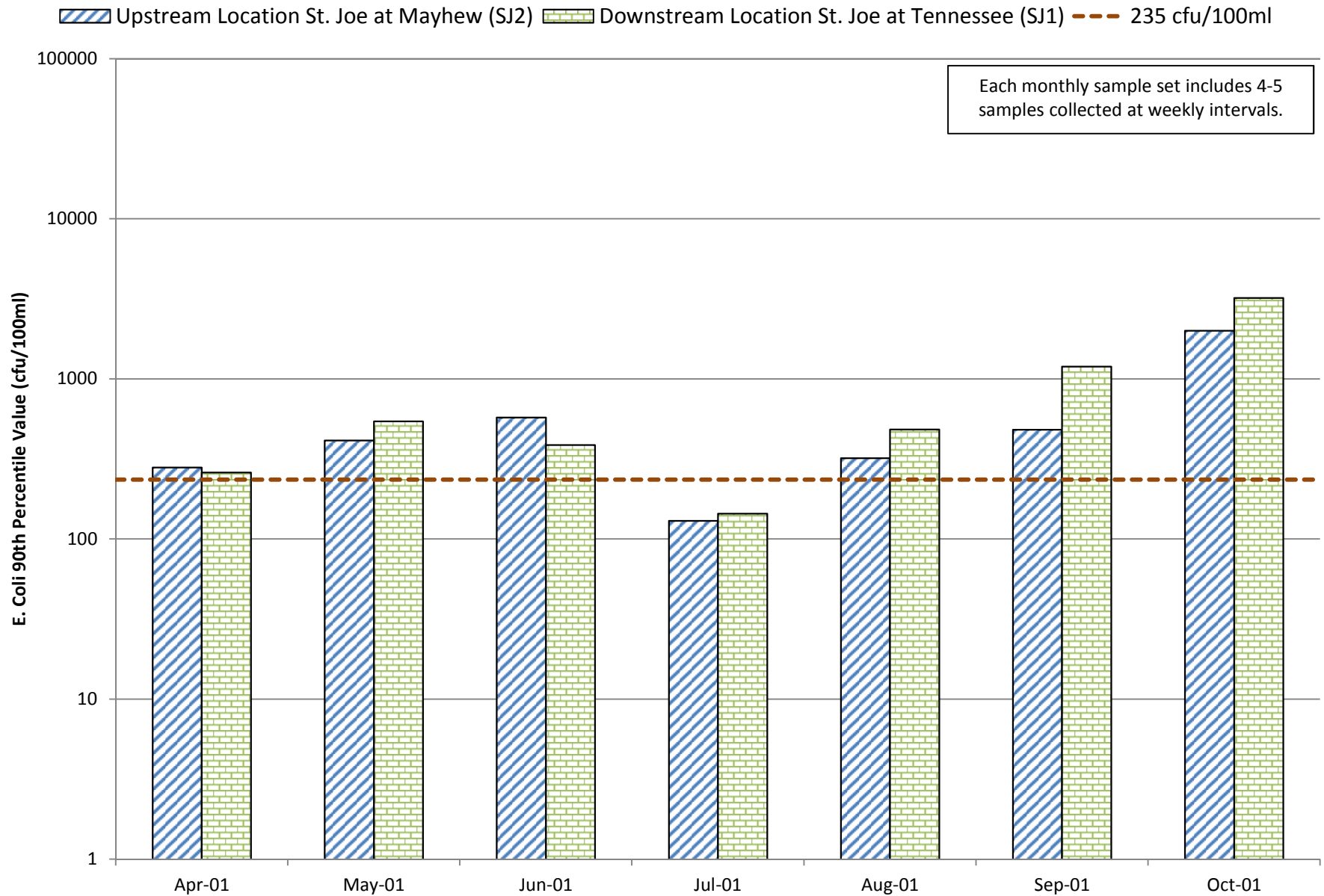
Christopher Korleski  
Director, Water Division

cc: Beth Admire, IDEM (via email)  
Lynn Riddle, IDEM (via email)  
Leslie Allen, DOJ (via email)  
Mark Pollins, OECA (via email)

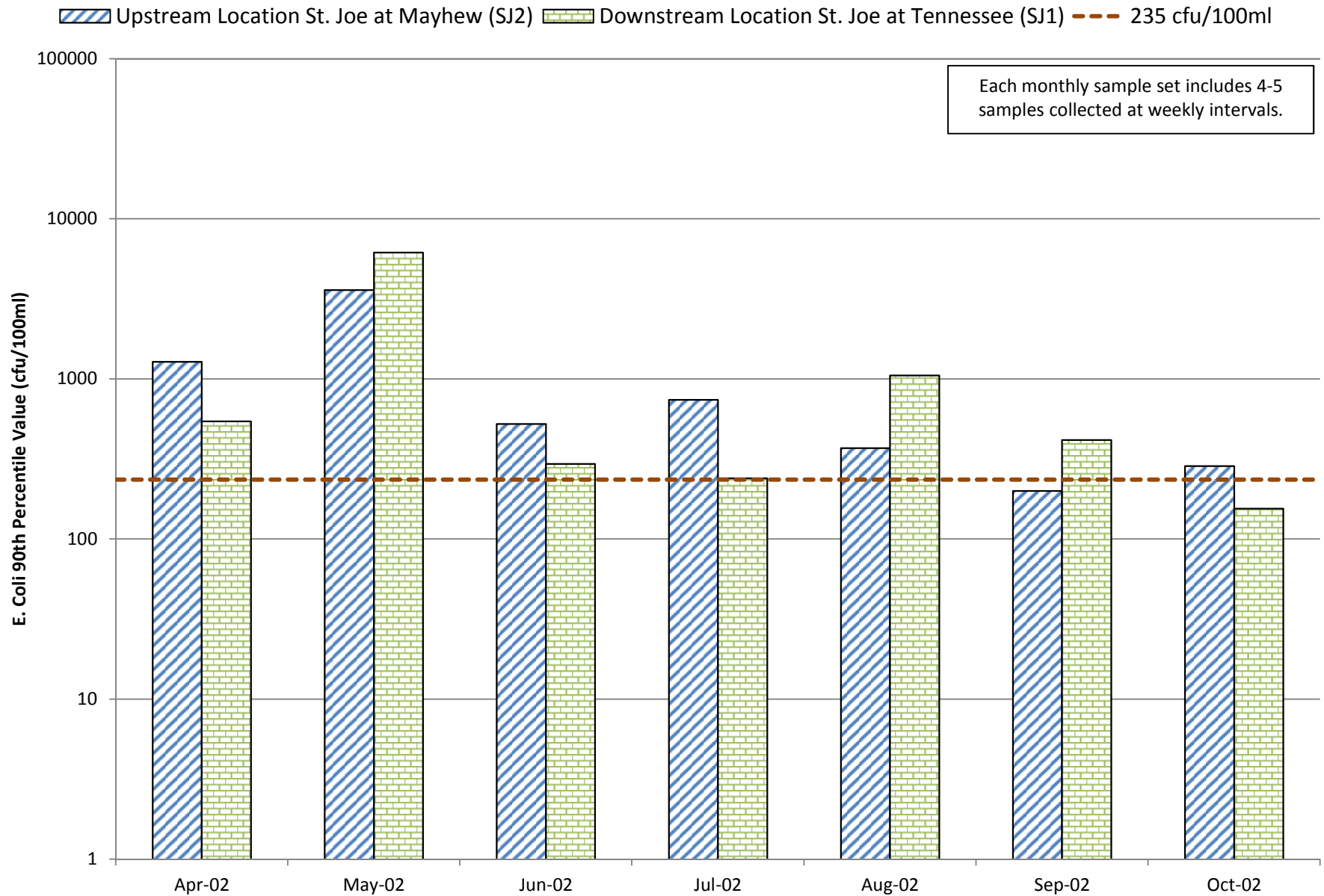
## ATTACHMENT 2

30-day Period E.coli Geomeans and 90<sup>th</sup> Percentile Values  
Based on 2001-2016 Historical Sampling Data

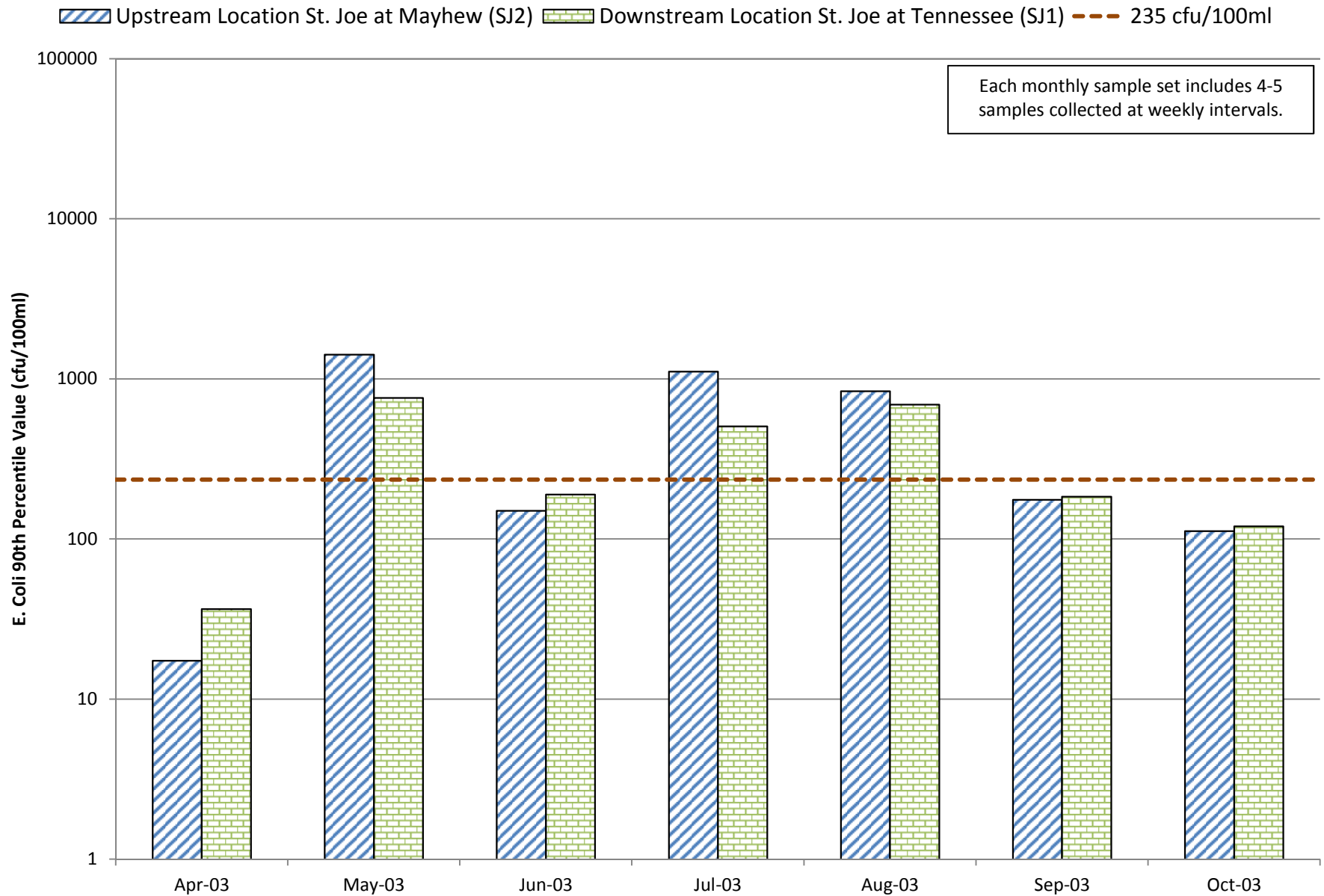
## Calculated E. coli 90th Percentile from Sampling Results - 2001



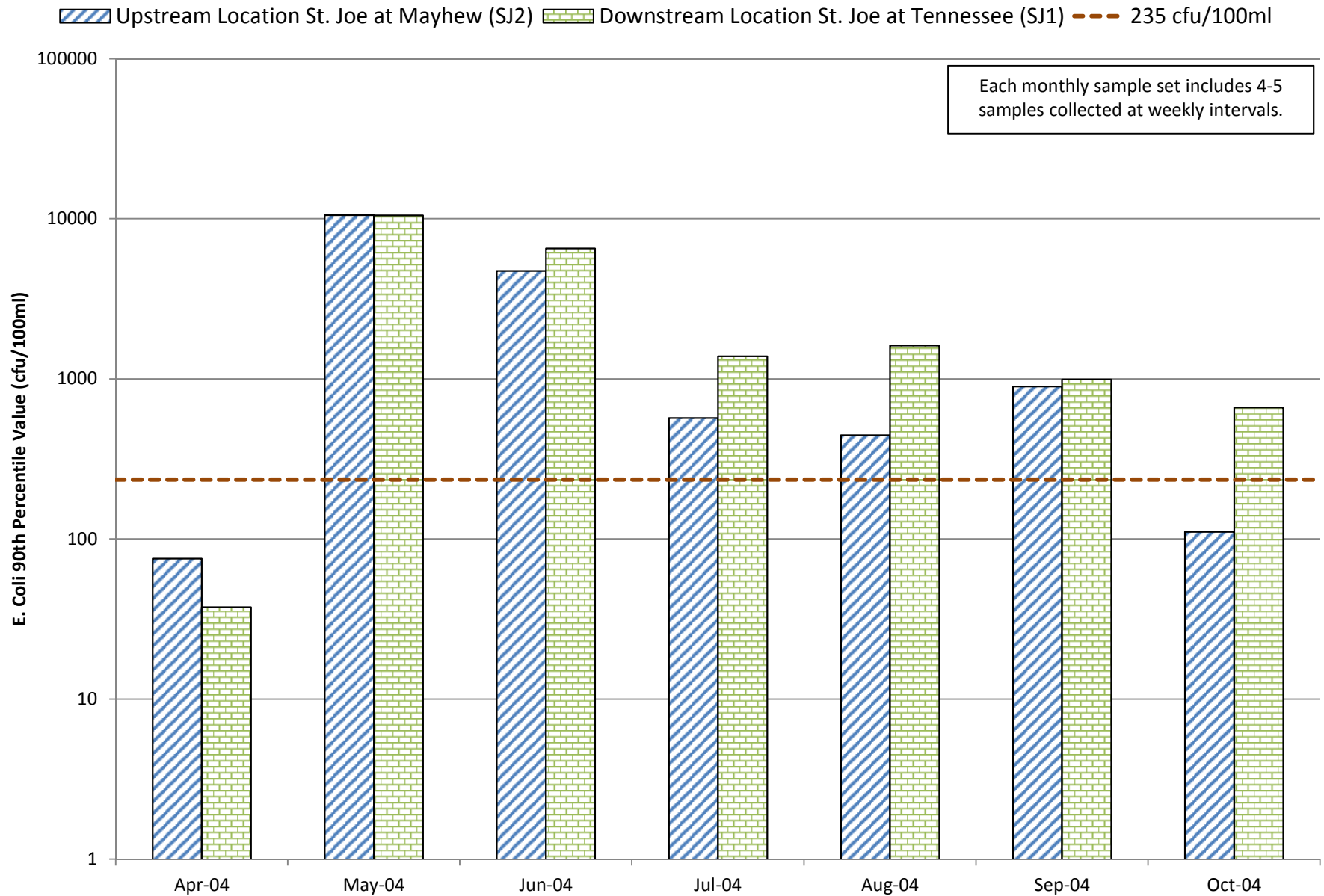
## Calculated E. coli 90th Percentile from Sampling Results - 2002



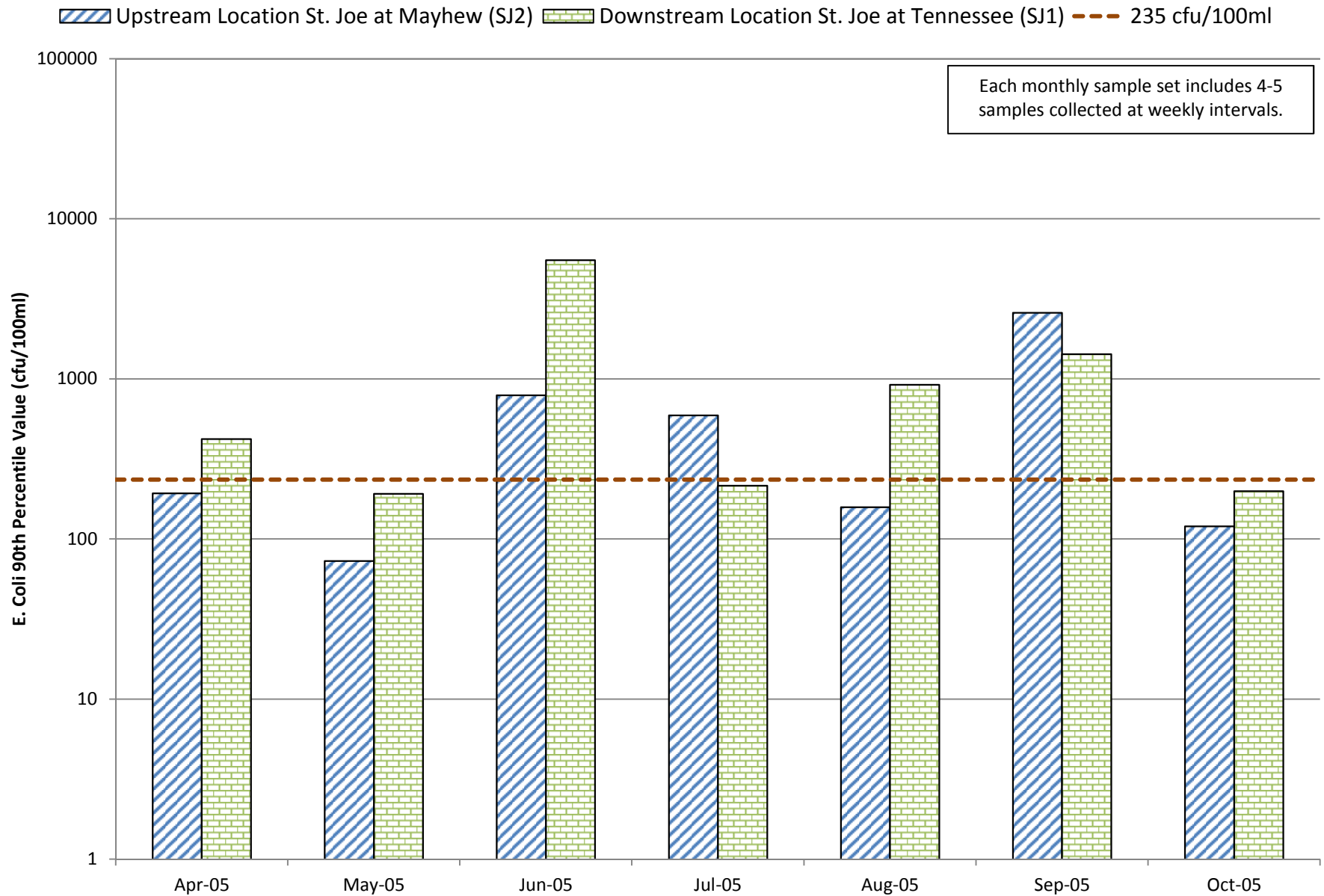
## Calculated E. coli 90th Percentile from Sampling Results - 2003



## Calculated E. coli 90th Percentile from Sampling Results - 2004

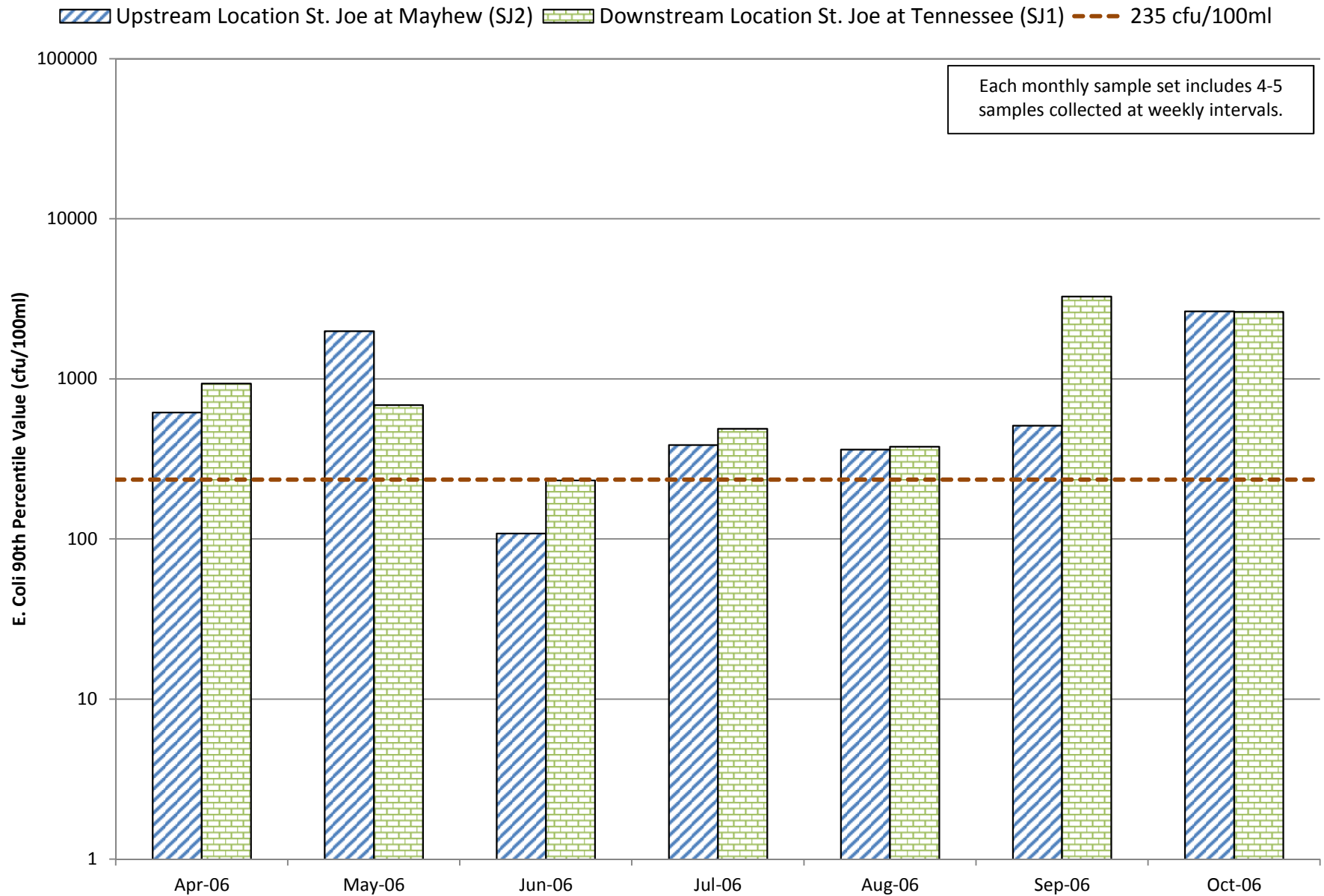


## Calculated E. coli 90th Percentile from Sampling Results - 2005

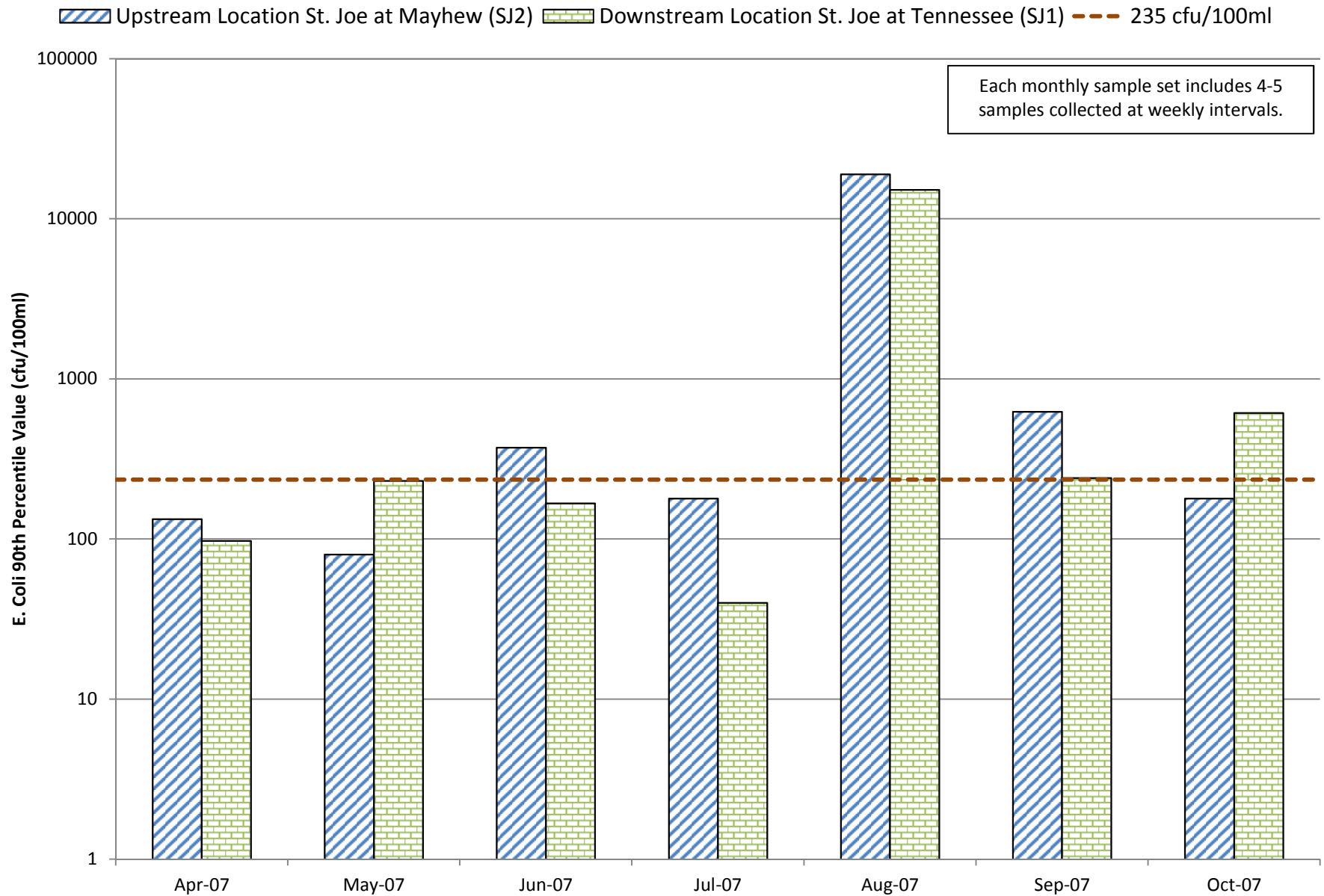




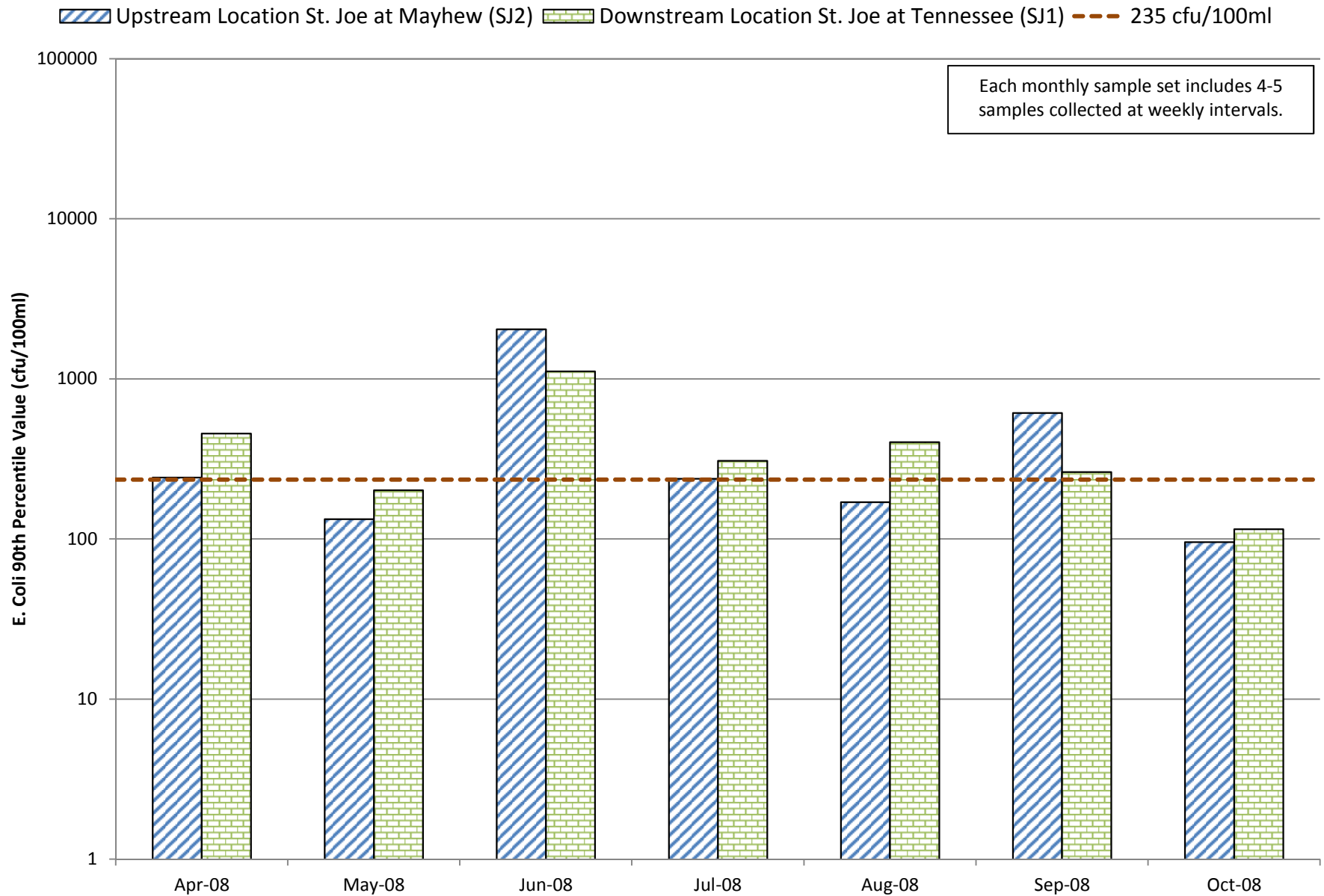
## Calculated E. coli 90th Percentile from Sampling Results - 2006



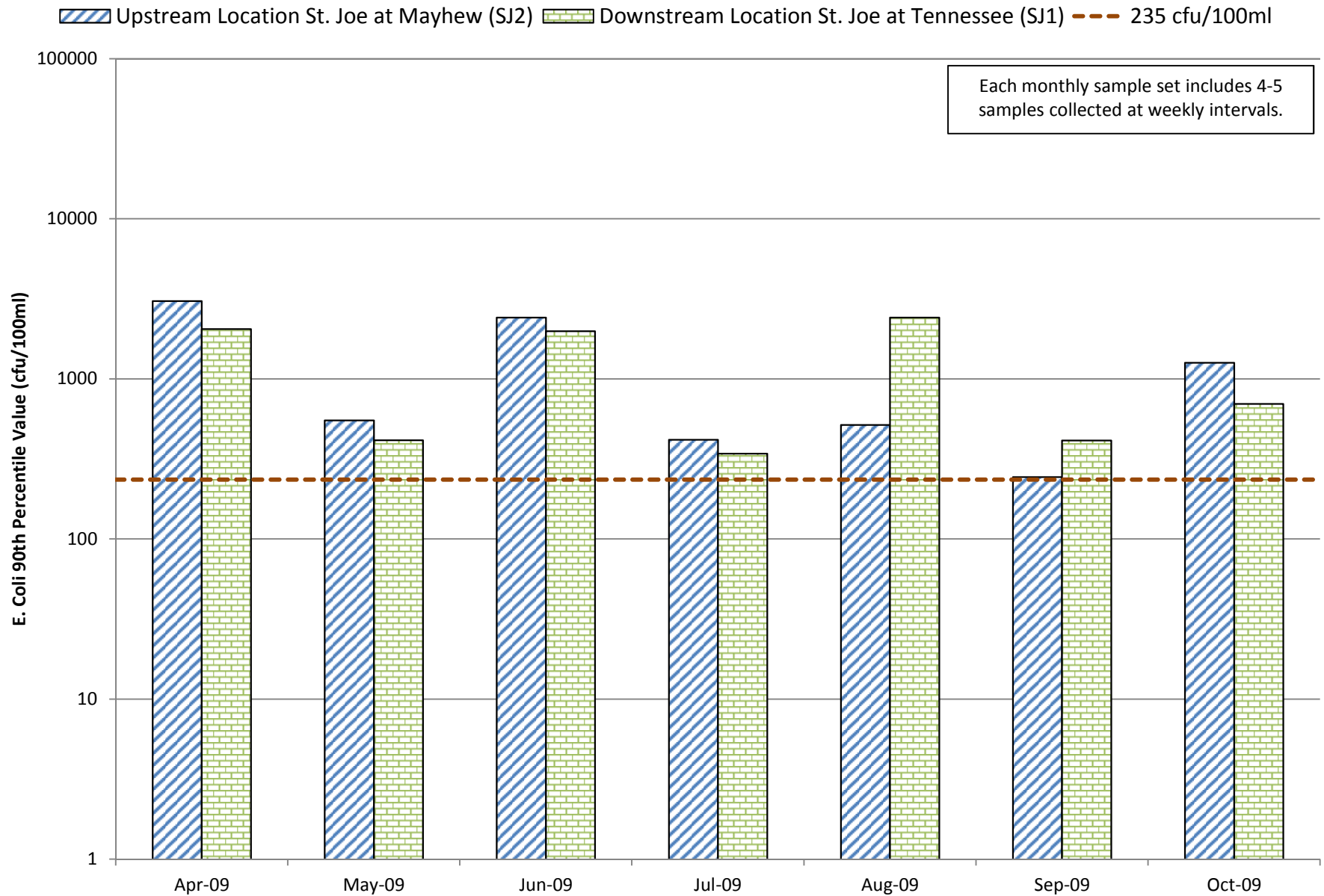
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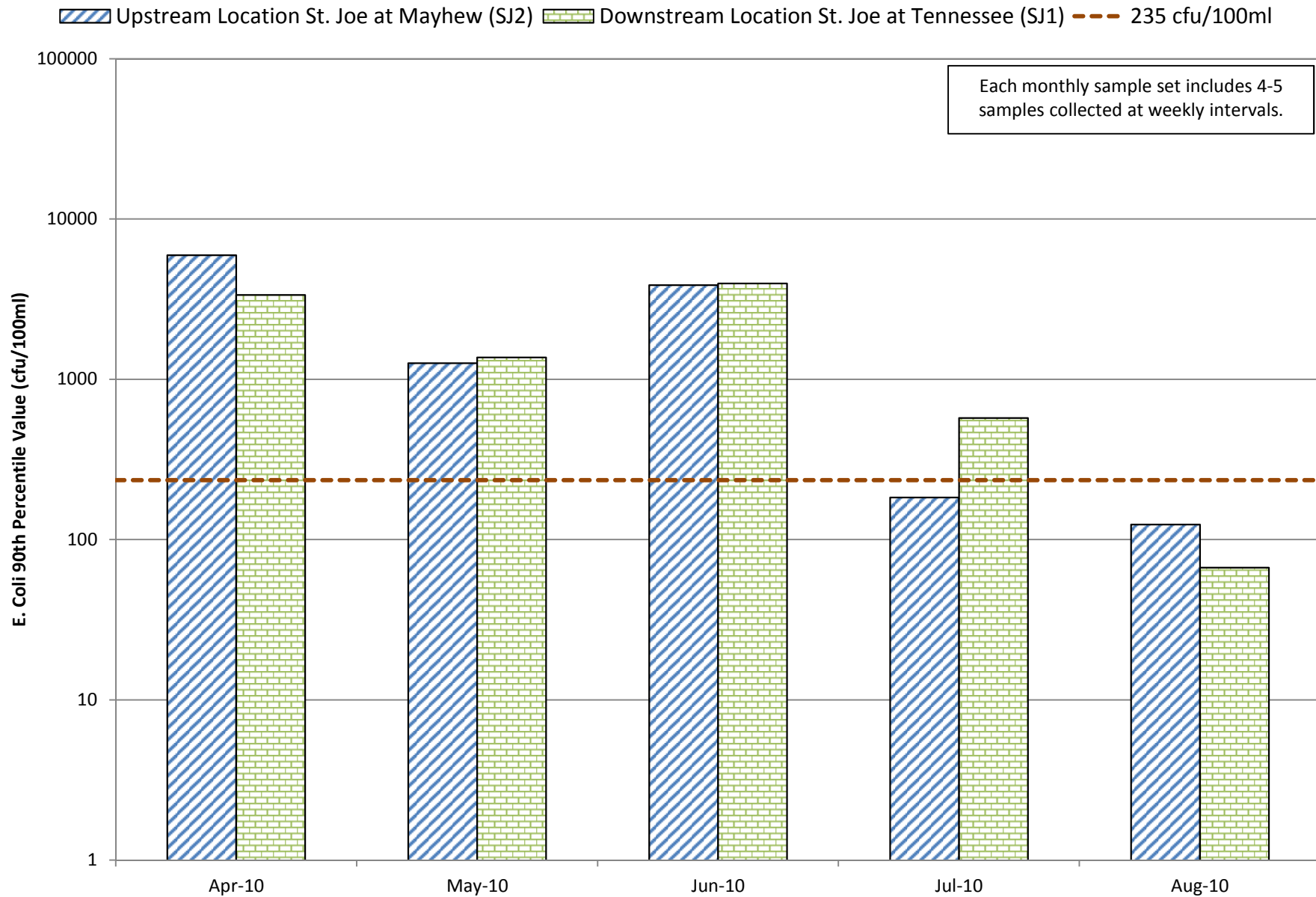
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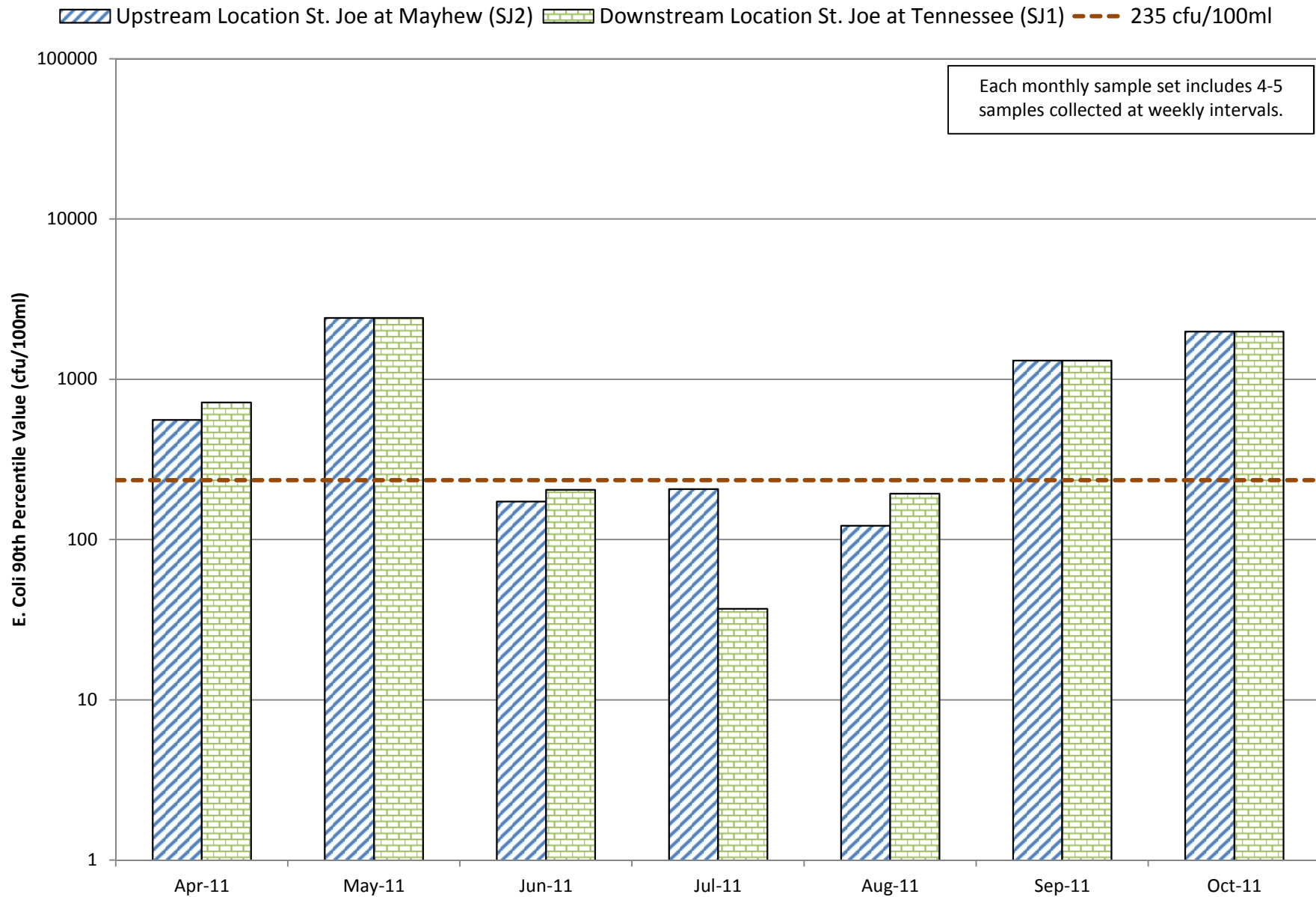
## Calculated E. coli 90th Percentile from Sampling Results - 2009



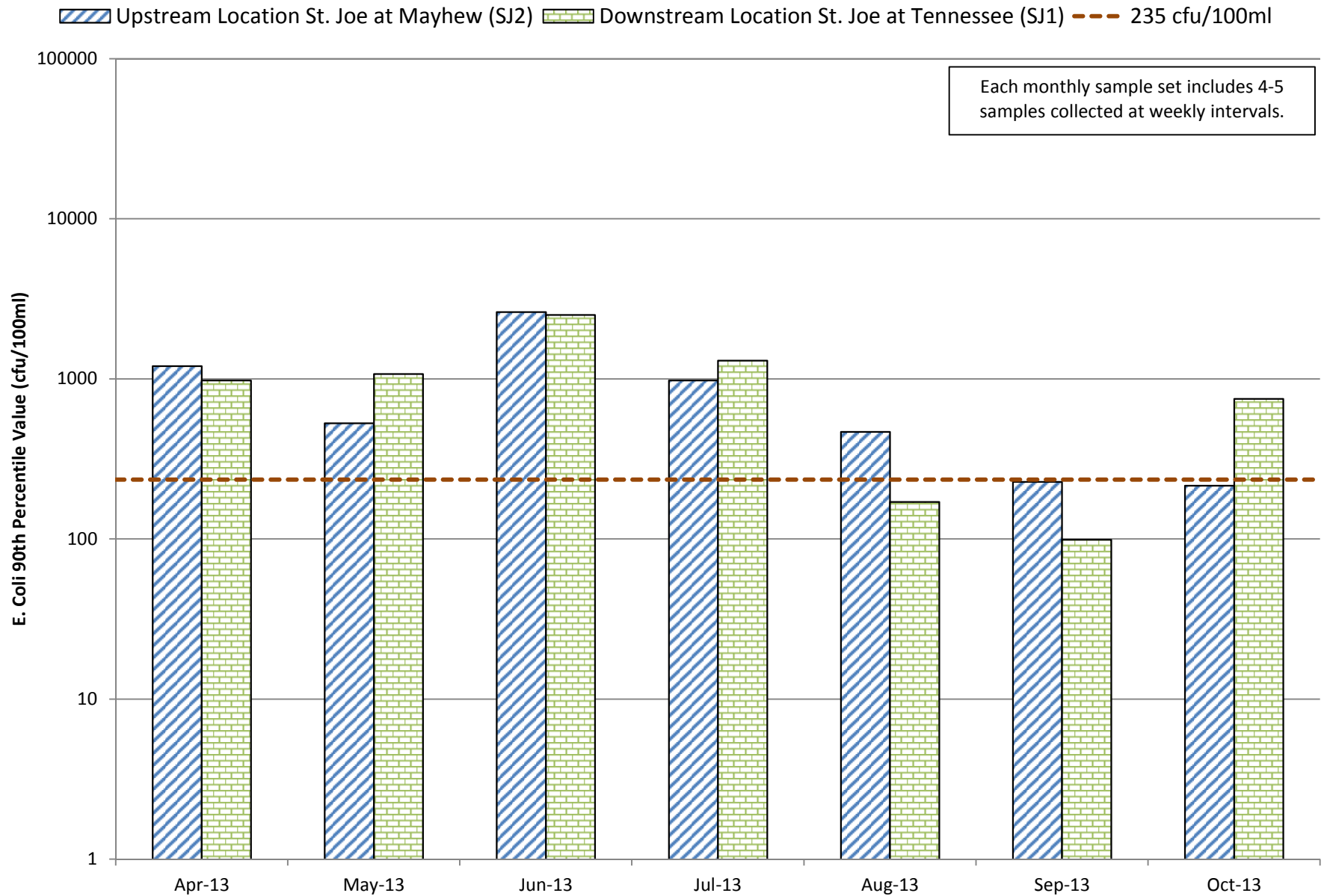
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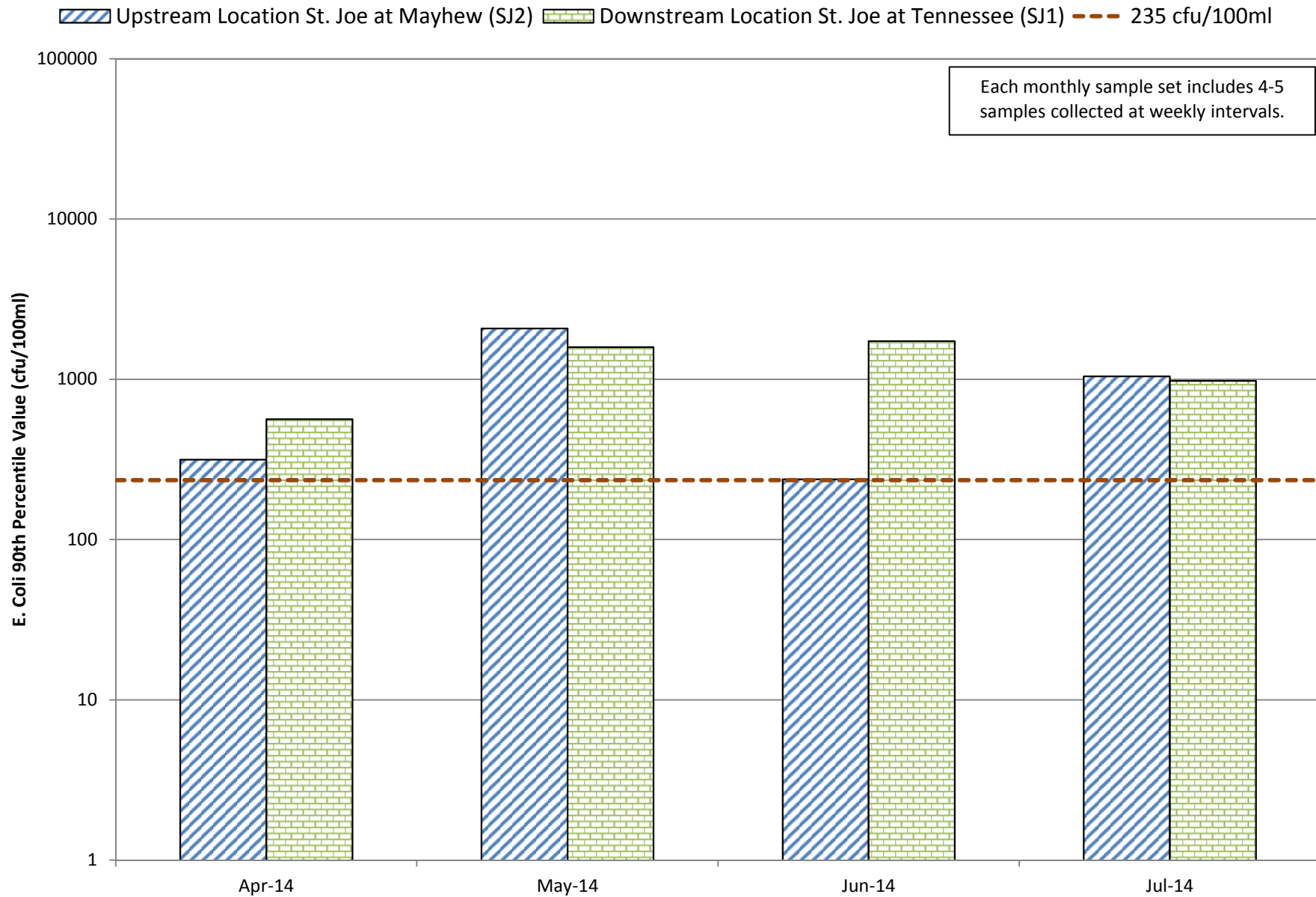
## Calculated E. coli 90th Percentile from Sampling Results - 2011



## Calculated E. coli 90th Percentile from Sampling Results - 2013

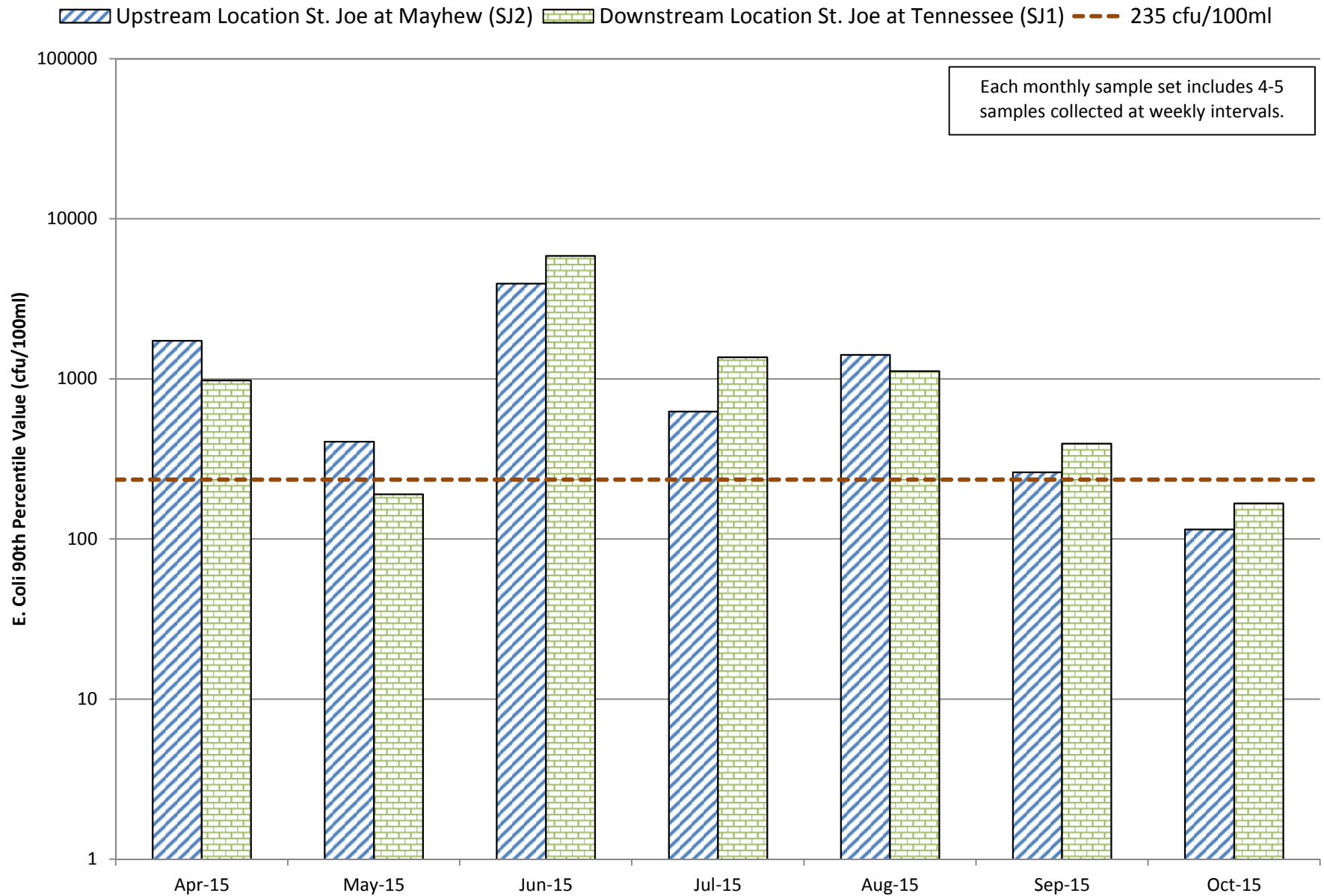


## Calculated E. coli 90th Percentile from Sampling Results - 2014

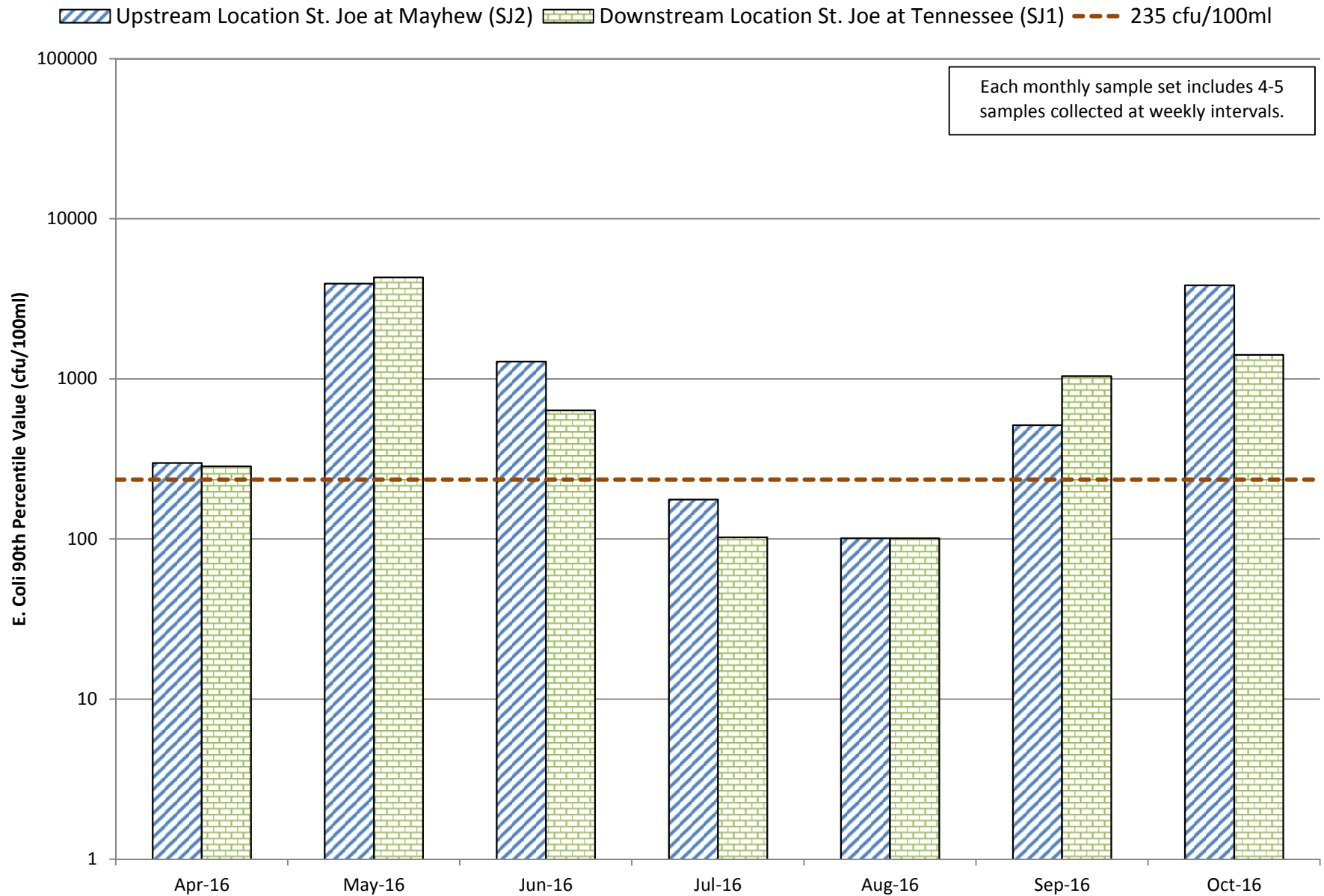




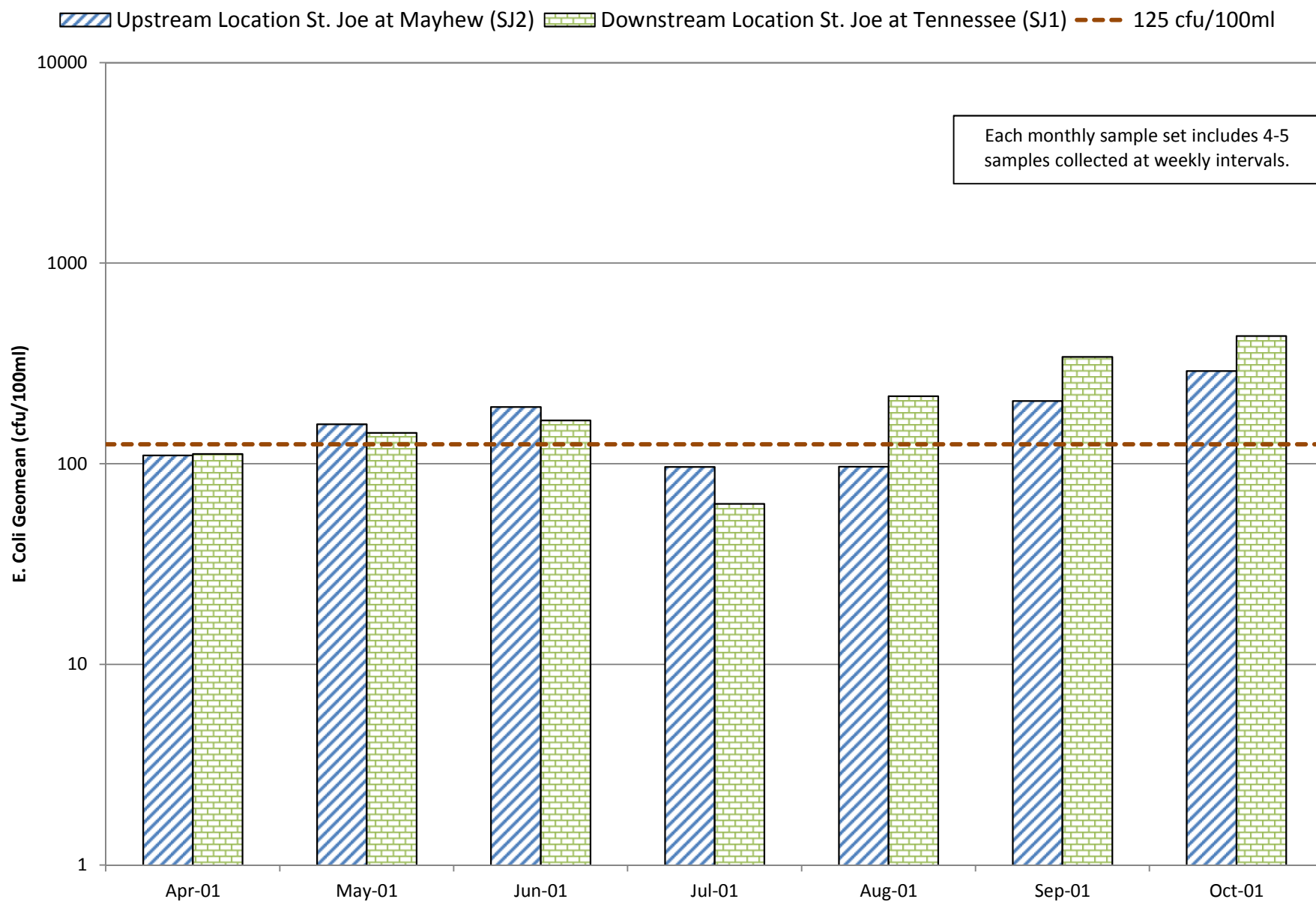
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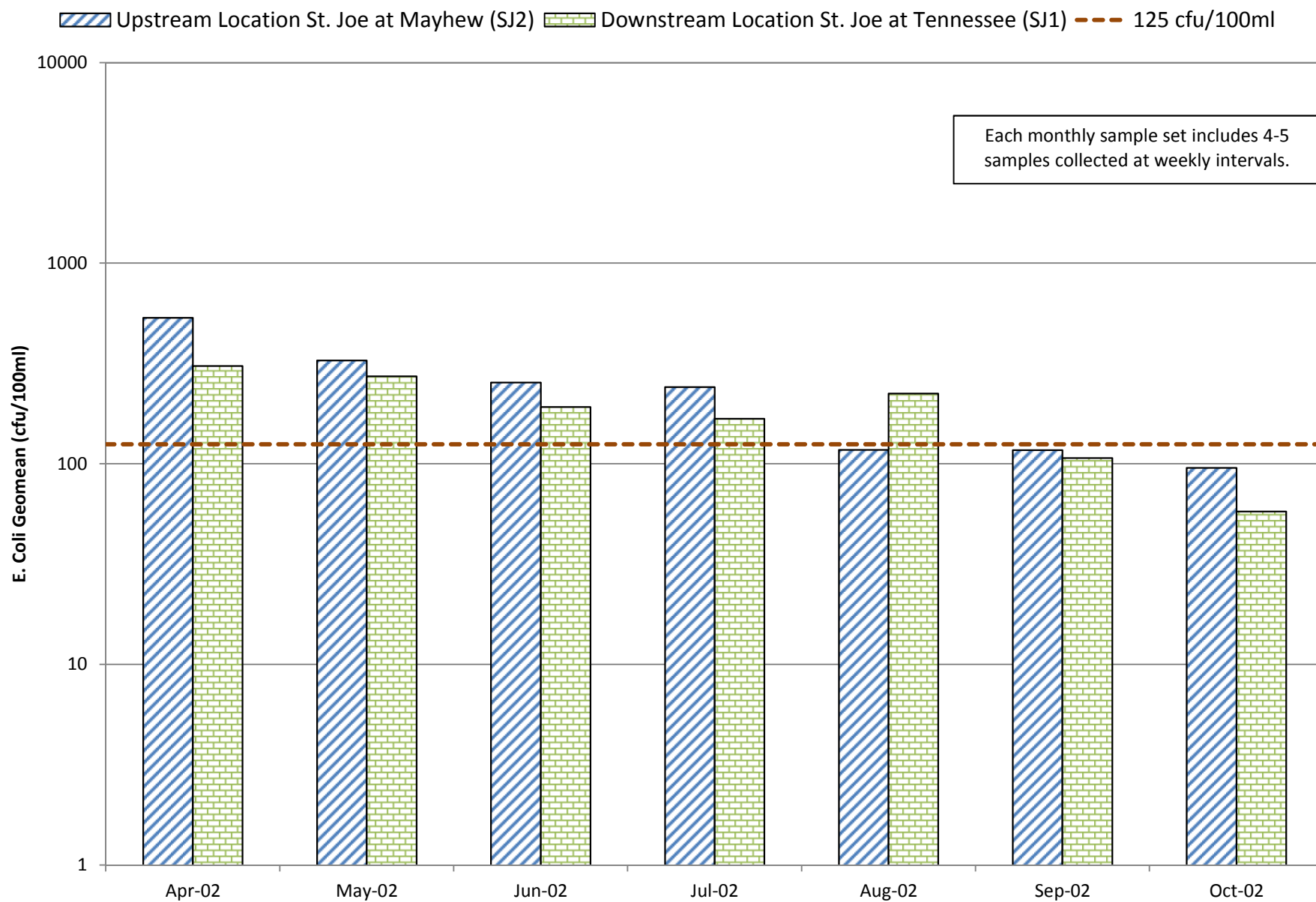
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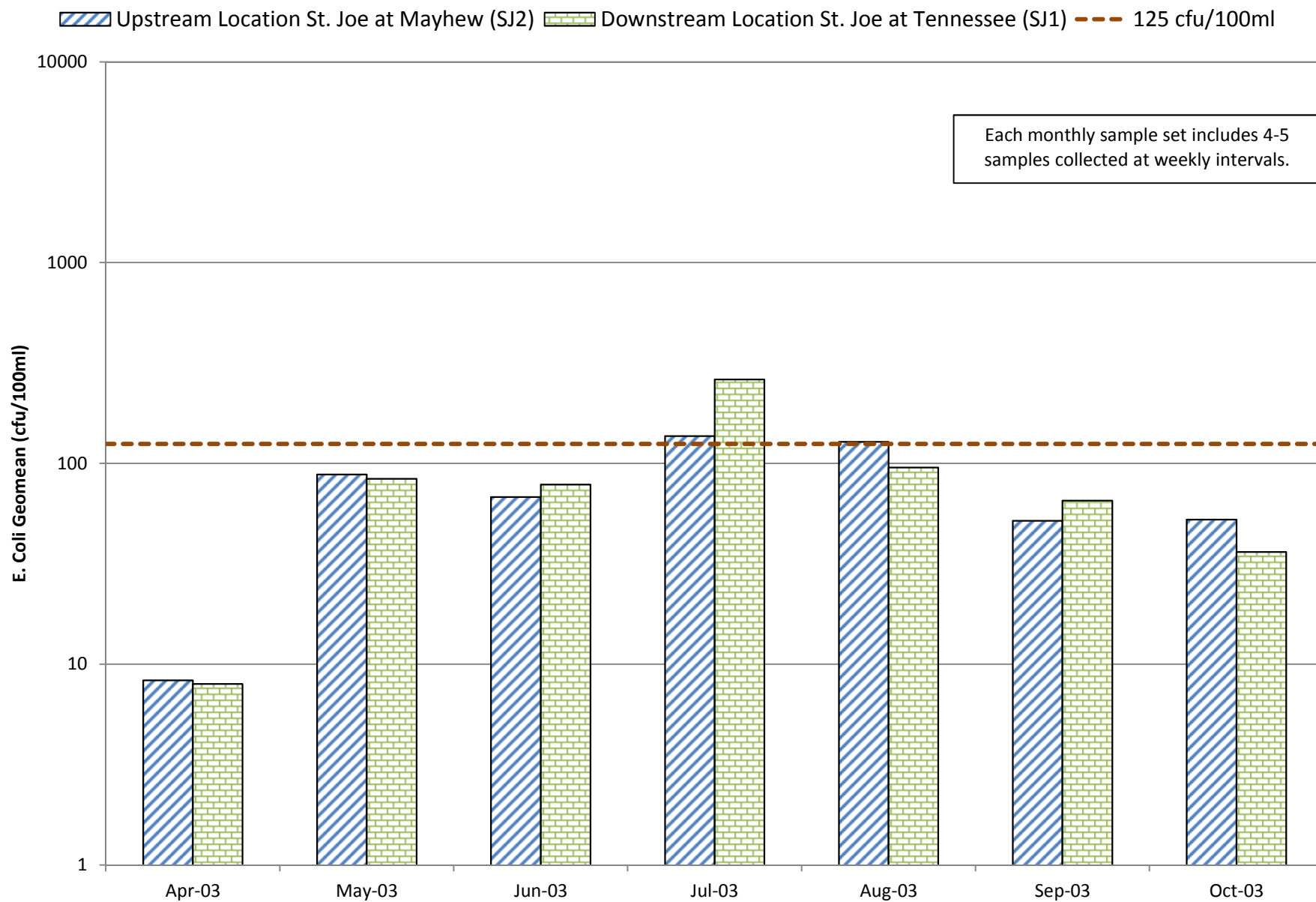
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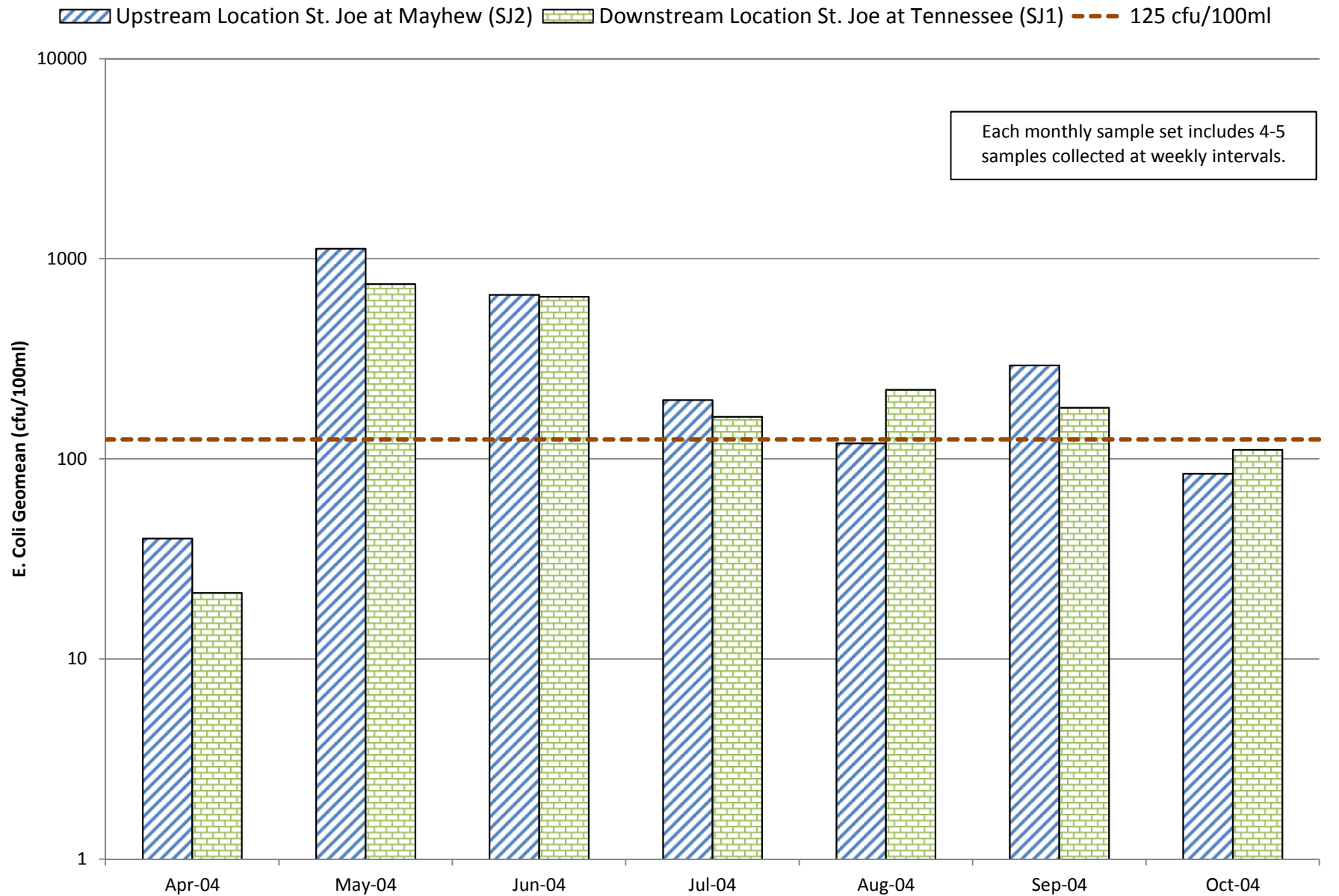
## Calculated E. coli Geomean from Sampling Results - 2002



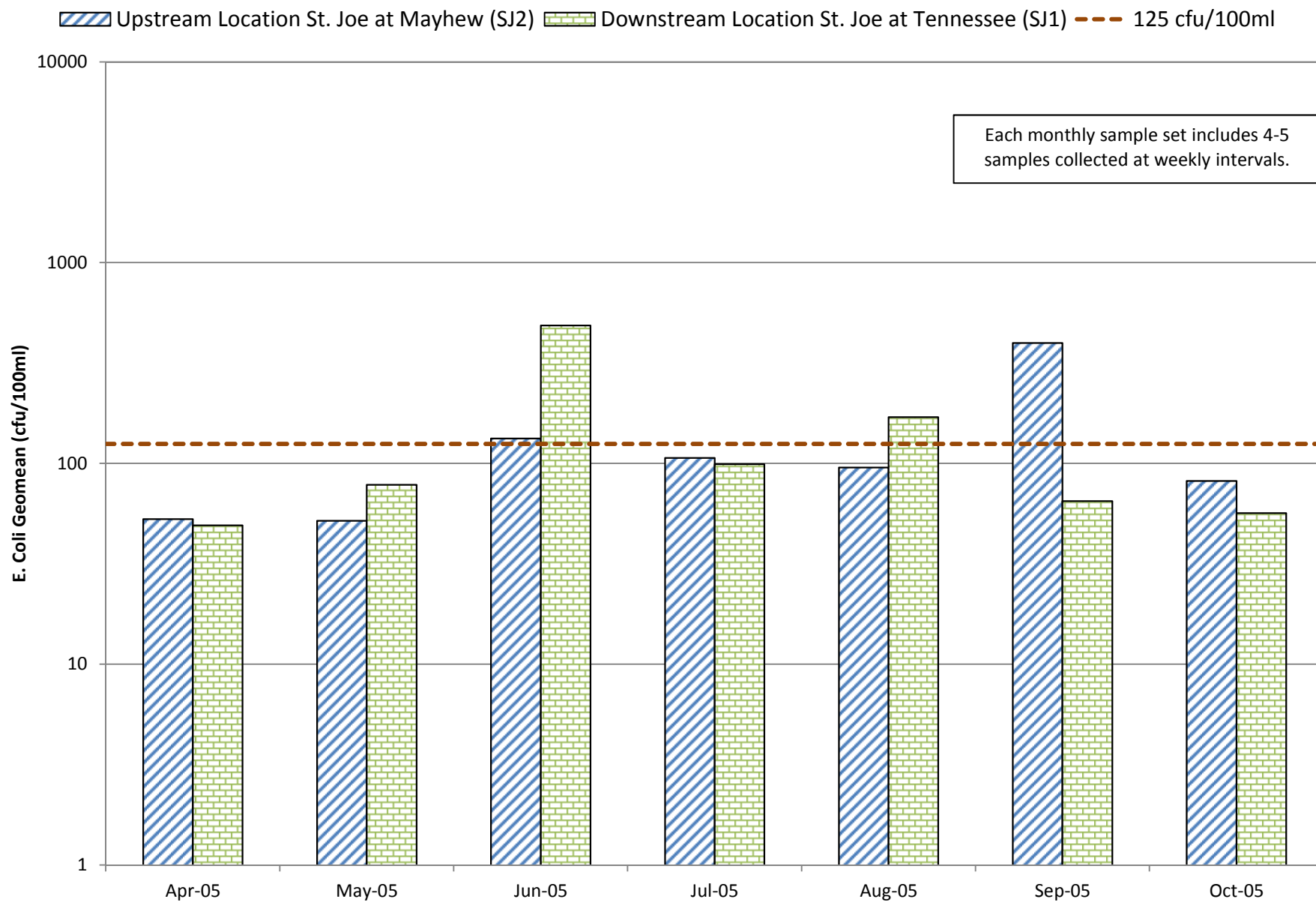
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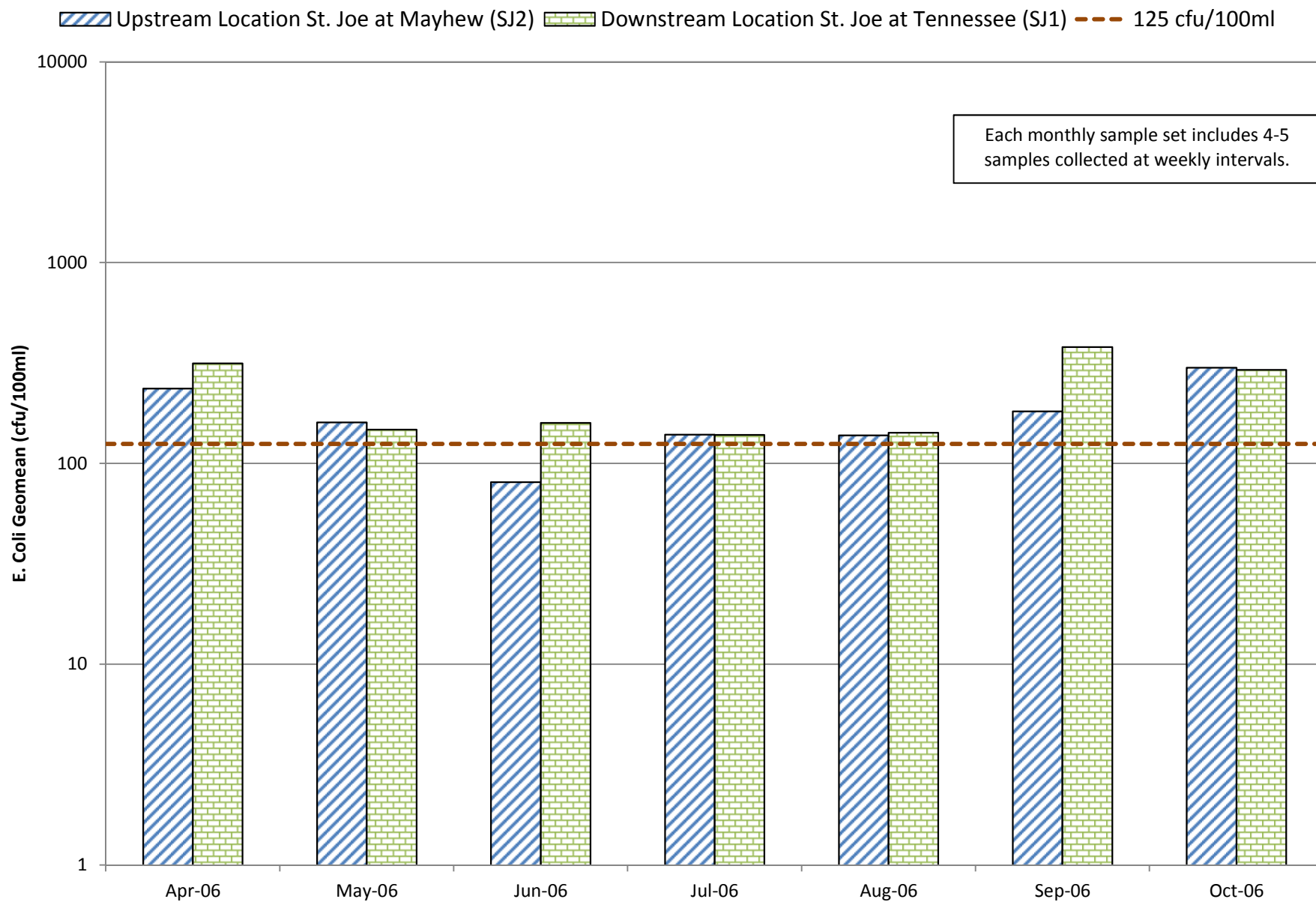
## Calculated E. coli Geomean from Sampling Results - 2004



## Calculated E. coli Geomean from Sampling Results - 2005

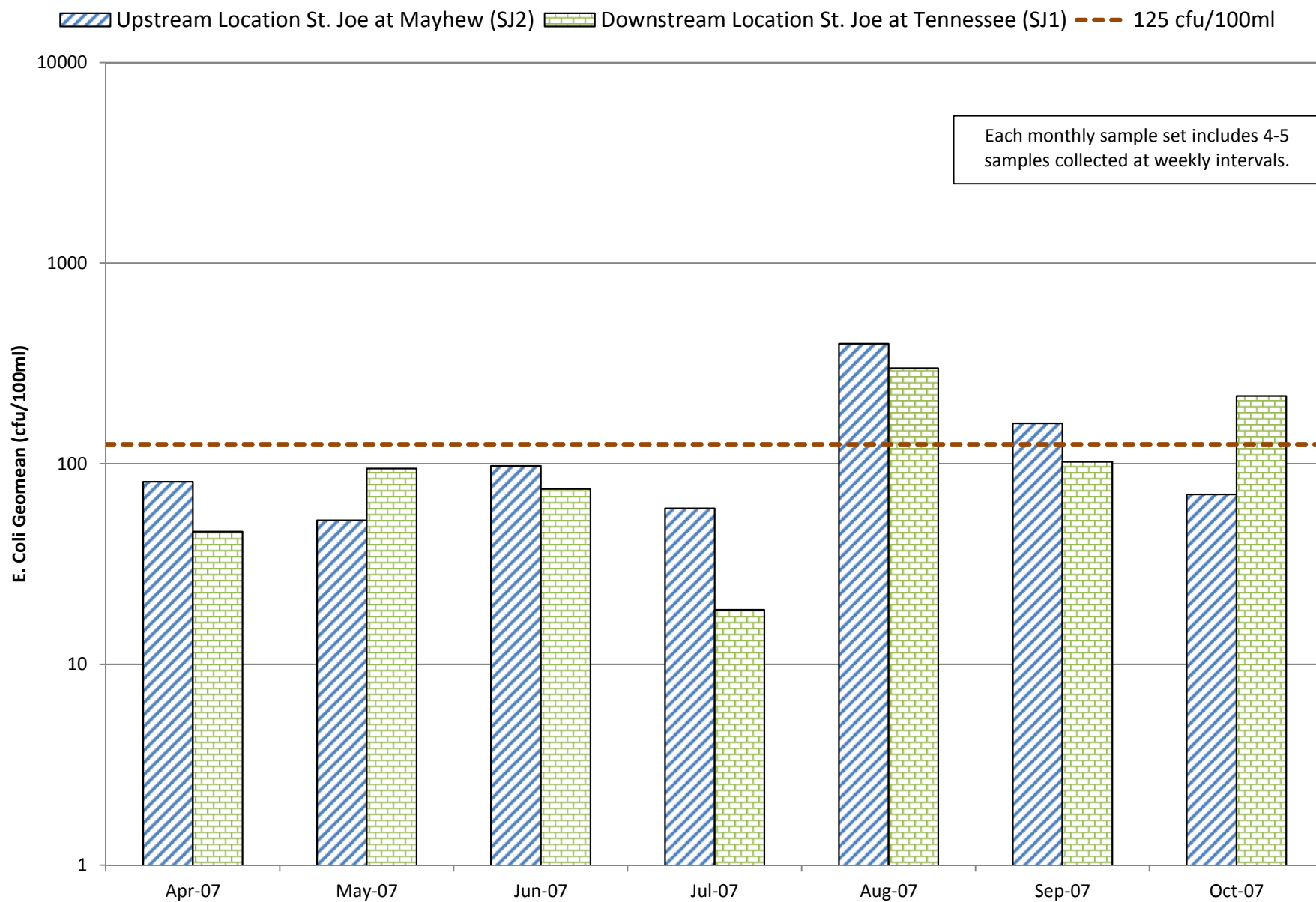


## Calculated E. coli Geomean from Sampling Results - 2006

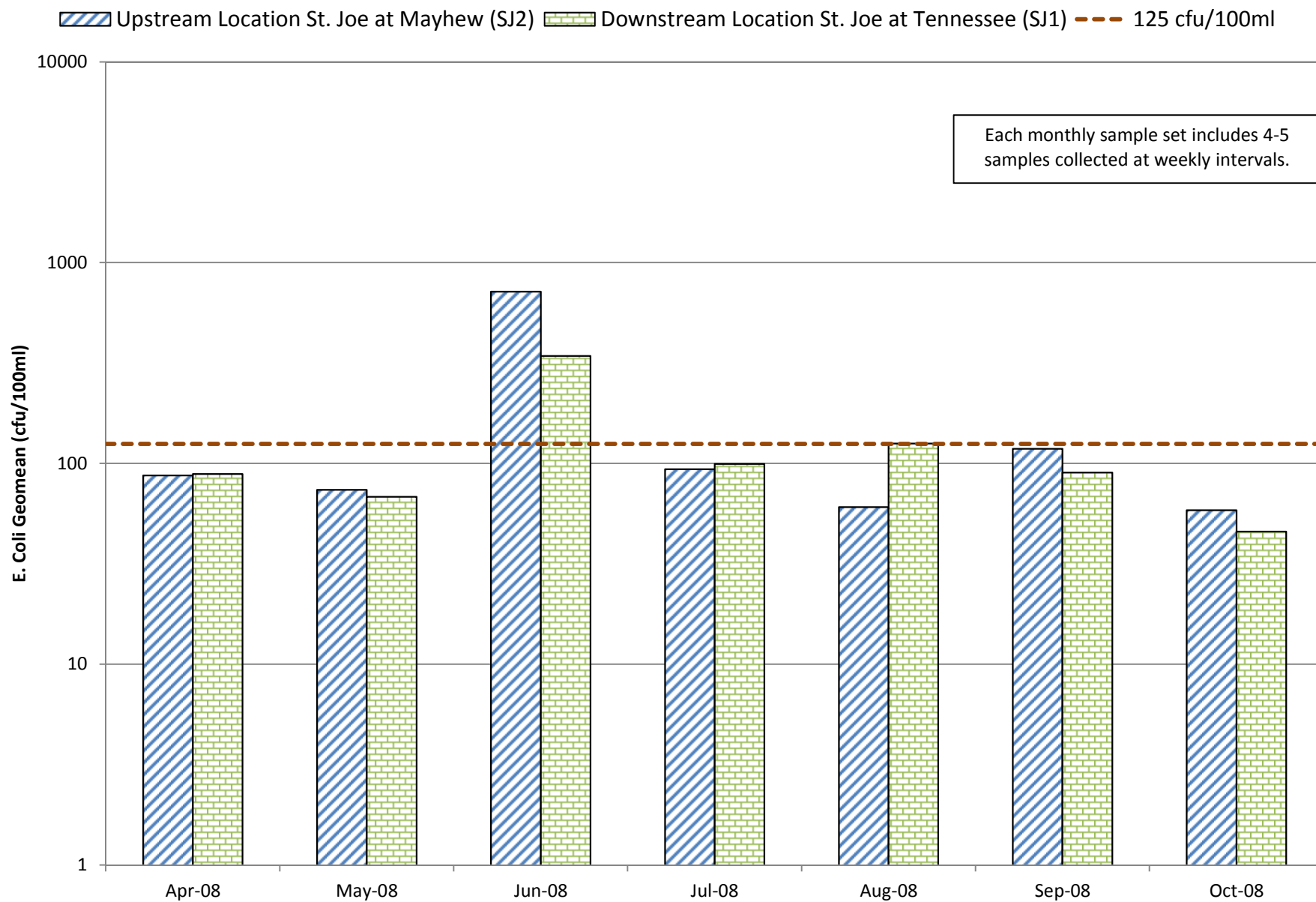




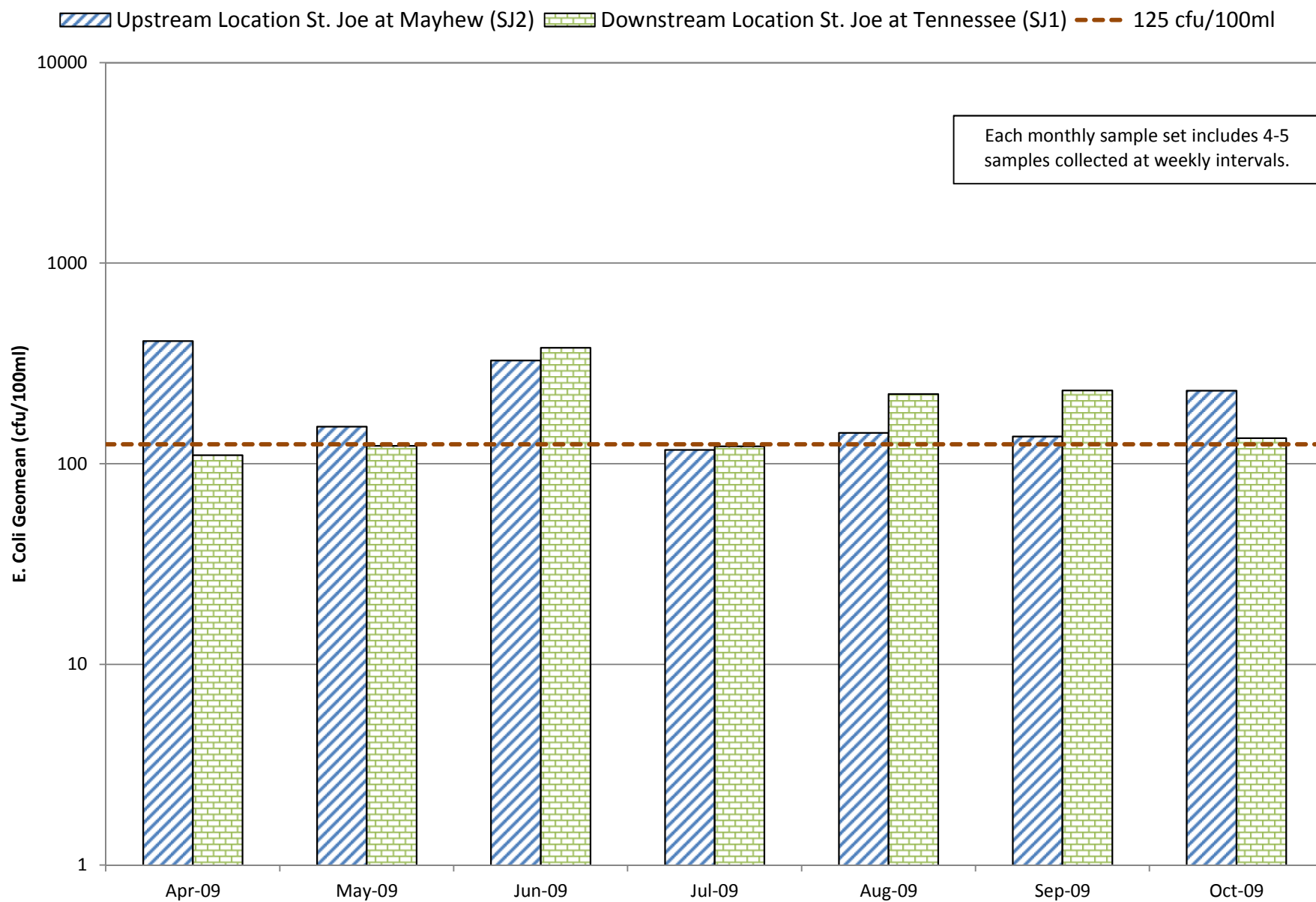
## Calculated E. coli Geomean from Sampling Results - 2007



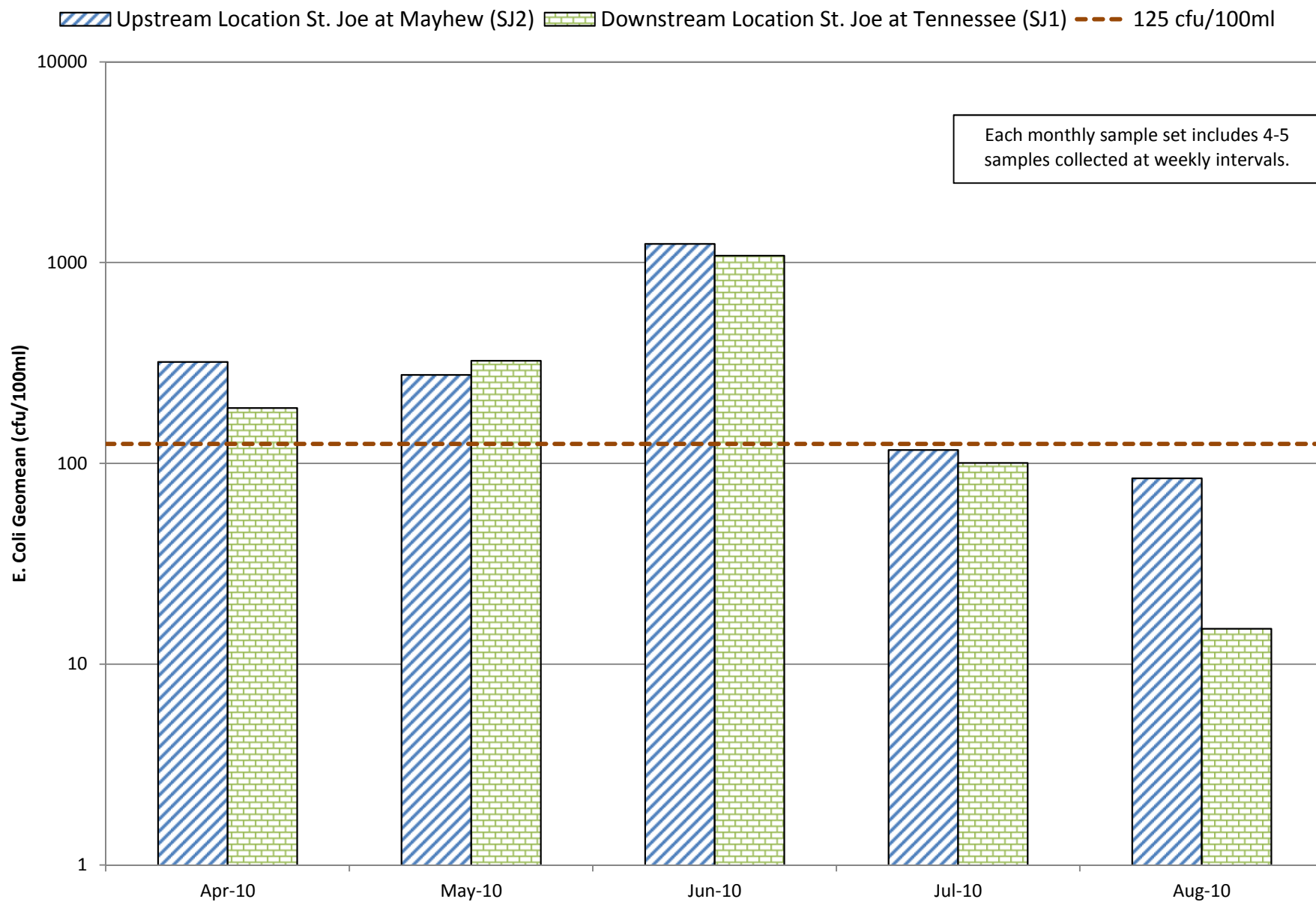
## Calculated E. coli Geomean from Sampling Results - 2008



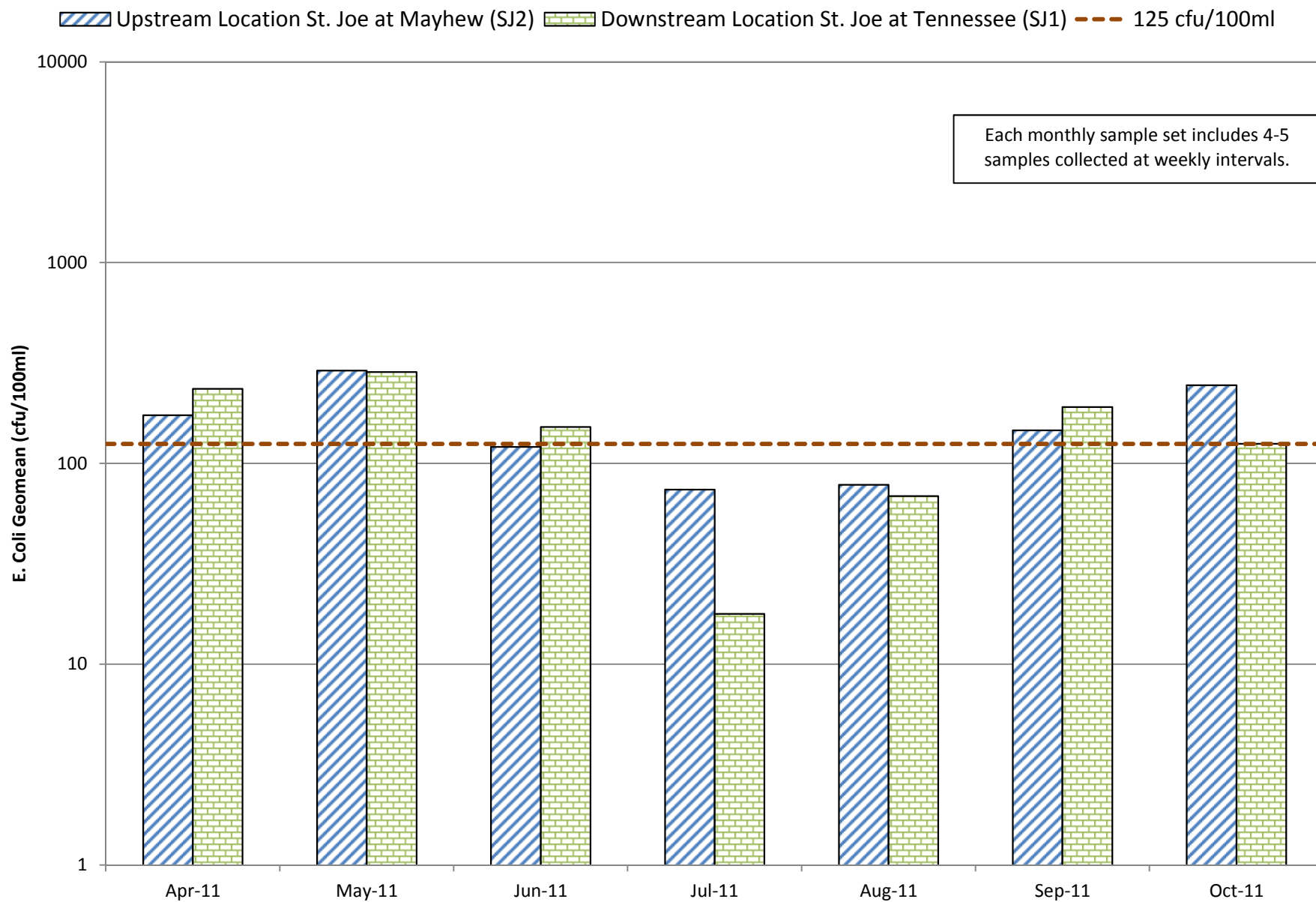
## Calculated E. coli Geomean from Sampling Results - 2009



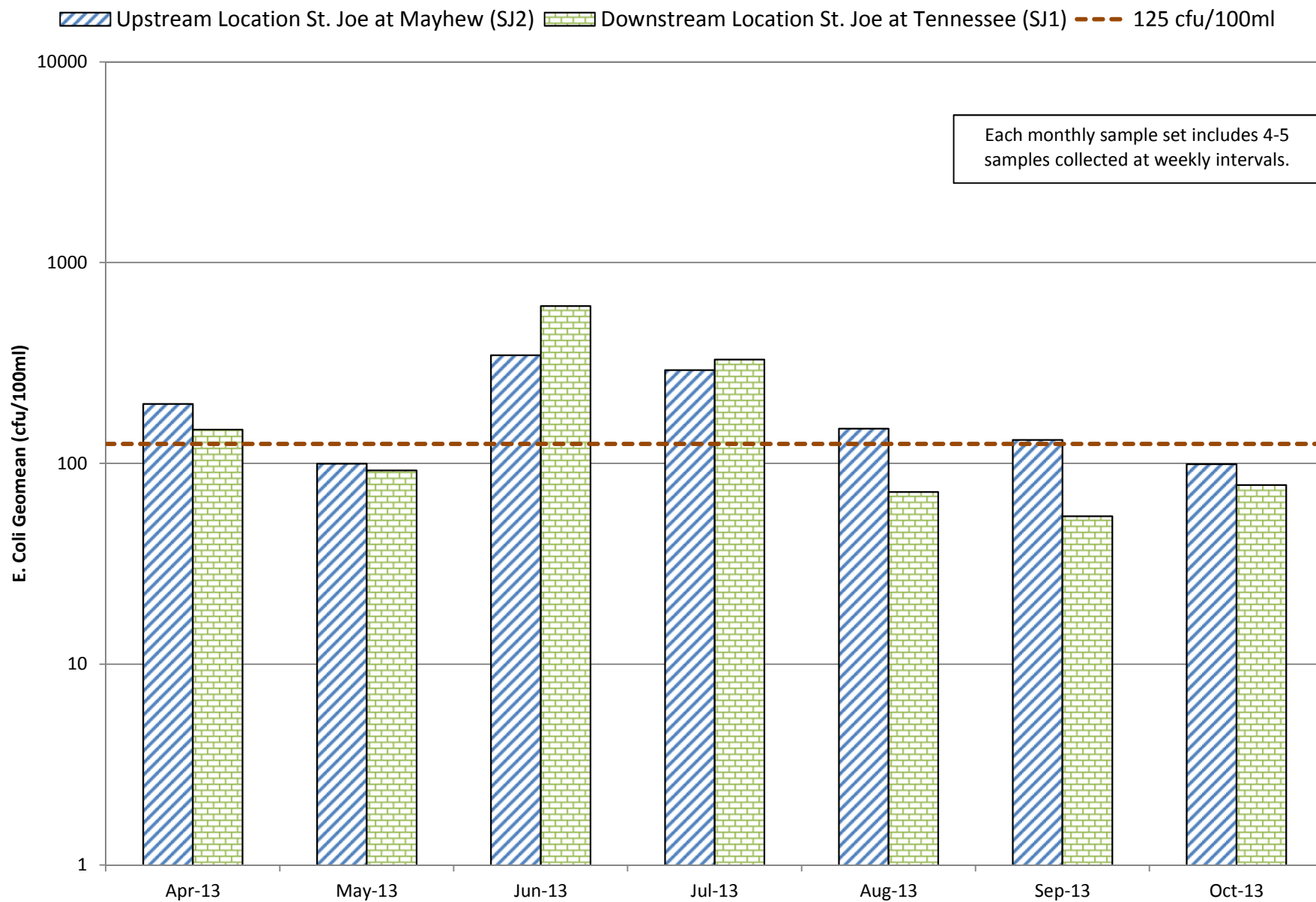
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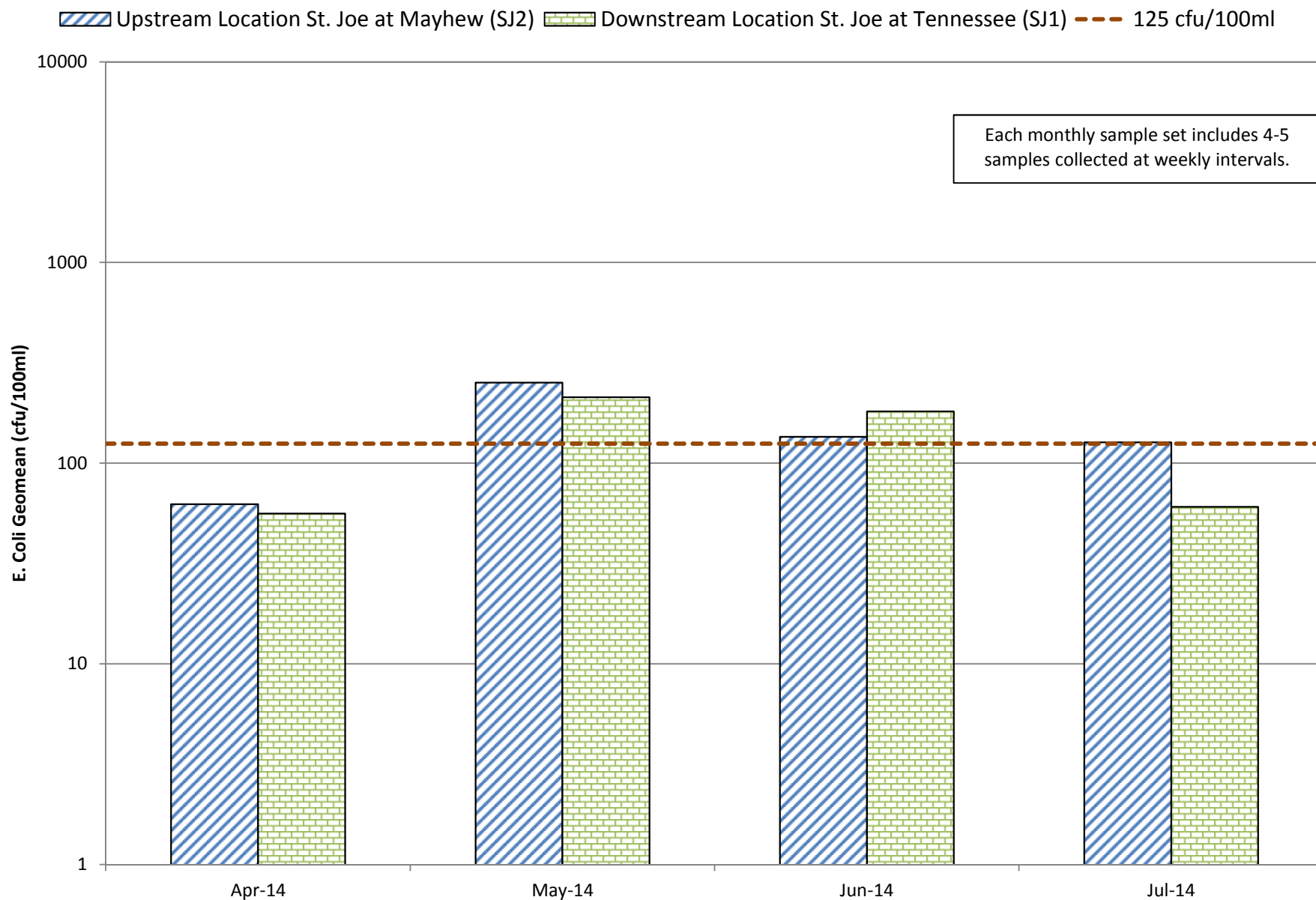
## Calculated E. coli Geomean from Sampling Results - 2011



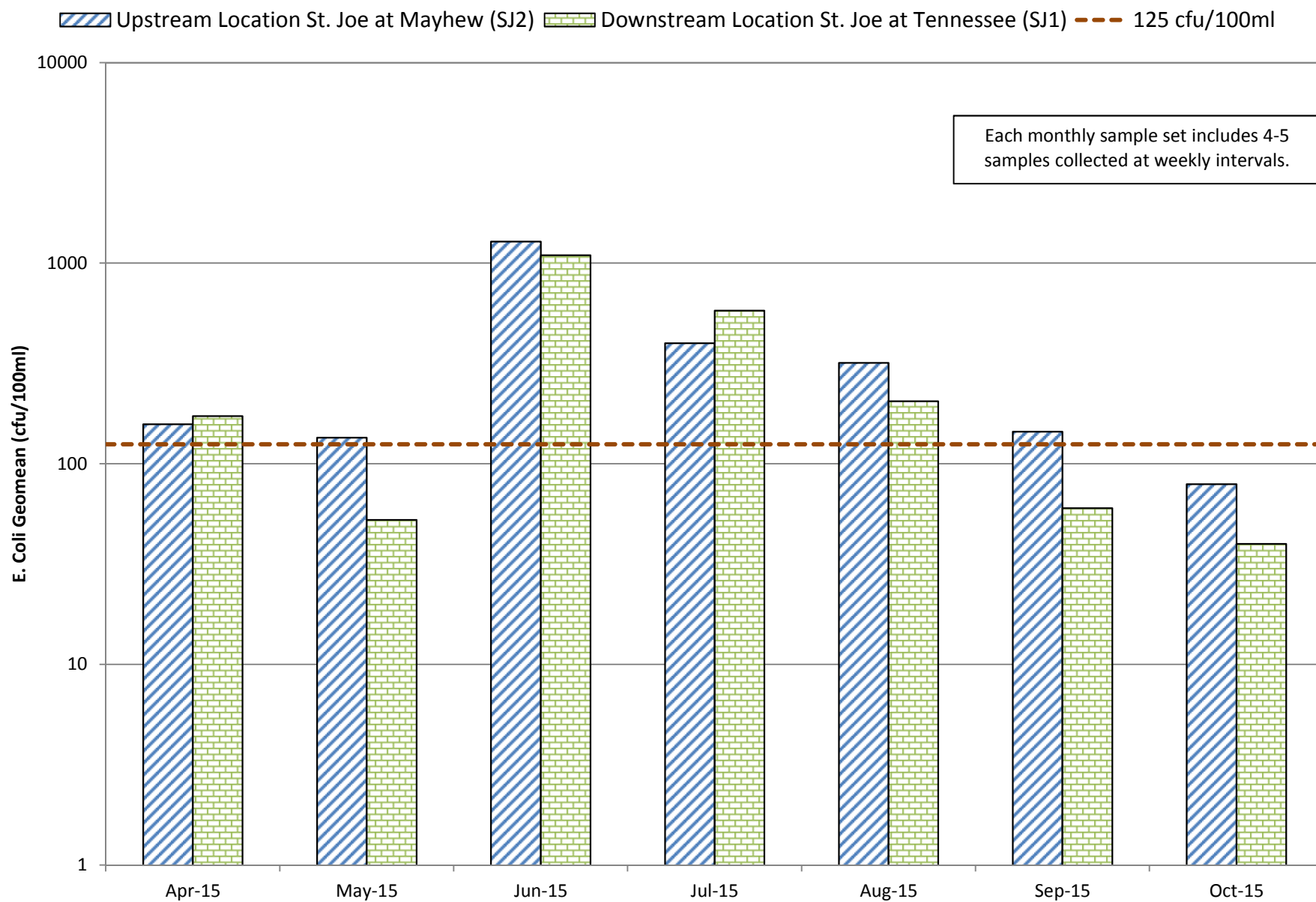
## Calculated E. coli Geomean from Sampling Results - 2013



## Calculated E. coli Geomean from Sampling Results - 2014

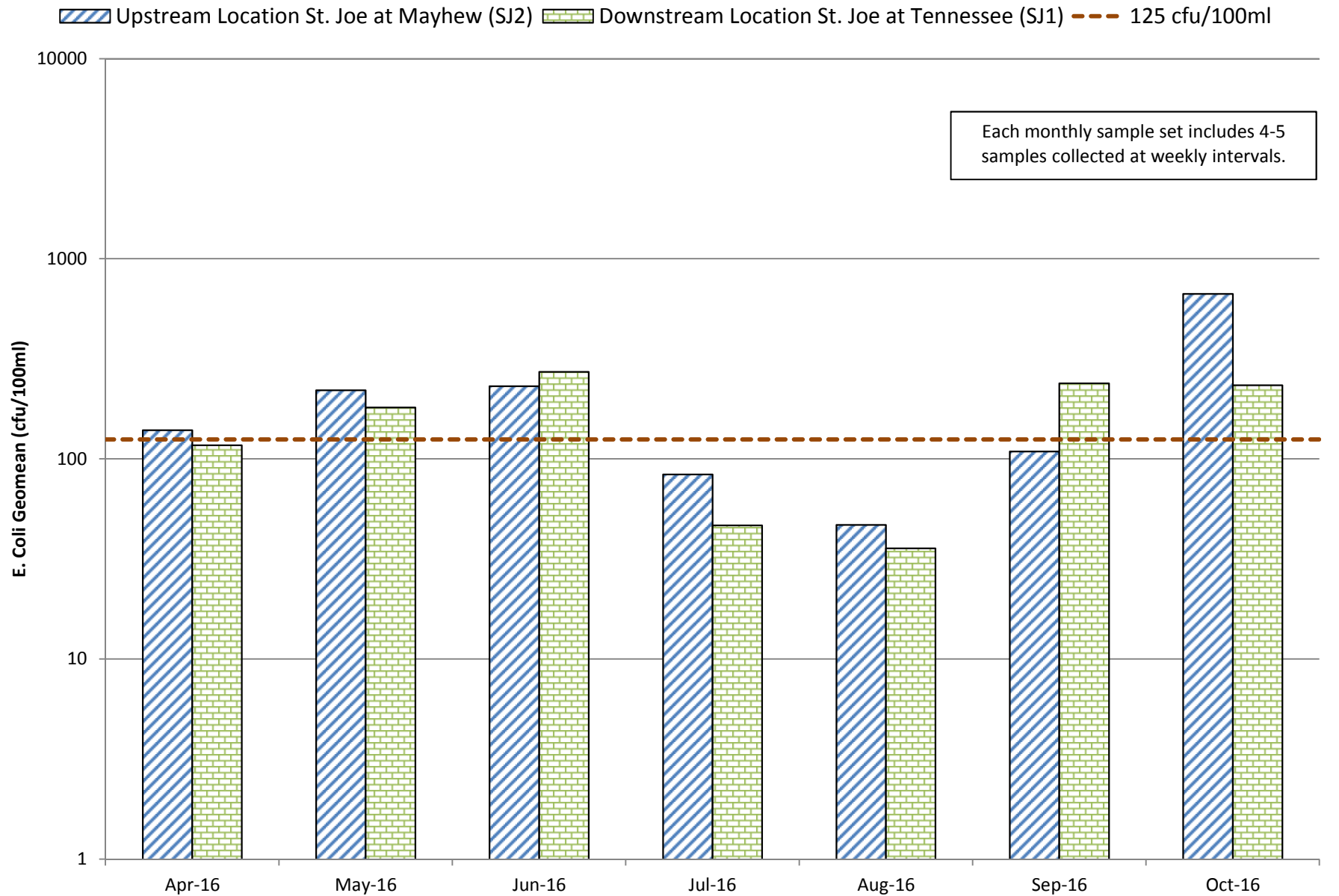


## Calculated E. coli Geomean from Sampling Results - 2015





## Calculated E. coli Geomean from Sampling Results - 2016



## ATTACHMENT 3

Text from CD Appendix 4 Section 4.6.4.1  
Model-Based Approach to Assessing Compliance

Performance Criteria in terms of CSO activations, the City is proposing a model-based approach similar to the method recently approved for the City of Indianapolis, Indiana. In addition, given the importance of the assessment process, and recognizing that methods to assess average performance of CSO control measures per the CSO Policy are in their infancy, the City is allowing for the possibility that an improved alternative, or modified, approach may be identified in the future.

#### **4.6.4.1 Model-Based Approach to Assessing Compliance**

The City of Fort Wayne began its collection system modeling program in the late 1990s, and developed a fully dynamic, planning-level collection system model to support development of the Long-Term Control Plan. As explained in Chapter 2, the City's model was reviewed and approved for LTCP development purposes by U.S. EPA and IDEM in 2005.

Under the model-based approach, the City would update and utilize their collection system model to determine whether operational CSO Control Measures have achieved compliance with the Performance Criteria set forth in Table 4.2.4.1. At least two (2) years prior to the initiation of post construction monitoring on the first river-watershed, Fort Wayne shall propose to EPA and IDEM, in writing, the five years it has selected as a five year period for a typical year. The City would take the following steps under this approach, with each step guided by modeling industry standards and sound engineering judgment:

1. Collect CSO outfall data for a 12-month post-construction monitoring period in each watershed in accordance with Section 4.6.3.4.
2. Perform quality assurance and quality control of the data collected in Step 1.
3. Utilize the model (incorporating the improved collection system) in its previously-calibrated state and the rainfall data collected during the monitoring period, to run a continuous simulation of CSO discharges for the 12-month post-construction monitoring period.
4. Compare the continuous simulation outputs to the CSO monitoring data for the 12-month post-construction monitoring period to determine whether re-calibration of the collection system model is needed. Model re-calibration will not be needed if the model achieves at least the same degree of calibration as was achieved for pre-CSO Long-Term Control conditions during the LTCP development process, and there is a high degree of agreement between the model output and CSO monitoring data for activation frequency for the 12-month post-construction monitoring period. Otherwise, model re-calibration will be needed in accordance with Steps 5-7.
5. If re-calibration is needed, select two or more appropriate rainfall events from the 12-month post-construction monitoring period for model recalibration. The City will apply the standard of practice used in the collection system modeling industry in selecting the best candidate events for model calibration.
6. Develop an initial data set for use with the model and perform successive applications of the model with appropriate parameter adjustment until there is a

- high degree of agreement between the model output and the CSO monitoring data for the selected recalibration events. In making such adjustments, the City will consider the inherent variability in both the collection system model and in flow monitoring data, and will exercise sound engineering judgment and best industry practices so as to not compromise the overall representativeness of the model.
7. Once the model has been re-calibrated in accordance with Step 6, the City will verify the re-calibrated model by again utilizing the model and the rainfall data collected during the 12-month post-construction monitoring period, to run another continuous simulation for the 12-month post-construction monitoring period. The City will again compare the continuous simulation outputs to the CSO monitoring data for the 12-month post-construction monitoring period as described in Step 4, to determine whether additional re-calibration of the collection system model is needed. Re-calibration will be determined to be adequate if the model achieves at least the same degree of calibration, as was achieved for pre-CSO Long-Term Control conditions during the LTCP development process, and there is a high degree of agreement between the model output and CSO monitoring data for activation frequency for the 12-month post-construction monitoring period. Otherwise, further re-calibration will be needed in accordance with these Steps 5-7 until the model achieves at least the same degree of calibration as was achieved for pre-CSO Long-Term Control conditions during the LTCP development process, and there is a high degree of agreement between the model output and CSO monitoring data for activation frequency for the 12-month post-construction monitoring period.
  8. Once the City has satisfactorily re-calibrated the model in accordance with Steps 5 through 7 (or shown that recalibration is not necessary in accordance with Step 4), the City will then utilize the original model (if recalibration was determined not to be necessary in accordance with Steps 4-7) or the recalibrated model to run a continuous simulation for a representative five-year period agreed to with IDEM and U.S. EPA. The model results for this five-year simulation will be used to determine whether the City has achieved the Performance Criteria set forth in Table 4.2.4.1.
  9. The City shall be deemed to have achieved the Performance Criteria if the five-year simulation shows that there were a total of 24 or fewer CSO events into the Maumee River and St. Marys River watershed for the five-year period, and a total of 6 or fewer CSO events into the St. Joseph River watershed for the five-year period, following construction of the necessary Control Measures in Table 4.2.4.1.
  10. The overflow frequency performance criterion is based upon a "typical year," calculated using the 5-year continuous simulation of the collection system model, as described above. If the modeled average annual overflow frequency is less than or equal to 1.2 for the St. Joseph River and 4.8 for the Maumee and St. Marys Rivers, the system is deemed to be in compliance with the performance criteria of 1 and 4 overflow events per year. This "rounding" is appropriate due to the inherent variability in model predictions. If the modeled overflow frequency exceeds 1.2 for the St. Joseph River and/or 4.8 for the Maumee and St. Marys Rivers, then the City will prepare a Milestone Report of this negative result under

Paragraph 4.6.6.1. The City may include an analysis of the following in the Milestone Report: (1) the volume, frequency, and factors causing the additional overflow frequency, (2) any impact on water quality, including designated uses, from the additional overflow frequency, (3) control options, if any, to reduce the frequency towards 4/1 (as appropriate), (4) associated costs for any additional control options, (5) any expected benefits from such control options and (6) a recommendation as to whether the City should proceed under Section XXI.D, XXI.E or another provision of the Consent Decree.

It is important to note that percent capture has not been identified as a formal Performance Criterion for the City's LTCP. Based on discussions with U.S. EPA and IDEM during development of the final recommended plan, average annual overflow frequency was identified as the controlling Performance Criterion and is identified as such in Table 4.2.4.1. However, the City recognizes that percent capture can sometimes be useful in assessing performance of a combined sewer system, and will continue to develop estimates of percent capture based on the 5-year simulations described above. These estimates will be included in documentation of system performance included in the Milestone Reports described in Section 4.6.6.1.

The City also plans to use their collections system model to support the process of refining the planning-level LTCP concepts into specific CSO control projects. This will require selected improvements to the level of detail and calibration of the model on an as-needed basis over the next 18 years. This process of refining the model to meet specific project needs has always been anticipated, and is consistent with the modeling approach followed by the City since the 1990s. The model is a valuable and dynamic tool that the City will use as appropriate to further system understanding from a design, operation, and maintenance perspective as they pursue their goal of improving water quality on local rivers.

#### **4.6.4.2 Alternate Compliance Assessment Approach**

The City may propose an alternate compliance assessment approach other than that described in Section 4.6.4.1. Such an alternate compliance assessment approach may be implemented by the City, in lieu of that described in Section 4.6.4.1, if approved by U.S. EPA and IDEM and subject to other approvals, if any, required by Section XXI of the City's Consent Decree. In order to provide sufficient time for agency review and approval to allow timely implementation, any proposal by the City for use of an alternative compliance assessment approach should be submitted to U.S. EPA and IDEM no later than December 31, 2015.

#### **4.6.5 Quality Control**

The City has Standard Operating Procedures (SOPs) in place for both of the core activities in the Post-Construction Monitoring Program, CSO outfall flow monitoring and river water quality sampling. Both of these programs have been ongoing in their current form since at least 2004, allowing for 3 years of field experience and identification of

## ATTACHMENT 4

### St. Joe River CSOs Post-Construction Monitoring Analysis Memorandum

# MEMO

To:

Wendy Reust, City Utilities  
Engineering

Copies:

Dante Zettler

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From:

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Date:

June 27, 2017

Arcadis Project No.:

02648125.0000

Subject:

St. Joe River CSOs Post-Construction Monitoring Analysis Memorandum –  
Final

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The purpose of this memorandum is to document the evaluation performed to assess whether or not a recalibration of City Utilities Engineering's (CUE's) model representation of the St. Joe River combined sewer subbasins is necessary before proceeding with the formal post-construction monitoring (PCM) model evaluation as required by CUE's consent decree. The intent of this memorandum is to be attached as an appendix in CUE's Milestone Report for the St. Joe River Combined Sewer Overflows (CSOs).

This memorandum is organized into the following sections: Executive Summary, Background, Rainfall Data Review, Flow Meter Data Review, St. Joe Subbasin Model Analysis, and Summary and Next Steps.

## EXECUTIVE SUMMARY

Based on the evaluation documented in this memorandum, CUE's model does not need to be recalibrated. CUE can proceed with the final 1998-2002 typical year simulation for the St. Joe River subbasins to assess compliance for the six CSOs on the river. The reasons the current model calibration is adequate are as follows:

- CUE has collected the precipitation and CSO outfall data as required in LTCP Section 4.6.4.1; and

- CUE has applied the model for the 12-month period and determined that all metered overflow events were successfully predicted in the model.

## BACKGROUND

This section provides a brief history of the St. Joe River CSOs, the consent decree performance criteria, and the implemented Long-Term Control Plan (LTCP) projects to achieve the performance criteria.

### Consent Decree Requirements

The St. Joe River receives discharge from CSOs 052, 051, 053, 045, 044, and 068. As documented in Table 4.2.4.1 of the final LTCP (CUE, 2007), the St. Joe River CSOs have a performance criteria of one overflow event during the typical year. The final LTCP originally contemplated achieving full operation (AFO) in 2019.

As documented in Section 4.6.4.1 of the final LTCP, CUE's process for PCM is as follows:

- Collect CSO outfall data for 12-months following AFO and QA/QC the data;
- Compare the CSO outfall data to a 12-month model simulation;
- "Model re-calibration will not be needed if the model achieves at least the same degree of calibration as was achieved for pre-CSO Long-Term Control conditions during the LTCP development process, and there is a high degree of agreement between the model output and CSO monitoring data for activation frequency";
- If necessary, re-calibrate the model with two or more appropriate events;
- Verify the re-calibration with a final 12-month simulation;
- Apply the final model for the 5-year (1998-2002) typical year period; and
- Assess compliance with the performance criteria as 24 or fewer simulated CSO events on the Maumee and St. Mary's Rivers, and 6 or fewer simulated CSO events on the St. Joe River (CUE, 2007).

As presented above, it is important to note the emphasis on CSO outfall flow monitoring data in LTCP Section 4.6.4.1, both for data collection and evaluating whether or not the model should be recalibrated. In other words, flow monitoring data collected upstream in the collection system may support the assessment of the model calibration, but is not required by Section 4.6.4.1 of the LTCP.

As part of the PCM milestone report for the St. Joe River CSOs, CUE will need to populate Table 4.6.2.1 of the LTCP (CUE, 2007) for Control Measures 7 and 8, for both the monitoring data and model simulation. The table is re-produced and presented as **Table 1** of this memorandum. As part of the PCM Milestone Report, CUE will need to populate the first two rows of the table for both the monitoring data and the typical year performance. For the monitoring data columns, CUE can report the following in the table:

- CSOs 044, 045, 051, 053, 068 – 0 MG, 0 Overflows
- CSO 052 – 0.10 MG, 2 Overflows



Table 4.6.2.1  
Post-Construction Monitoring for CSO Control Measures by River Watershed

Watershed	CSO Control Measure <sup>(1)</sup>	CSOs Controlled (By Overflow Permit ID)	Monitoring Data <sup>(2)</sup>		Typical Year Performance <sup>(3)</sup>		Overflow Frequency Criteria Achieved (Yes/No) <sup>(4)</sup>	Comments
			CSO Volume (MG)	Overflow Frequency By Watershed	CSO Volume (MG)	Overflow Frequency By Watershed <sup>(5)</sup>		
St. Joseph River	7 Satellite Storage at St. Joseph River CSOs	45, 51, 53, 68						
	8 Satellite Disinfection at St. Joseph River CSOs <sup>(6)</sup>	53						
Maumee River	5 Pond Storage & Diversion	57, plus Outfalls 002/003						
	10 Morton Street/O10101 Reroute	48						
	11 Wayne Street Parallel Interceptor	11, 12, 13, 23, 24, 25, 27, 28, 29, 32, 33, 36, 39, 50, 55, 60						
	14 Satellite Storage	54						
	9 Satellite Disinfection <sup>(6)</sup>	61, 62						
St. Marys River	12 St. Marys Parallel Interceptor	4, 5, 17, 18, 19, 20, 21						
	9 Satellite Disinfection <sup>(6)</sup>	54						

Table 1: LTCP Table 4.6.2.1 (CUE, 2007)

### Consent Decree Milestones

Based on CUE's 6-month consent decree reporting, Status Report 15 (CUE, 2015) documents that the St. Joe River Control Measures, Control Measures 7 and 8, achieved full operation during the March 1, 2015 – August 31, 2015 reporting period. Therefore, the 12-month monitoring period was established as September 1, 2015 – September 1, 2016, and the PCM milestone report would be submitted to IDEM and US EPA on or before September 1, 2017.

### RAINFALL DATA REVIEW

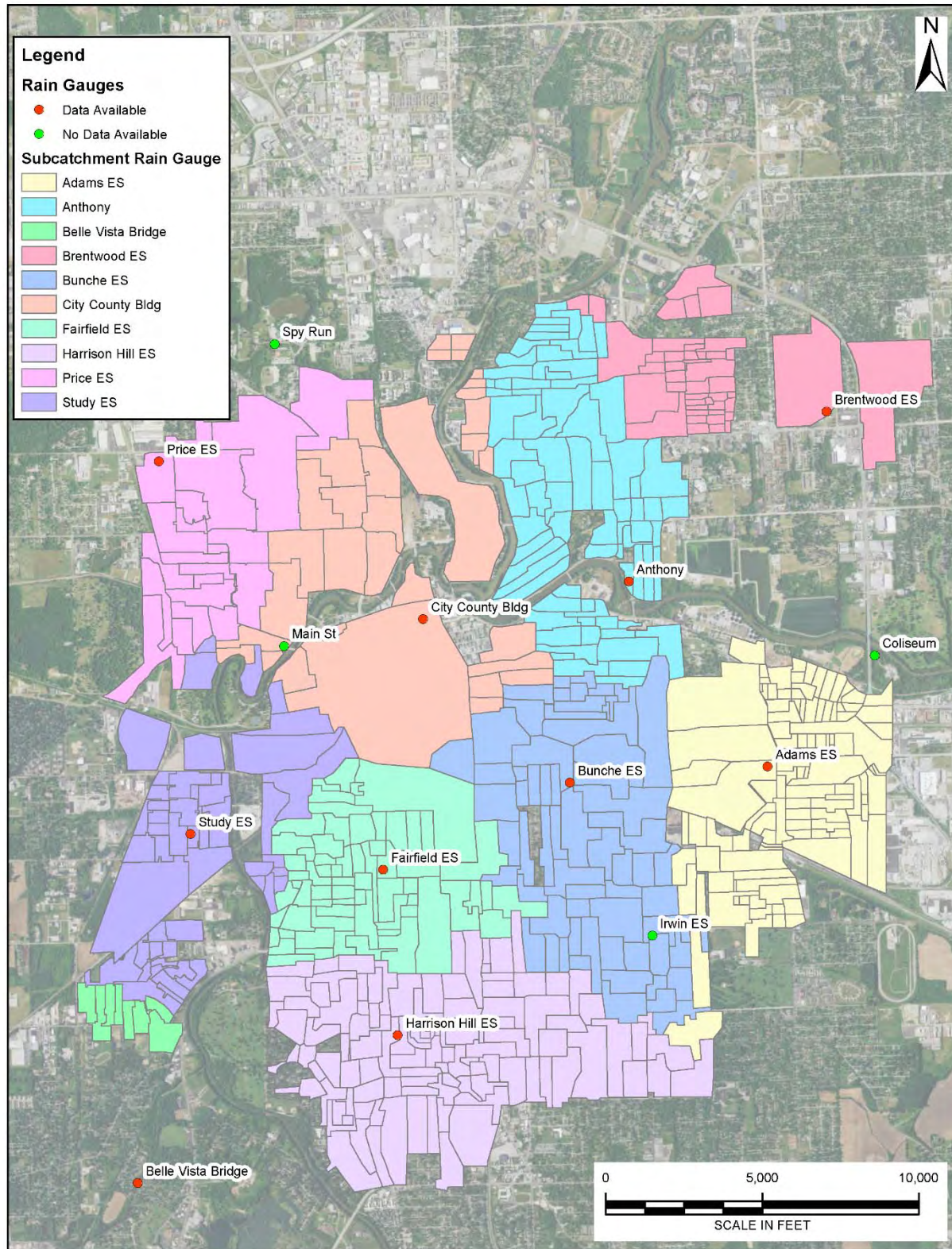
This section discusses the rainfall data for the September 1, 2015 – September 1, 2016 period that was reviewed by the project team. The project team made slight adjustments to the rainfall data based on the review, and assigned CUE's rain gauges to the current model subcatchments.

### Model Subcatchment Assignments

**Figure 1** presents the model subcatchments and gauge network in the vicinity of the combined sewer system. As shown in the figure, ten of the 13 gauges for which data was provided are in close proximity to the combined sewer system and were assigned to subcatchments as shown in the figure. For model nodes with rainfall dependent inflow and infiltration (RDII) represented through RTK parameters, EPA SWMM does not formally present a subcatchment for the drainage areas, so these nodes were assigned gauges based on the closest proximity between the model node and the gauge location.

The remaining three of the 13 gauges reviewed for the analysis (Getz Road, Dupont Library, and Lima Road) are not shown in Figure 1, as they are well outside of the combined sewer area. These three gauges represent rainfall in the northern separate sanitary area and were assigned to RDII nodes as appropriate, except for Lima Road since it did not record data in the PCM period. Finally, Figure 1 presents four gauges for which data was not available during the 12-month PCM Period. A summary of the gauge locations used in the analysis and summarized in this memorandum is as follows:

- Data reviewed and assigned in the model analysis (10): Adams, Anthony, Belle Vista, Brentwood, Bunche, City County, Fairfield, Harrison Hill, Price, Study;
- Data reviewed and assigned to RDII nodes in the sanitary system, but not shown in Figure 1 (2): Dupont Library, Getz Road;



**Figure 1: Rain Gauge and Model Subcatchment Locations**

- Data not available during PCM Period and not shown in Figure 1 (1): Lima Road; and
- Data not available during PCM Period and shown in Figure 1 (4): Coliseum, Irwin, Main Street, Spy Run.

### Rainfall Data Review

Based on direction from CUE staff, the project team reviewed the rainfall data for the following:

- Event classification based on Rainfall Frequency Atlas of the Midwest (Huff and Angel, 1992).
- Spatial variation across the gauge network
- Telemetry errors where a period of precipitation is read in a single 5-minute interval
- Events where only a single gauge reported rainfall

**Table 2** presents the ten largest events by average rainfall for the 12-month period. It should be noted that events are classified based on the specific duration of precipitation in lieu of a fixed duration for all events. This was done to understand the relative importance of each event to the collection system. For example, suppose two inches of rain fell in a single hour. This would be classified as a 25-year storm. If the same two inches of rain were reviewed assuming a fixed six-hour event duration, it would be classified as a 2- to 5-year storm event.

As shown in the table, no event was consistently in excess of a 1-year storm for the majority of the gauging stations. However, the May 10 event had a single gauge at a 10- to 25-year event (Belle Vista) and the August 18 event had a single gauge at a 10-year event (Anthony).

Rainfall Event	Average Gauge Network Rainfall, in	Classification for Majority of Gauges	Airport Gauge Rainfall, in	Classification for Airport Gauge
9/4/2015	1.01	2 Month - 9 Month	1.10	2 Month
10/27/2015	0.95	2 Month - 6 Month	0.98	< 2 Month
12/26/2015	1.08	2 Month - 3 Month	1.45	4 Month
1/9/2016	0.88	2 Month	1.11	< 2 Month
2/24/2016	0.87	2 Month - 3 Month	0.81	< 2 Month
5/10/2016	2.01	2 Month - 5 Year	2.77	2 Year to 5 Year
6/4/2016	1.20	2 Month - 9 Month	1.70	1 Year to 2 Year
6/15/2016	0.83	2 Month - 9 Month	1.38	9 Month to 1 Year
8/18/2016	0.85	2 Month - 1 Year	0.31	< 2 Month
8/24/2016	1.00	2 Month - 2-Year	0.94	2 Month to 3 Month

**Table 2: Top 10 Events by Average Rainfall**

For the events in Table 2, the rainfall collected at the airport rain gauge is relatively consistent, with some effects of spatial variation shown. This comparison was made at CUE's request since long-term data from the airport gauge was used to derive the typical year rainfall for PCM compliance simulations.



**Table 3** presents a summary of eleven rain events flagged due to suspect data in the review of the 12 months of data from the 13-gauge network. As shown in the table, based on the review, three events were unmodified, one event at a single gauge was removed, and seven were modified based on the rainfall from adjacent gauges. Overall, the annual data is of good quality, with an annual average precipitation of 28.7" as measured by the 13 rain gauges used in this analysis. Further, rainfall data from the Airport gauge indicates that the 12-month PCM period was very close to a typical year in terms of total rainfall – annual precipitation at the Airport gauge for this 12-month period was 34.55", similar to the typical year average of 35.4" (the average annual rainfall for the City's 5-year (1998-2002) typical year period).

Event Date	Rain Gauge	Return Period	Return Period of the Other Rain Gages	Solution
12/24/2015	Belle Vista	5-yr to 10-yr	~2-mo	Distribute Rain over 12/23 and 12/24
12/29/2015	Belle Vista	2-yr to 5-yr	2-mo to 6-mo	Distribute Rain over 12/28 and 12/29
12/29/2015	Getz Road	>100-yr	2-mo to 6-mo	Distribute Rain over 12/28 and 12/29
1/2/2016	Fairfield	6-mo to 9-mo	No other gages reported rain events	Remove rainfall
1/11/2016	Study	>100-yr	~2-mo	Replace with average of nearby gauges
2/26/2016	Fairfield	6-mo to 9-mo	~2-mo	Replace with average of nearby gauges
4/6/2016	Dupont Library	2-yr to 5-yr	<2-mo	Distribute Rain over 3/24 through 4/6
5/10/2016	All gages vary	Gages range from 25-yr to 2-mo		Keep – Spatially Varied
6/9/2016	Getz Road	>100-yr	No other gages reported rain events	Distribute Rain over 5/14 through 6/9
7/29/2016	Getz Road	9-mo to 1-yr	Only 1 other gage reported a <2-mo event (Study)	Keep – Spatially Varied
8/18/2016	Anthony	10-yr	2-mo to 1-yr	Keep – Spatially Varied

**Table 3: Corrections to 13-Gauge Network Rainfall Based on Technical Review**

As an example of events modified based on the rainfall data review, **Figure 2** presents the rainfall from the 13-gauge network from December 24<sup>th</sup> through December 31<sup>st</sup>, 2015. As shown in the figure, two telemetry errors are observed for the December 24<sup>th</sup> and 28<sup>th</sup> events. For these observed errors, the project team corrected the data by maintaining the total rainfall, but temporally distributing it consistent with the nearby gauges.

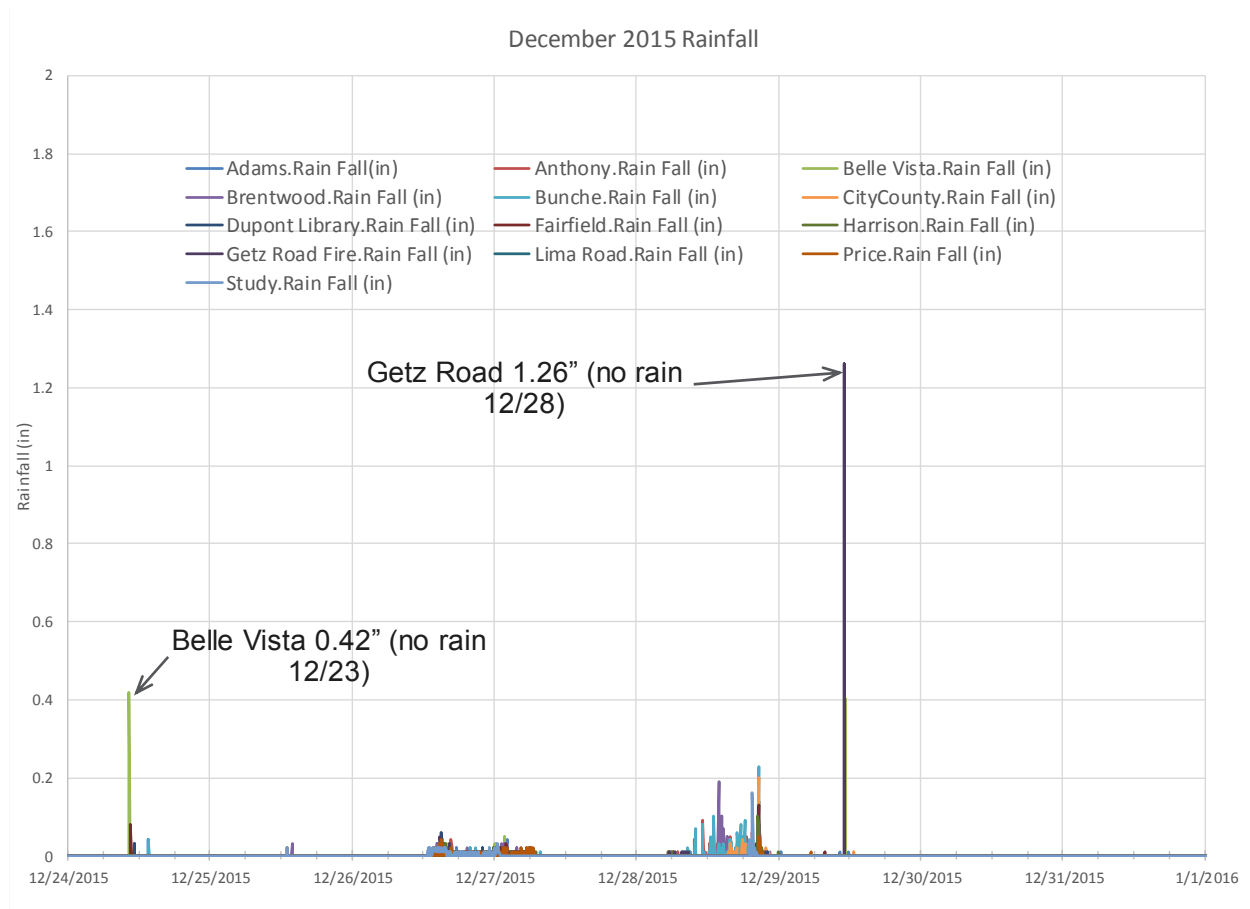


Figure 2: Observed Telemetry Errors December 24<sup>th</sup> – December 31<sup>st</sup>, 2015

## FLOW METER DATA REVIEW

This section presents the review of outfall flow monitoring data provided by CUE for the St. Joe CSOs and tributary collection system. Monthly level-velocity scattergraphs are presented in **Appendix A**.

### Outfall Meter Data

Meter data was provided for one CSO structure on the east side of the St. Joe River: CSO 052. For the other five CSOs, CUE confirmed that no overflows were monitored during the 2015-2016 PCM period from their preparation of CSO Discharge Monitoring Reports (DMRs); therefore, no outfall meter data review was necessary at these locations. CSO 052 data is presented for September 2015 to August 2016. For an overflow pipe, the level-velocity scatter presented as expected, there is limited scatter since the majority of the time the pipe is empty, but the observed depth, velocity, and flow data is consistent through the 12-month period. Based on the review of scattergraphs in Appendix A, the outfall monitoring data is appropriate for use in assessing the model calibration as required in CUE's Long-Term Control Plan (CUE, 2007).

As shown in Appendix A, CSO 052 reported three verified overflow events during the monitoring period. Two of these were verified overflow events due to wet weather in August 2016. The third event was

observed during a wet-weather event on September 19, 2015 but field investigation indicates it was due to a blockage in the regulator and not due to excess wet-weather flows. This blockage was immediately cleared. One other potential overflow event was unverified and determined to be a non-event on March 31, 2016. This was done using redundant instrumentation and is described in more detail in the following report section on page 10.

## ST JOE SUBBASIN MODEL ANALYSIS

This section presents the model review, preparation, and application for the 12-month PCM period, and comparison to the data collected by CUE from September 1, 2015 to September 1, 2016. **Figure 3** presents the St. Joe River CSO Subbasins that were the focus of the analysis.

### Model Review and Preparation

The EPA SWMM v5.1.009 model files provided by CUE represent the current combined sewer collection system with Control Measures 7 and 8 completed. Modeling inputs were updated to reflect the monitoring period. Climatology data for the simulation period was updated with daily maximum and minimum temperatures for the City of Fort Wayne. The evaporation rates used in the simulation were computed in the model from the daily temperature values. Five-minute interval rainfall data from the 13 gauge network was imported into the model for the simulation period. As shown in Figure 1, rain gauge assignments to subcatchments and RDII hydrographs were based on geospatial location of the rain gauge in relation to the subcatchments and the manhole locations with assigned RDII flow. River intrusion to the combined sewer collection system outside of the St. Joe collection system was provided by CUE and modeled as direct inflow at six locations throughout the system.

### Initial Model Testing

In advance of completing a 12-month simulation, initial shorter duration models were tested. The initial model tests included simulating four individual rain events and one full month of rainfall. The individual rain events represent small, large, and spatially varied rain events which occurred during the monitoring period. The selected model test periods are described in Table 4.

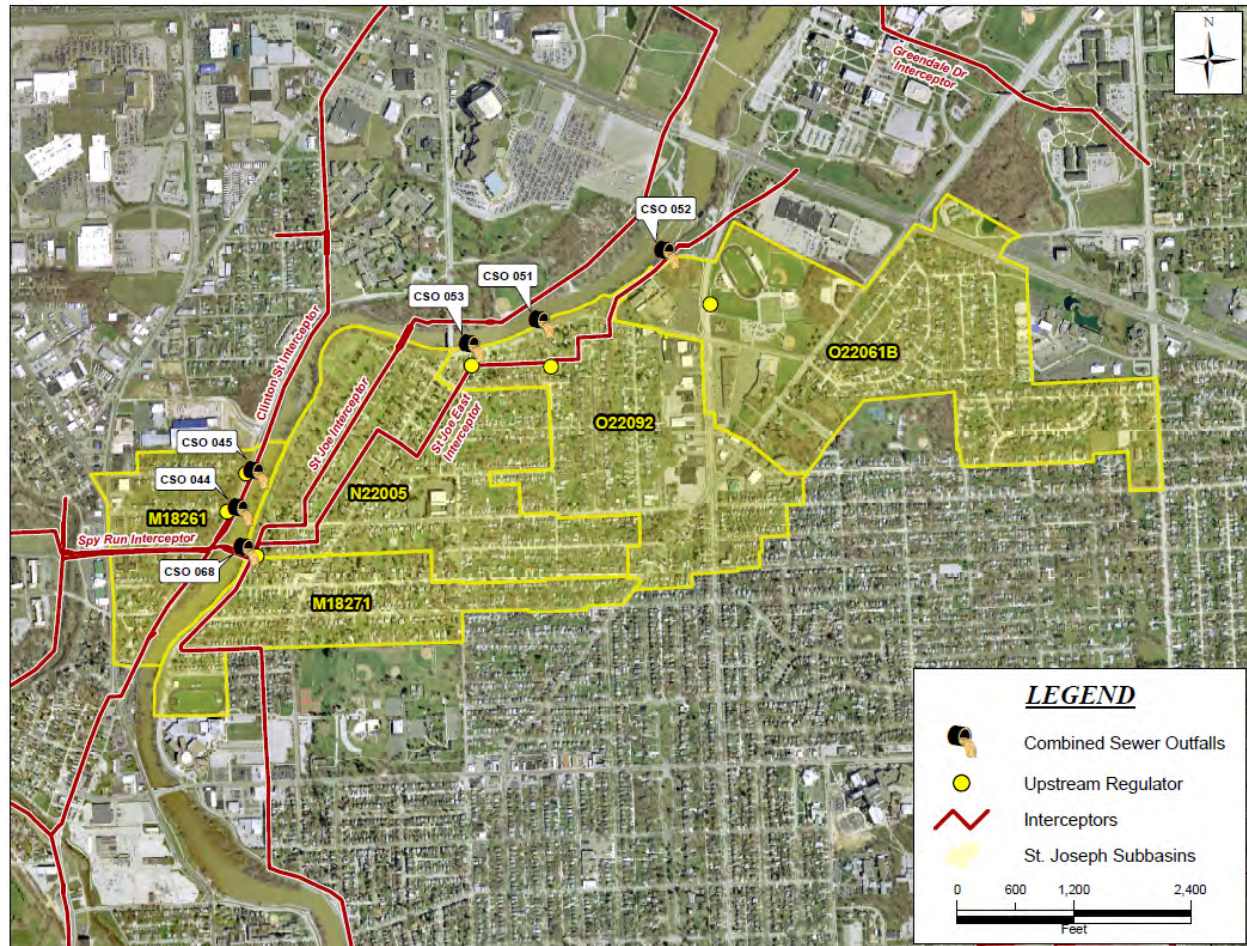


Figure 3: St. Joe River CSO Subbasins

Event Date	Average Event Rainfall, in	Return Period Classification of Majority of Rain Gauges
10/27/2015	0.95	2 month – 6 month
4/28/2016	0.71	2 month
6/4/2016	1.20	2 month – 9 month
7/21/2016	0.61	2 month – 1 year
August 2016	3.4	N/A

Table 4: Initial Model Test Periods

Simulation results from the model test periods were reviewed to develop confidence in the model predictions. Model results review included hydraulic grade line evaluations and comparisons with metered data including flow rate, depth, and CSO activations. The initial test simulations were stable (low continuity error) and the collection system results were a good fit to metered data over a wide range of conditions, confirming the model's ability to perform the critical 12-month PCM simulation.



### Final 12-Month Model Simulation

The final model simulation duration extends for 12 months, from September 1, 2015 through September 1, 2016. Wet-weather and dry-weather runoff calculations were assigned a five minute and one hour time step, respectively. A variable flow routing time step based at 10 seconds was applied to reduce model instabilities and improve continuity. Simulation runoff quantity and flow routing continuity were -0.4% and -0.06% respectively. The low continuity errors reflect a high level of certainty in the hydraulic and hydrologic results.

The review of the St. Joe River CSOs results focused on the six CSO locations: 068, 044, 045, 053, 051, and 052. Metering data recorded two true CSO activations during the simulation period, all occurring at CSO 052. Given the configuration at CSO 052, the City's monitoring installation uses several sensors: a pressure transducer at the actual regulator, which serves as a "yes/no" indicator of activation, and a full depth/velocity meter in the outfall pipe to measure flow rate. Because the outfall pipe can be impacted by groundwater infiltration, a true CSO activation is only registered when the pressure transducer indicates overflow at the regulator structure. For example, a potential fourth event was initially observed in the CSO 052 outfall meter data at the end of the month of March 2016, but CUE confirmed this event was not an actual overflow by using the pressure transducer. In this case, the briefly measured flow in the overflow pipe was groundwater infiltration.

### Comparison to PCM Metering Data

The 12-month simulation results in the St. Joe River Basins were compared to the metered depth and flow data. There is an overall consistency in the flow data throughout the model in comparison with metered data and known collection system performance. Comparisons between metered and modeled flow and depth were completed for the top ten rain events listed in Table 3, plus an additional event in September 2015. The percent difference between modeled and metered data is provided in **Table 5** for each rain event. CSO locations 068, 053, 051, 044, and 045 had zero flow or depth for the full simulation duration.



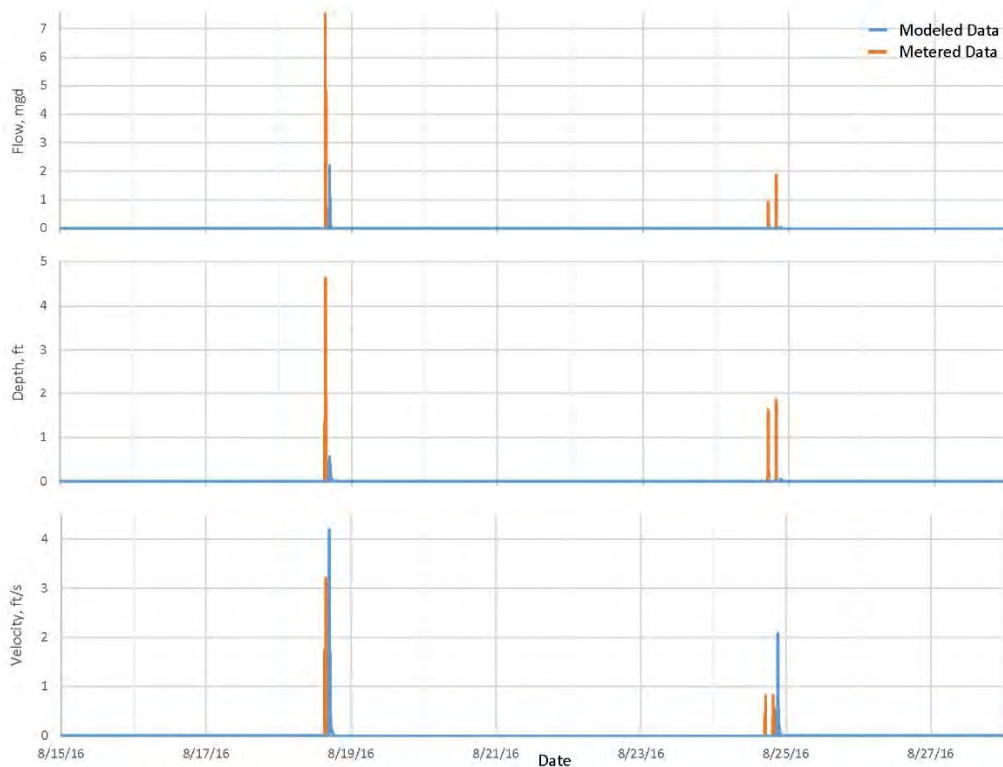
Date	Data Set	CSO 052		CSO 044		CSO 045		CSO 051		CSO 053		CSO 068	
		Depth, ft	Flow, MGD	Depth, ft	Flow, MGD	Depth, ft	Flow, MGD	Depth, ft	Flow, MGD	Depth, ft	Flow, MGD	Depth, ft	Flow, MGD
9/4/2015-9/6/2015	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	1.6 <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-	-	-	-	-	-	-	-	-	-	-
9/19/2015-9/20/2015	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	2.0 <sup>2</sup>	3.0 <sup>2</sup>	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-.2	-	-	-	-	-	-	-	-	-	-
10/27/2015-10/29/2015	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	0.01 <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-	-	-	-	-	-	-	-	-	-	-
12/26/2015-12/28/2015	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	0.02 <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-	-	-	-	-	-	-	-	-	-	-
1/8/2016-1/11/2016	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	0.03 <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-	-	-	-	-	-	-	-	-	-	-
2/24/2016-2/25/2016	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	0.03 <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-	-	-	-	-	-	-	-	-	-	-
5/9/2016-5/12/2016	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	1.4 <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-	-	-	-	-	-	-	-	-	-	-
6/4/2016-6/6/2016	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	0.03 <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-	-	-	-	-	-	-	-	-	-	-
6/15/2016-6/16/2016	Model	0	0	0	0	0	0	0	0	0	0	0	0
	Meter	0.5 <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0
	% Difference	-	-	-	-	-	-	-	-	-	-	-	-
8/17/2016-8/20/2016	Model	0.6	2.2	0	0	0	0	0	0	0	0	0	0
	Meter	4.6	7.5	0	0	0	0	0	0	0	0	0	0
	% Difference	-88%	-71%	-	-	-	-	-	-	-	-	-	-
8/24/2016-8/25/2016	Model	0.1	0.04	0	0	0	0	0	0	0	0	0	0
	Meter	1.8	1.9	0	0	0	0	0	0	0	0	0	0
	% Difference	-97%	-98%	-	-	-	-	-	-	-	-	-	-

Note<sup>1</sup>: Inconsequential depth reading at CSO 052 because overflow rate was zero (confirmed with pressure transducer). Note<sup>2</sup>: Field investigation indicate this overflow was due to a blockage in the regulator.

**Table 5: Top 10 Rain Event Flow and Depth Comparison**

The two true CSO 052 activations occurring during the August 17-20, 2016 and August 24-25, 2016 rain events match the metered data activations, with variation in the peak depth and flow comparison. For outfall metering, matching activation is the highest priority since the outfall meter cannot be field verified during a wet-weather event. While the peak flow and depth for the two true CSO 052 activations in the model are lower than the metered data there is agreement between the model output and CSO monitoring data for activation frequency.

Graphical comparison of the August 17-25, 2016 event period for metered and modeled flow, depth, and velocity for CSO 052 are provided in **Figure 4**, with the model output shown in blue, and meter data shown in orange. As presented in Figure 4, the metered depth and flow exceeds the model, but the observed and simulated CSO activations are correct. CUE had expected the meter data to be higher due to the observed groundwater infiltration in the overflow pipe downstream of the regulator structure. Also, the lack of access to a CSO outfall meter during a wet-weather event prevents the meter from being formally field-calibrated, meaning that the meter could be over-representing actual flow conditions in the pipe.



**Figure 4: CSO 052 August 17-25, 2016 Model Results**

## SUMMARY AND NEXT STEPS

### Summary

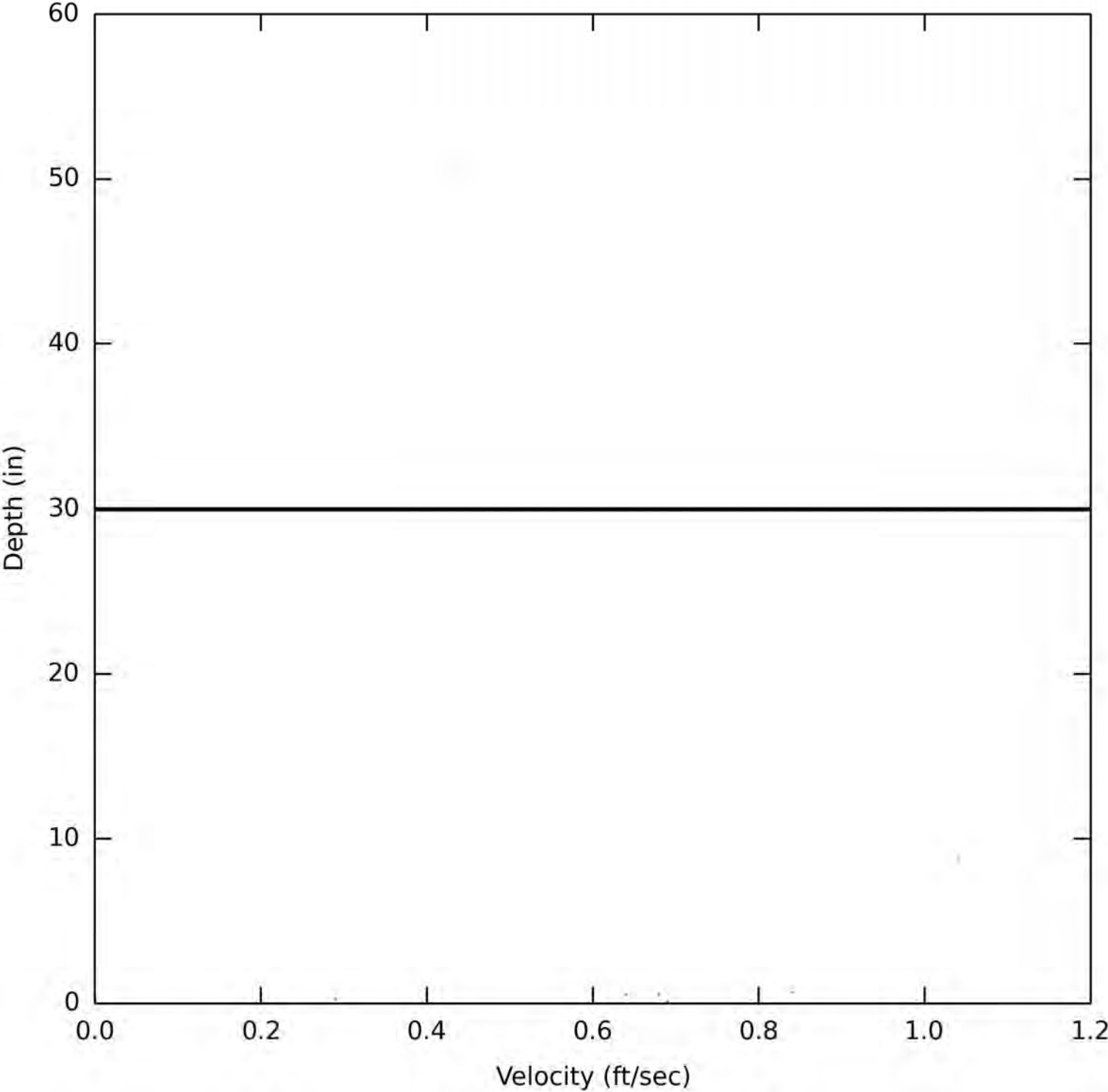
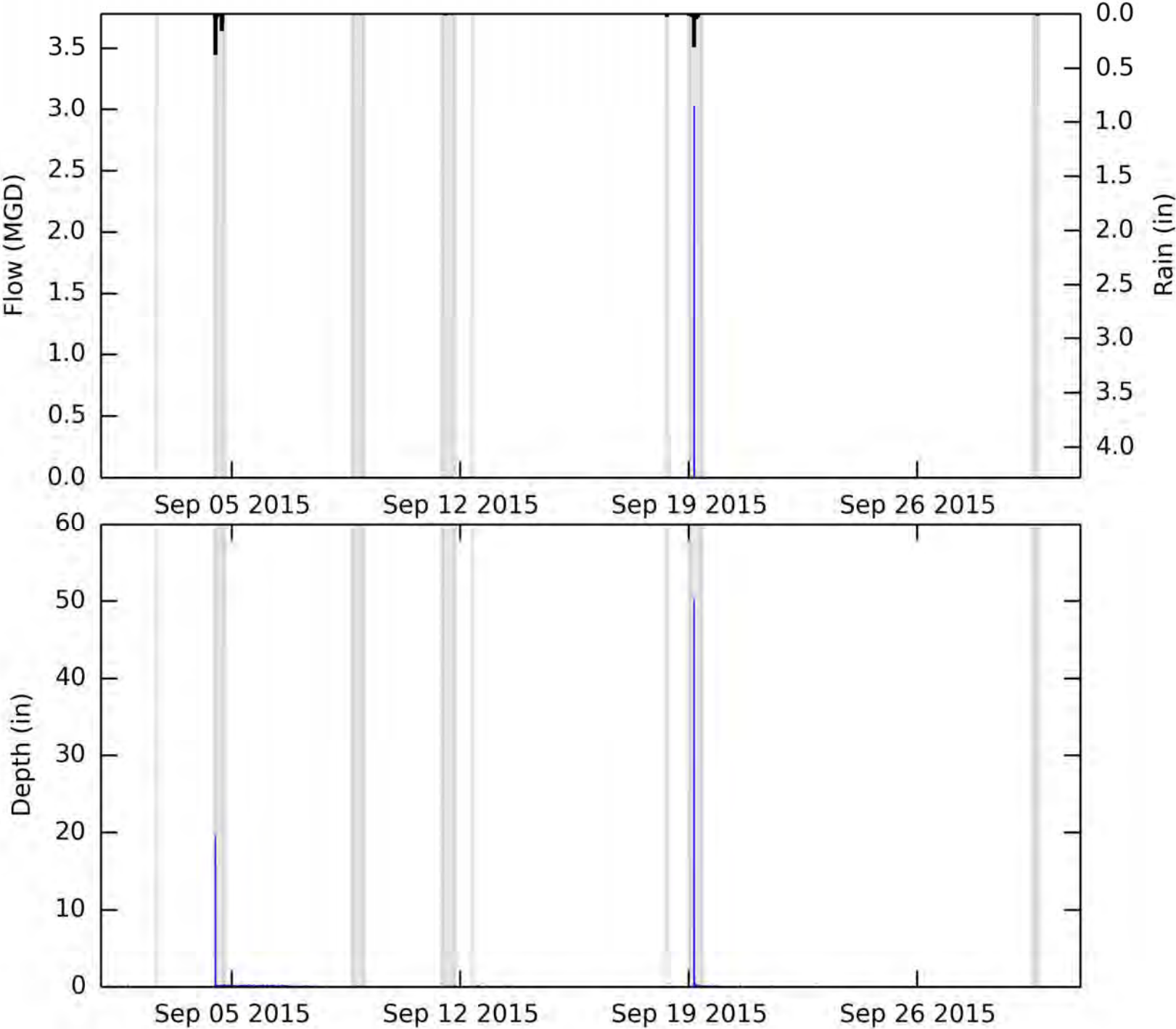
Based on the evaluation documented in this memorandum, CUE's model does not need to be recalibrated. CUE can proceed with the final 1998-2002 typical year simulation for the St. Joe River subbasins to assess compliance for the six CSOs on the river. The reasons that the current model calibration is adequate are as follows:

- CUE has collected the precipitation and CSO outfall data as required in LTCP Section 4.6.4.1; and
- CUE has applied the model for the 12-month period and determined that all metered overflow events were successfully predicted in the model.

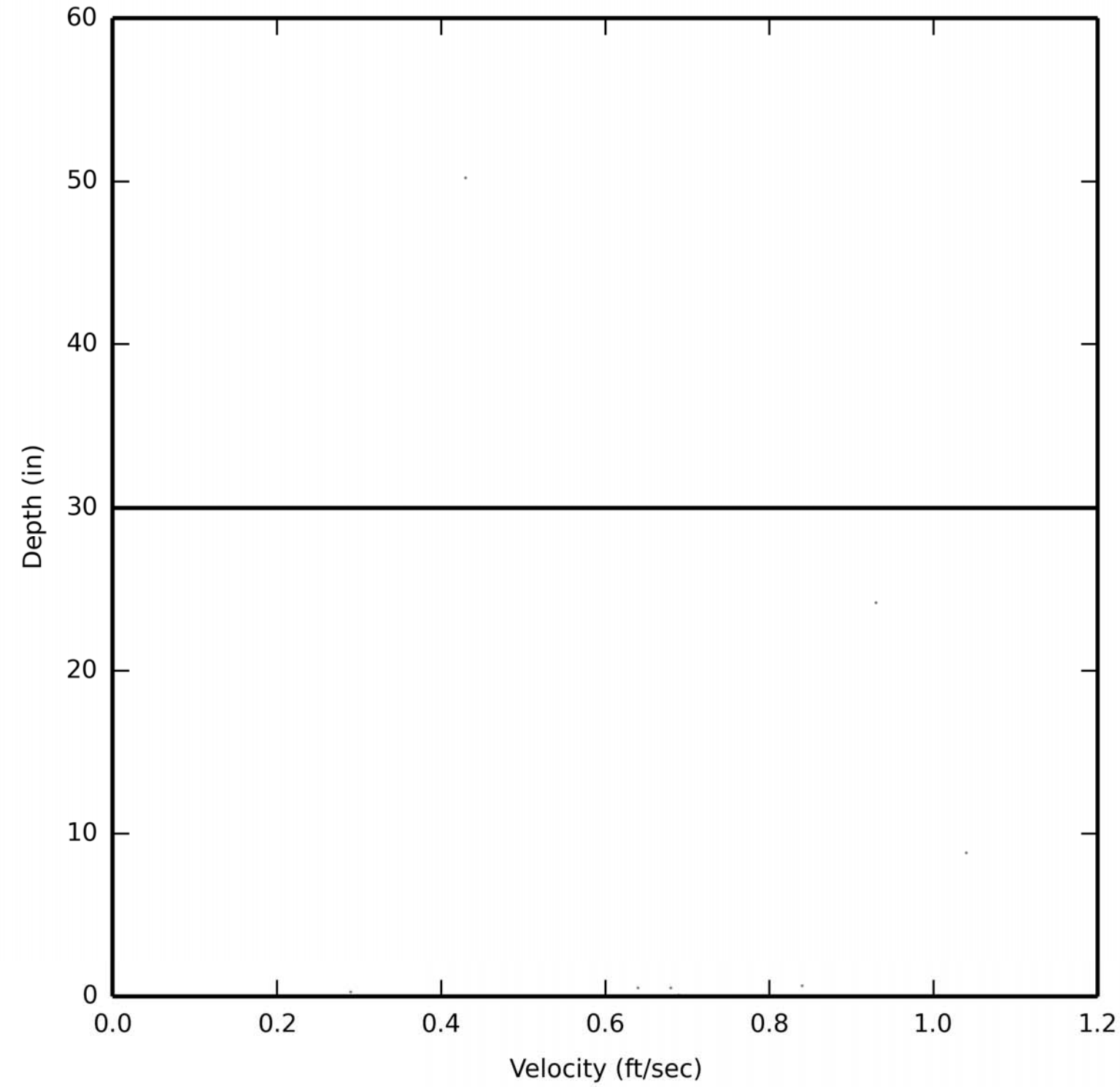
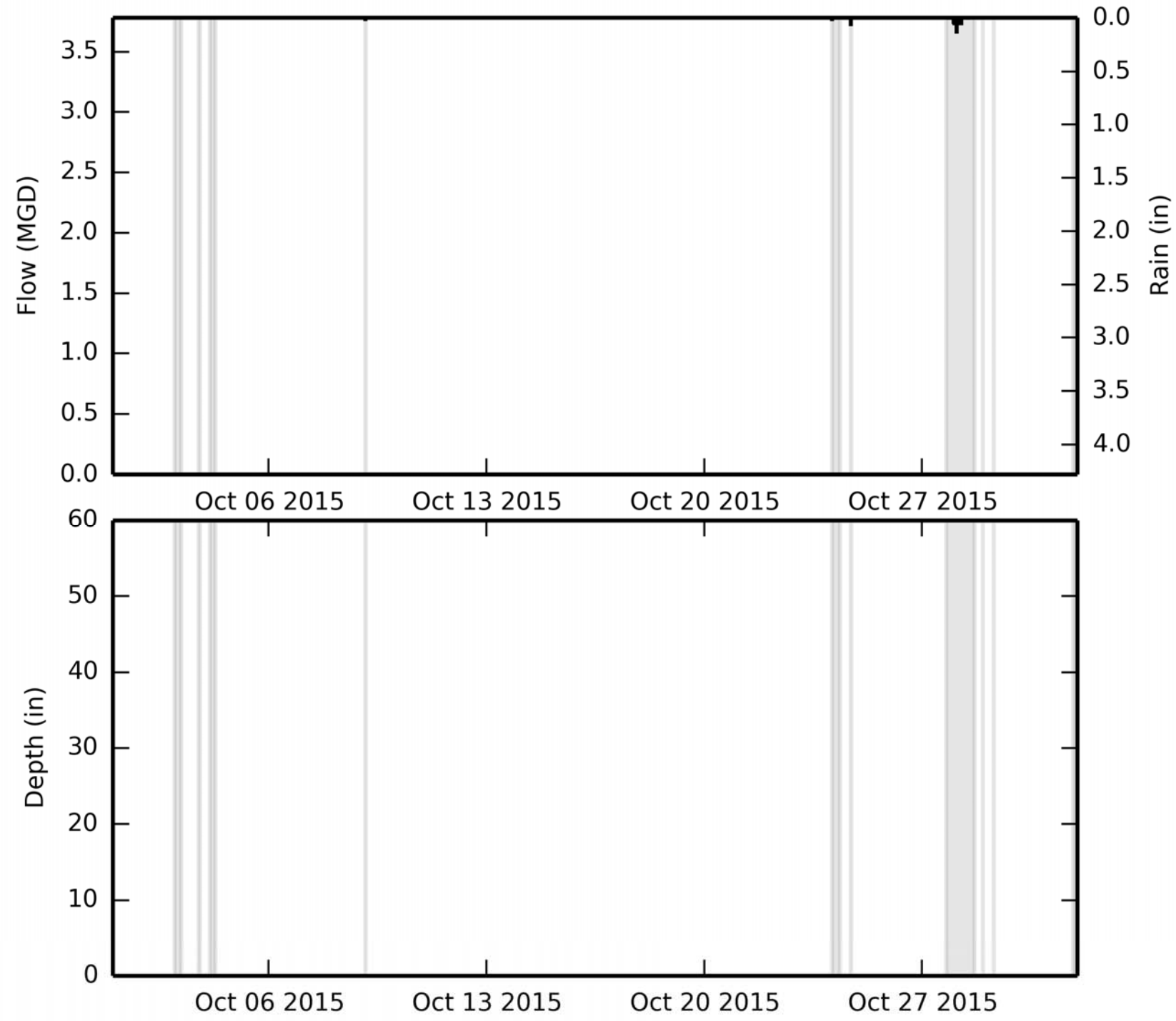
### Next Steps

CUE can proceed with the final 1998-2002 typical year simulation for the St. Joe River subbasins and develop the PCM Milestone Report.

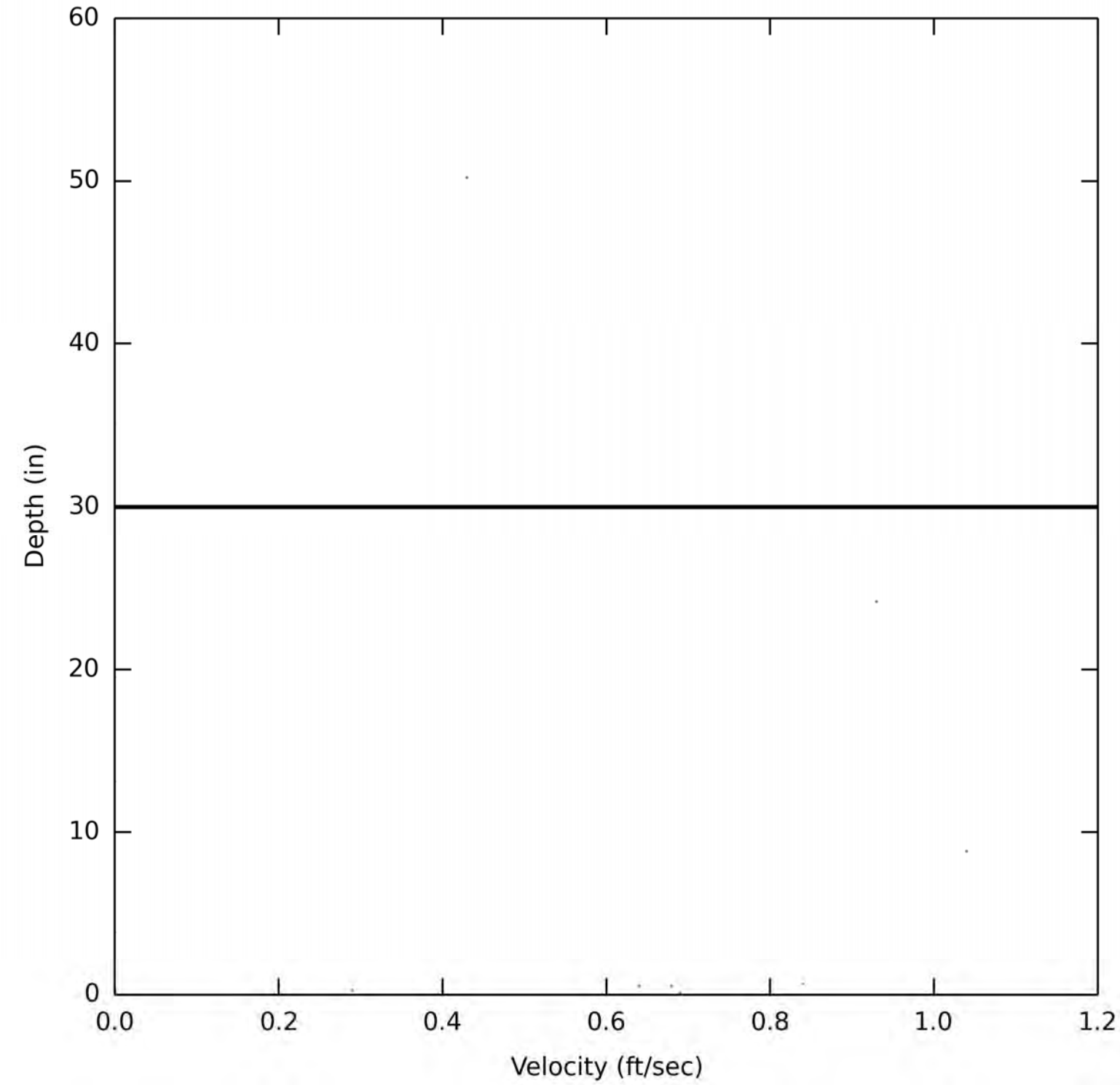
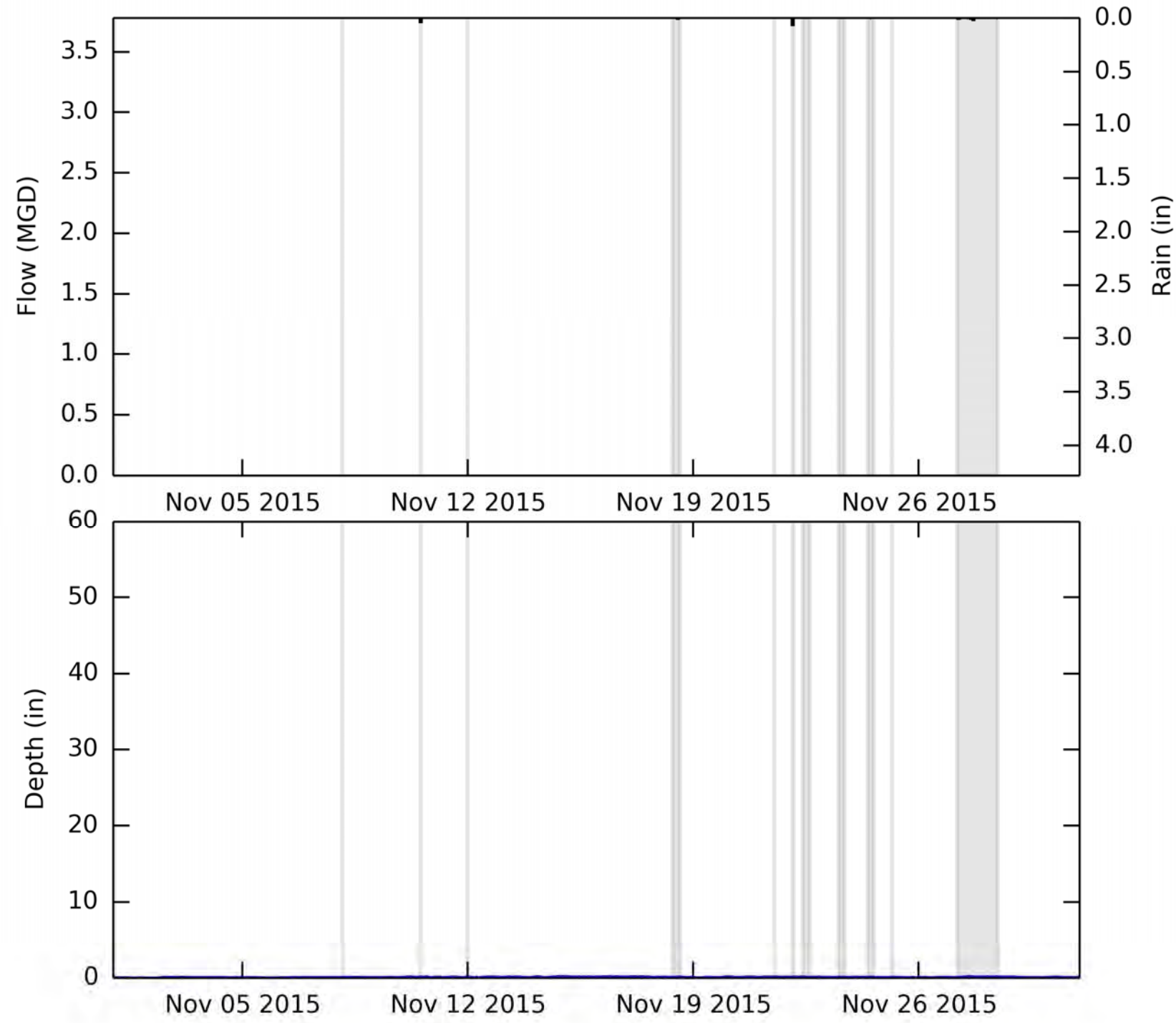
## APPENDIX A: CSO 052 METER SCATTERGRAPH



Meter CSO052B - 10/2015 RG: Anthony Basin: St Joe Conduit Diameter: 30



Meter CSO052B - 11/2015 RG: Anthony Basin: St Joe Conduit Diameter: 30



Meter CSO052B - 12/2015 RG: Anthony Basin: St Joe Conduit Diameter: 30

