"MIAMI RIVER BASIN WATER QUALITY IMPROVEMENT REPORT"
Action Item Matrix Quarterly Progress Report

First Quarterly Report, 2018
(January-March)

Action Item:

4. Monitoring and Research
   a. Continue monthly monitoring for water quality of Wagner Creek, Miami River, and adjoining Biscayne Bay

Lead Agency:	Miami-Dade County DERM
Contact Name	Pamela Sweeney or Omar Abdelrahman, DERM
Address	701 NW 1st Court Miami, FL 33136
Telephone	(305) 372-6594 or (305) 372-6872
Fax	(305) 372-6649
E-mail	montyj@miamidade.gov abdelo@miamidade.gov

Action Item Status:

Miami-Dade DERM has continued to collect monthly water quality samples in the Miami River and its tributaries (including Tamiami Canal, Comfort Canal and Wagner Creek). During the First Quarter of 2018 samples were collected at each of the eight stations in the River and tributaries on First Tuesday of the first full week in January, February, and March. Costs for sampling (including salaries and fringe and analysis) have been calculated at approximately $394 per station per month. No sewage spills were reported on or around the Miami River or its tributaries during the quarter.

The Florida Department of Environmental Protection (FDEP) revised the human health-based surface water quality criteria in Chapter 62-302, F.A.C that are designed to ensure that Floridians can safely eat Florida fish and drink local tap water. Based on updated scientific information, the FDEP discontinued the Fecal Coliform standard and instead adopted E. Coli in Class III fresh water and Enterococci in Class III saline waters, and required NPDES permittees to implement the changes. To that end, DERM discontinued sampling Fecal Coliform in March, 2017 and transitioned to collecting the parameters adopted by the State. Since then, DERM has recognized the need for continuity in order to maintain comparability with long-term trends and has resumed Fecal Coliform sampling until there is enough E. Coli and Enterococcus data to characterize bacteriological contamination levels in the subject area.

Figures **1 -3** below depict where monthly results for stations in the Miami River and the vicinity exceed the single sample standard of 35 cfu/100ml for Enterococcus—the applicable indicator for saline locations. Figure 4 is a quarterly composite of Enterococci results from station locations on the Miami River and its tributaries showing how frequently the results at each station exceeded the standard during the First Quarter of the year. Table 1 lists the observed Enterococcus values, as well as E. Coli levels, in Wagner Creek and its confluence with the Miami River (MR03) for January-March.

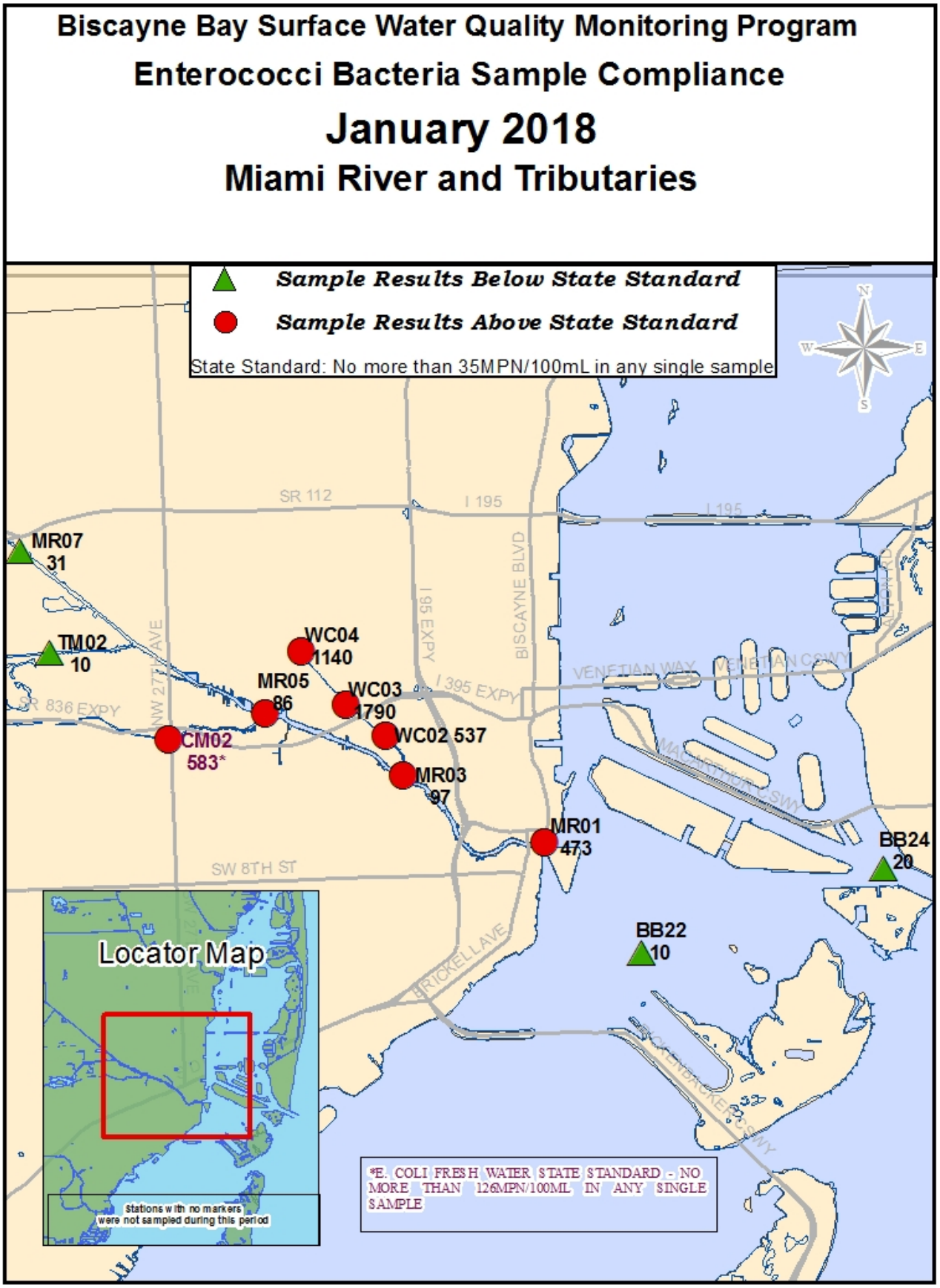

Biscayne Bay Surface Water Quality Monitoring Program
Enterococci Bacteria Sample Compliance
January 2018
Miami River and Tributaries
Sample Results Below State Standard
Sample Results Above State Standard
State Standard: No more than 35MPN/100mL in any single sample
MR07 31
TM02 10
WC04 1140
MR05 86
WC03 1790
WC02 537
CM02 583*
MR03 97
MR01 473
BB24 20
BB22 10
SR 112
I 195
I 195 EXPY
BISCAYNE BLVD
I 395 EXPY
SR 836 EXPY
NW 27TH AVE
SW 8TH ST
BRICKELL AVE
VENETIAN WAY
VENETIAN CSWY
MACARTHUR CSWY
JULIA TUTTLE CSWY
Locator Map
stations with no markers were not sampled during this period
*E. COLI FRESH WATER STATE STANDARD - NO MORE THAN 126MPN/100ML IN ANY SINGLE SAMPLE

Figure 1.

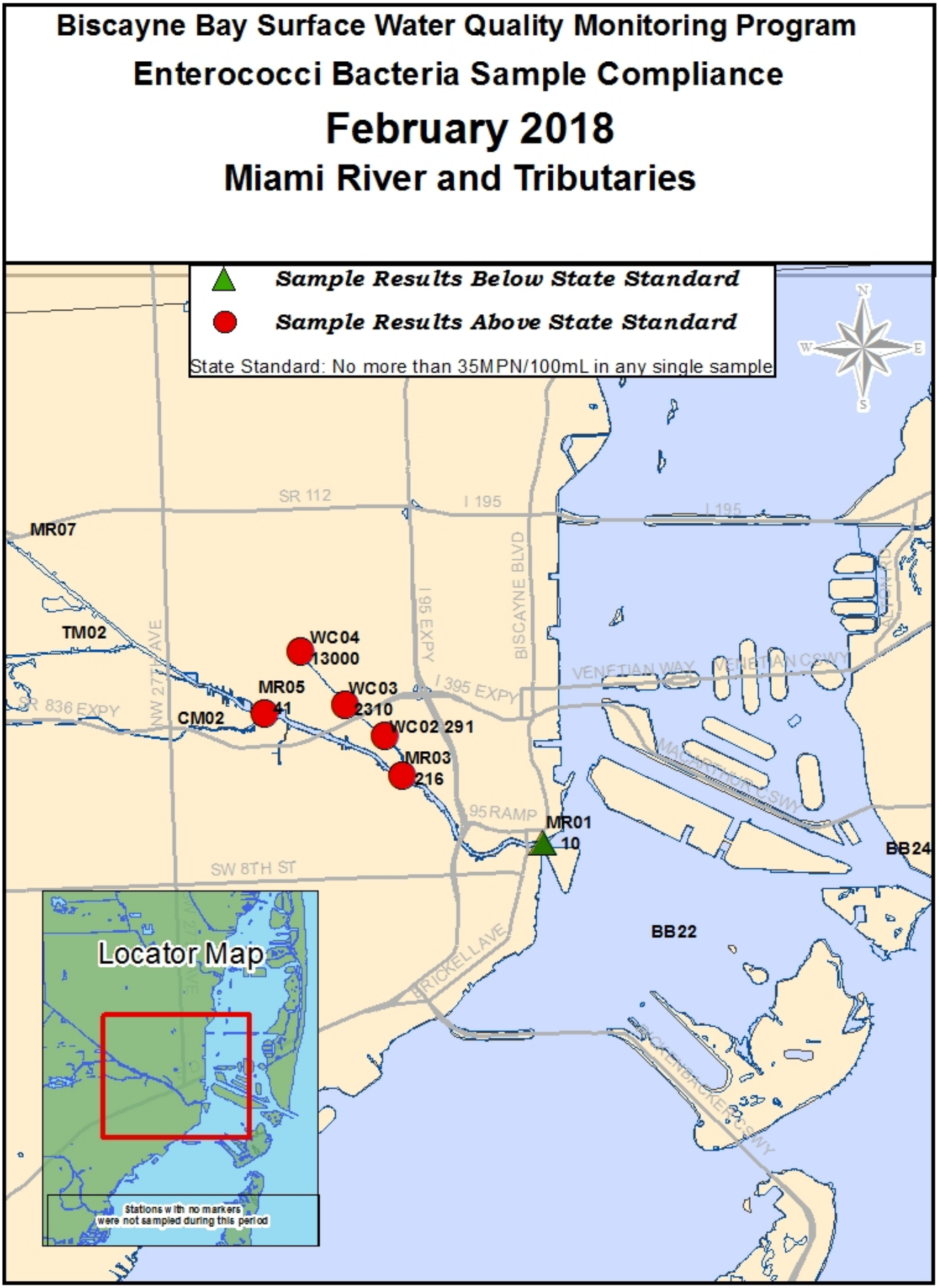

Biscayne Bay Surface Water Quality Monitoring Program
Enterococci Bacteria Sample Compliance
February 2018
Miami River and Tributaries
Sample Results Below State Standard
Sample Results Above State Standard
State Standard: No more than 35MPN/100mL in any single sample
MR07
TM02
CM02
WC04
13000
MR05
41
WC03
2310
WC02 291
MR03
216
MR01
10
BB24
BB22
SR 112
I 195
I 95 EXPY
BISCAYNE BLVD
SR 836 EXPY
NW 27TH AVE
I 395 EXPY
VENETIAN WAY
MACARTHUR CSWY
95 RAMP
SW 8TH ST
BRICKELL AVE
Locator Map
Stations with no markers were not sampled during this period

Figure 2.

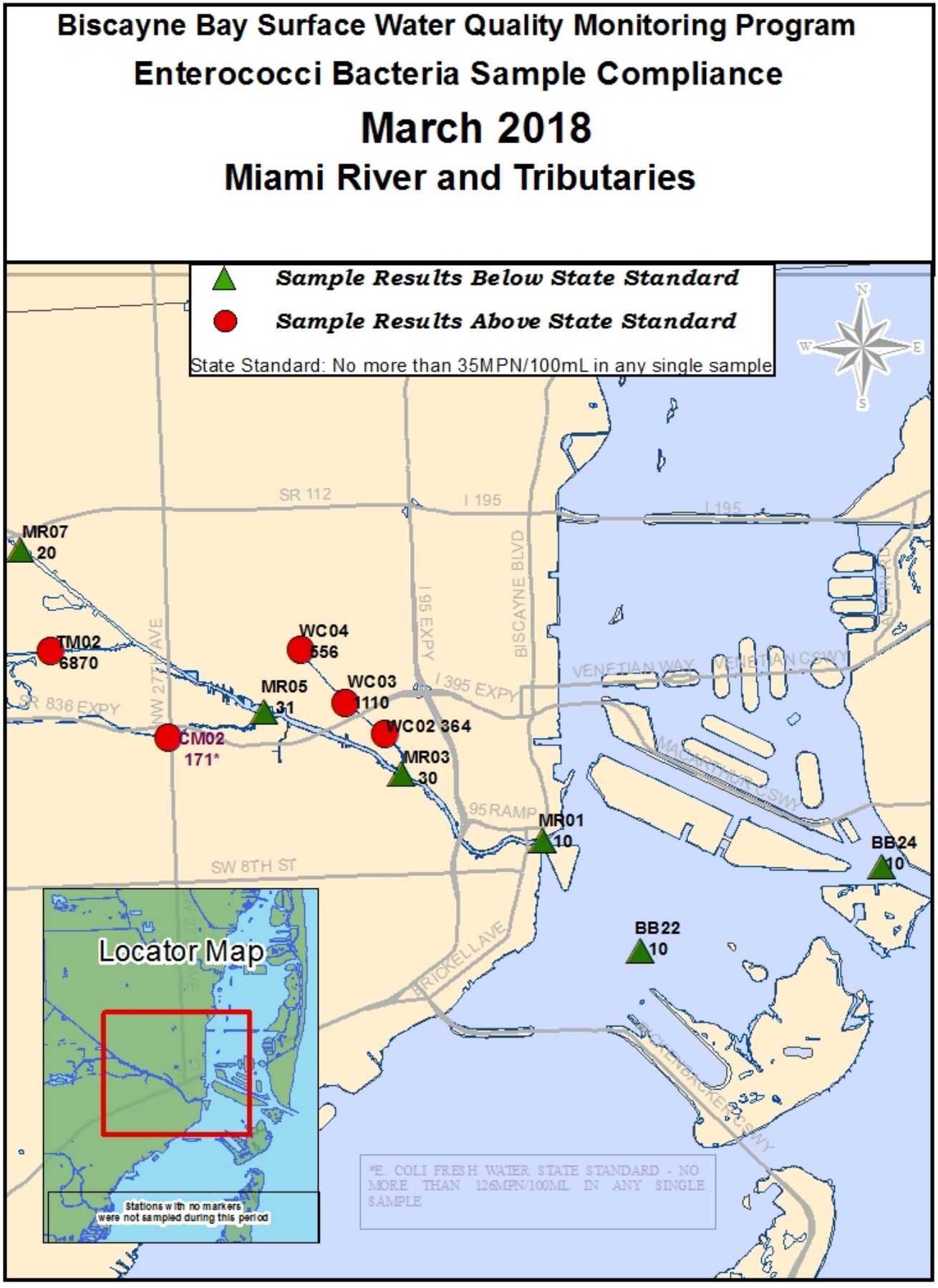

Biscayne Bay Surface Water Quality Monitoring Program
Enterococci Bacteria Sample Compliance
March 2018
Miami River and Tributaries
Sample Results Below State Standard
Sample Results Above State Standard
State Standard: No more than 35MPN/100mL in any single sample
MR07 20
TM02 6870
WC04 556
MR05 31
WC03 1110
WC02 364
CM02 171*
MR03 30
MR01 10
BB24 10
BB22 10
SR 112
I 195
I 95 EXPY
BISCAYNE BLVD
NW 27TH AVE
SR 836 EXPY
I 395 EXPY
VENETIAN WAY
VENETIAN CSWY
MACARTHUR CSWY
95 RAMP
SW 8TH ST
BRICKELL AVE
RICKENBACKER CSWY
Locator Map
Stations with no markers were not sampled during this period
*E. COLI FRESH WATER STATE STANDARD - NO MORE THAN 126MPN/100ML IN ANY SINGLE SAMPLE
N
S
E
W

Figure 3.

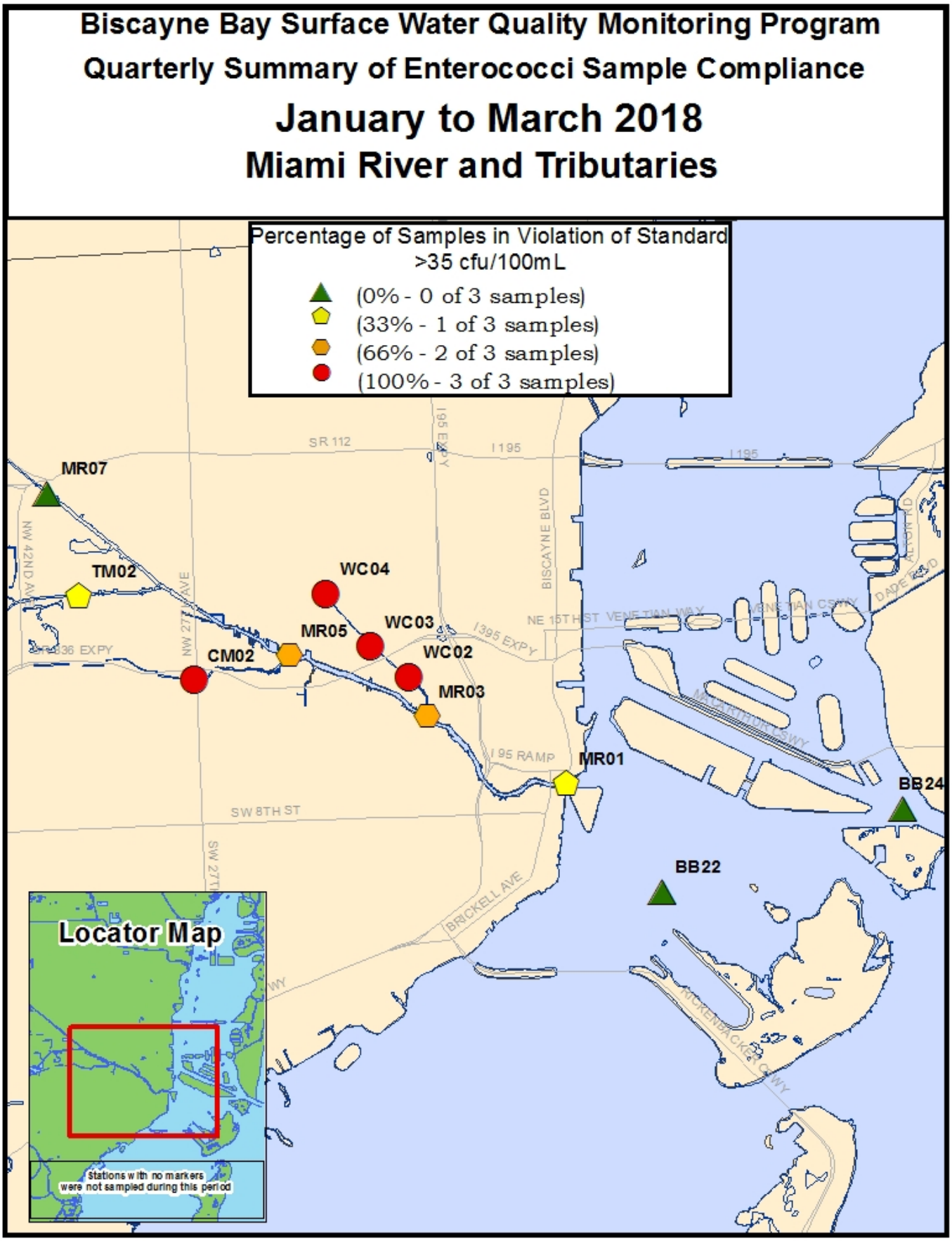

Biscayne Bay Surface Water Quality Monitoring Program
Quarterly Summary of Enterococci Sample Compliance
January to March 2018
Miami River and Tributaries
Percentage of Samples in Violation of Standard
>35 cfu/100mL
(0% - 0 of 3 samples)
(33% - 1 of 3 samples)
(66% - 2 of 3 samples)
(100% - 3 of 3 samples)
MR07
TM02
WC04
WC03
MR05
WC02
CM02
MR03
MR01
BB24
BB22
SR 112
I 195
I 95 EXPY
BISCAYNE BLVD
NW 42ND AVE
NW 27TH AVE
SR 836 EXPY
I 395 EXPY
NE 15TH ST
VENETIAN WAY
VENETIAN CSWY
DODGE ISLAND
MACARTHUR CSWY
I 95 RAMP
SW 8TH ST
SW 27TH
BRICKELL AVE
RICKENBACKER CSWY
Locator Map
Stations with no markers
were not sampled during this period

Figure 4.

Table 1.

MONTHLY INDICATOR BACTERIA LEVELS (cfu's/100 ml) IN WAGNER CREEK								
	MR03		**WC02**		**WC03**		**WC04**	
Parameter	**E.Coli**	**Entero**	**E.Coli**	**Entero**	**E.Coli**	**Entero**	**E.Coli**	**Entero**
January	**233***	**97***	**1620***	**537***	**4610***	**1790***	**4610***	**1140***
February	**331***	**216**	**884***	**291***	**24200***	**2310***	**4610***	**13000***
March	**134***	**30**	**341***	**364***	**446***	**1110***	**2610***	**556***

A" *" indicates results that exceed the State's E. Coli Standard (126 cfu/100ml) or Enterococci (35 cfu/100ml); a "0" indicates that the true value was below the method detection limit.

First Quarterly Report, 2018
(January-March)

Action Item:

5. Management
d. Establish standardized water quality tracking for key characteristics

Lead Agency:	Miami-Dade County DERM
Contact Name	Omar Abdelrahman DERM
Address	701 NW 1ST Court Miami, FL 33136
Telephone	(305) 372-6872
Fax	(305) 372-6630
e-mail	abdelo@miamidade.gov

Action Item Status:

This report presents selected results of the water quality monitoring that occurred in the First Quarter (January-March) of 2018. Due to the extensive nature of the database, it is not feasible to track each parameter collected at each station for the period of record. Therefore, representative parameters have been selected to achieve the objective of this Action Item. Current water quality trends will be tracked by plotting the actual sample results of several key parameters (see Charts 1-14 for graphs of Ammonia Nitrogen, Total Phosphate, Bacteriological Indicator species, and Turbidity data) throughout the river.

All currently monitored stations in the river were included with each parameter plotted on 3 separate graphs each representing the lower river, upper river, and Wagner Creek (See maps presented under action item 4.a for station locations). Data are plotted in time series from the previous ten-year (2008-2018) period, except for Enterococcus which only has 3 months of data available. For further comparison, the target values developed under Action Item 4.f are plotted, and where applicable, the existing state or county standard for each parameter is shown.

Chart 1.

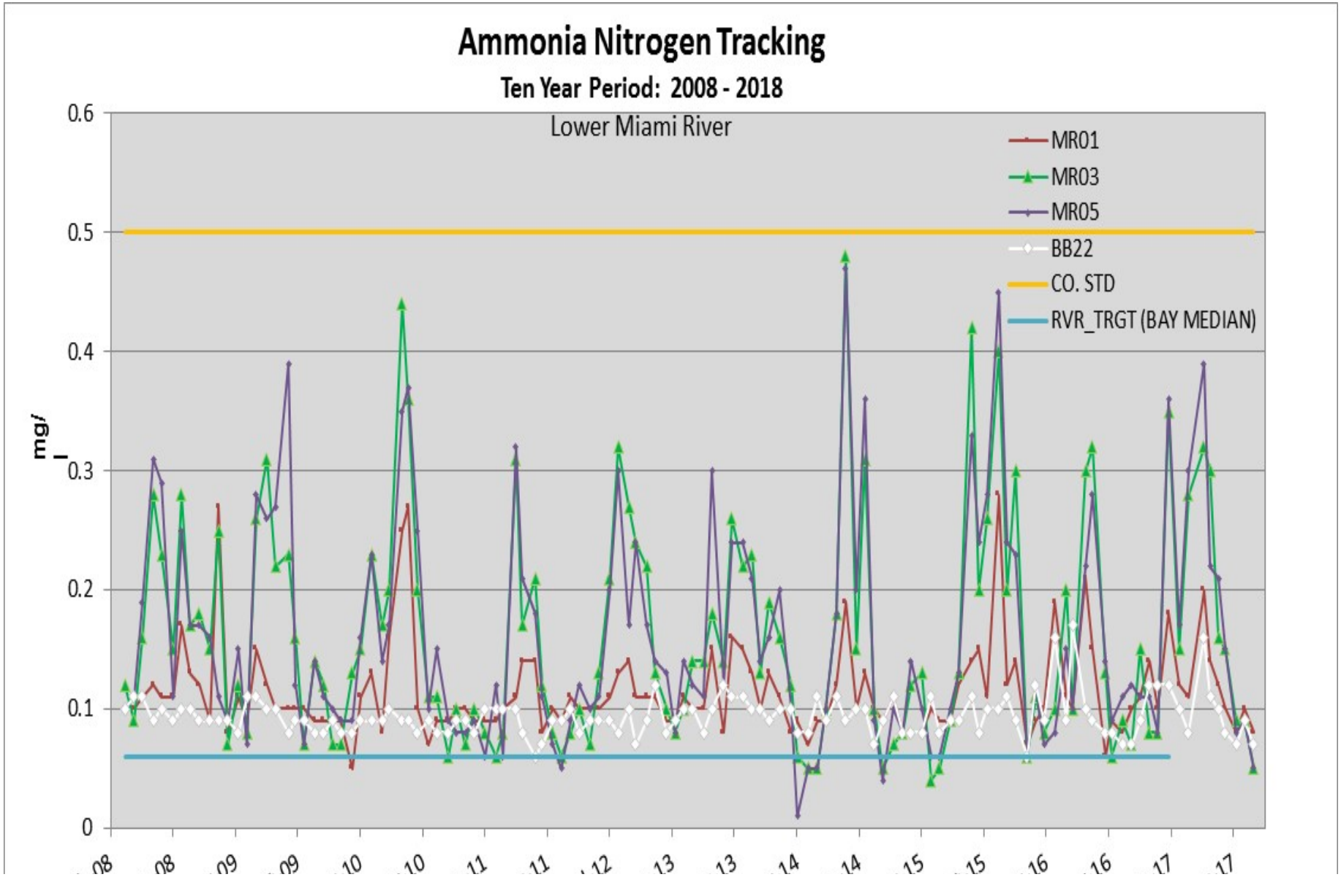

Ammonia Nitrogen Tracking
Ten Year Period: 2008 - 2018
Lower Miami River
MR01
MR03
MR05
BB22
CO. STD
RVR_TRGT (BAY MEDIAN)
mg/l
0.6
0.5
0.4
0.3
0.2
0.1
0

Chart 2.

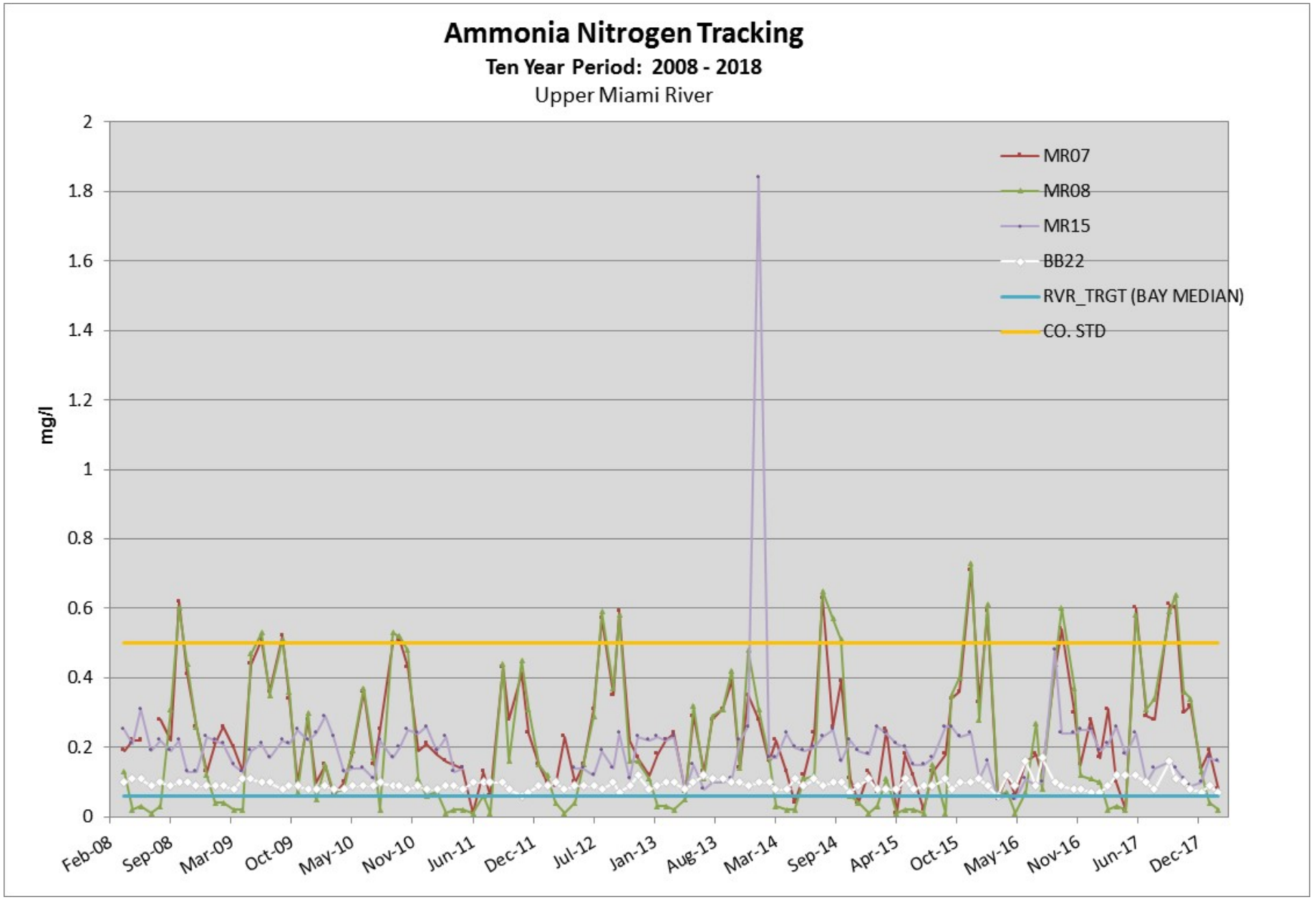

Ammonia Nitrogen Tracking
Ten Year Period: 2008 - 2018
Upper Miami River
mg/l
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
MR07
MR08
MR15
BB22
RVR_TRGT (BAY MEDIAN)
CO. STD
Feb-08
Sep-08
Mar-09
Oct-09
May-10
Nov-10
Jun-11
Dec-11
Jul-12
Jan-13
Aug-13
Mar-14
Sep-14
Apr-15
Oct-15
May-16
Nov-16
Jun-17
Dec-17

Chart 3

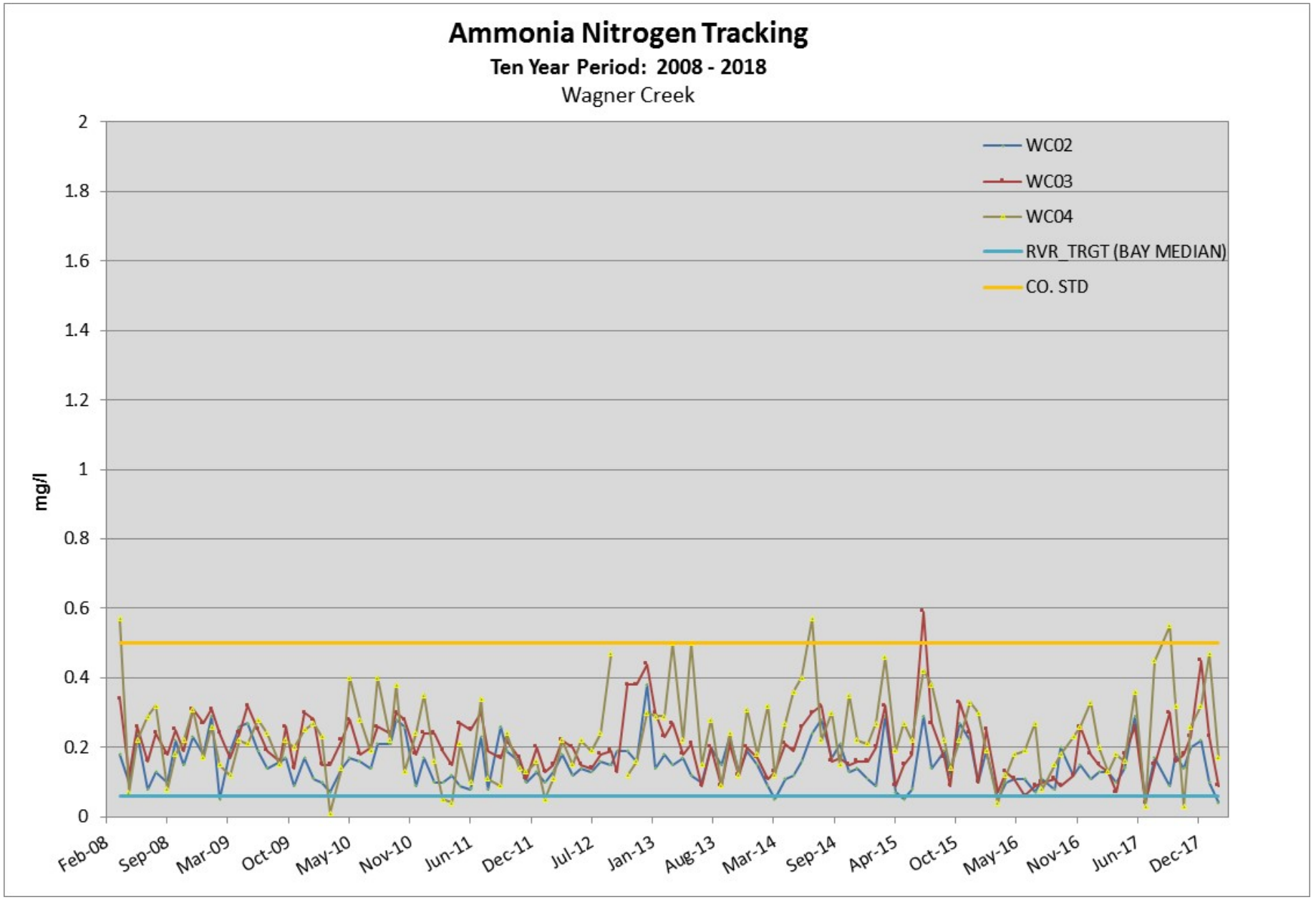

Ammonia Nitrogen Tracking
Ten Year Period: 2008 - 2018
Wagner Creek
mg/l
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
WC02
WC03
WC04
RVR_TRGT (BAY MEDIAN)
CO. STD
Feb-08
Sep-08
Mar-09
Oct-09
May-10
Nov-10
Jun-11
Dec-11
Jul-12
Jan-13
Aug-13
Mar-14
Sep-14
Apr-15
Oct-15
May-16
Nov-16
Jun-17
Dec-17

Chart 4.

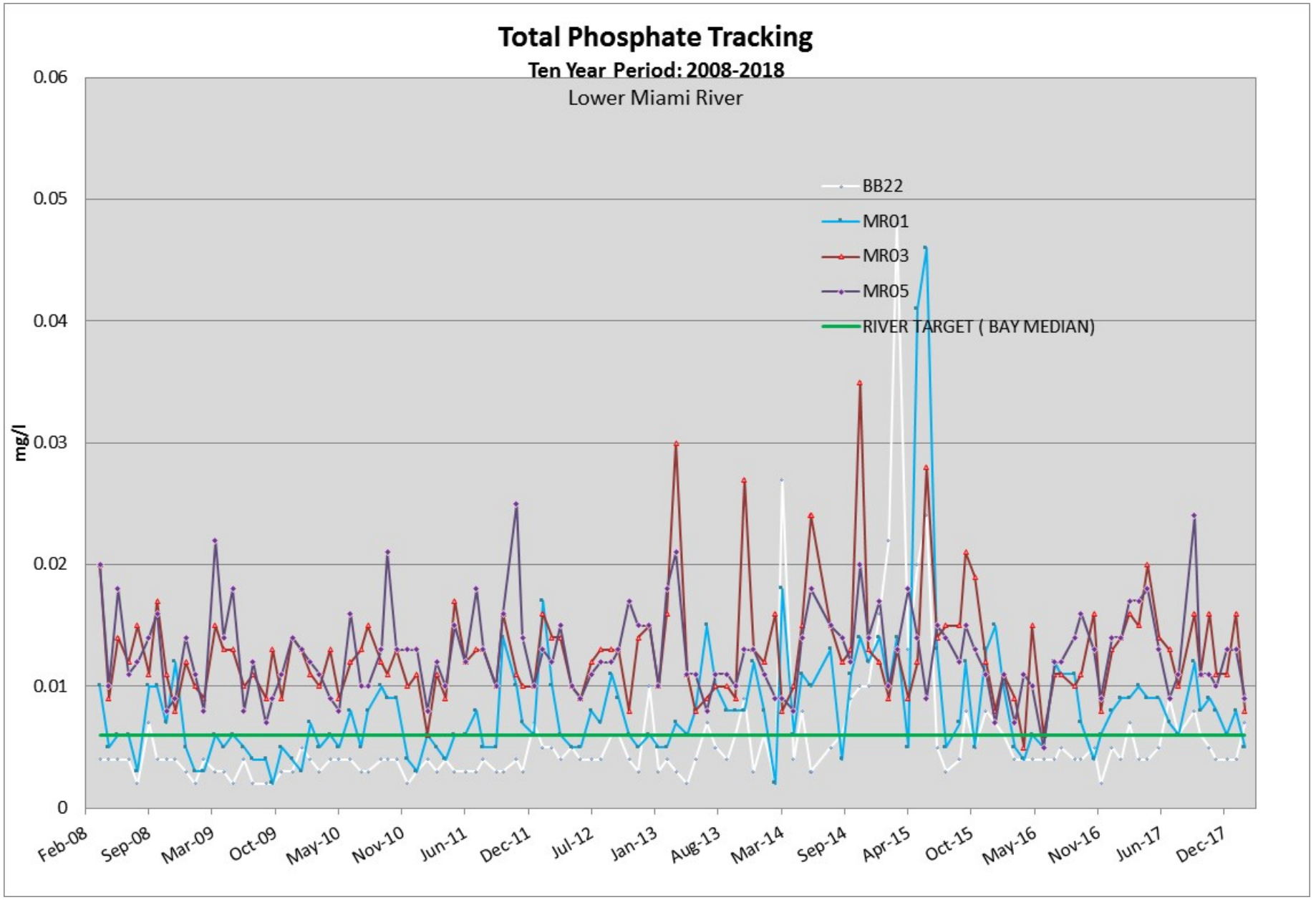

Total Phosphate Tracking
Ten Year Period: 2008-2018
Lower Miami River
mg/l
0.06
0.05
0.04
0.03
0.02
0.01
0
BB22
MR01
MR03
MR05
RIVER TARGET (BAY MEDIAN)
Feb-08
Sep-08
Mar-09
Oct-09
May-10
Nov-10
Jun-11
Dec-11
Jul-12
Jan-13
Aug-13
Mar-14
Sep-14
Apr-15
Oct-15
May-16
Nov-16
Jun-17
Dec-17

Chart 5.

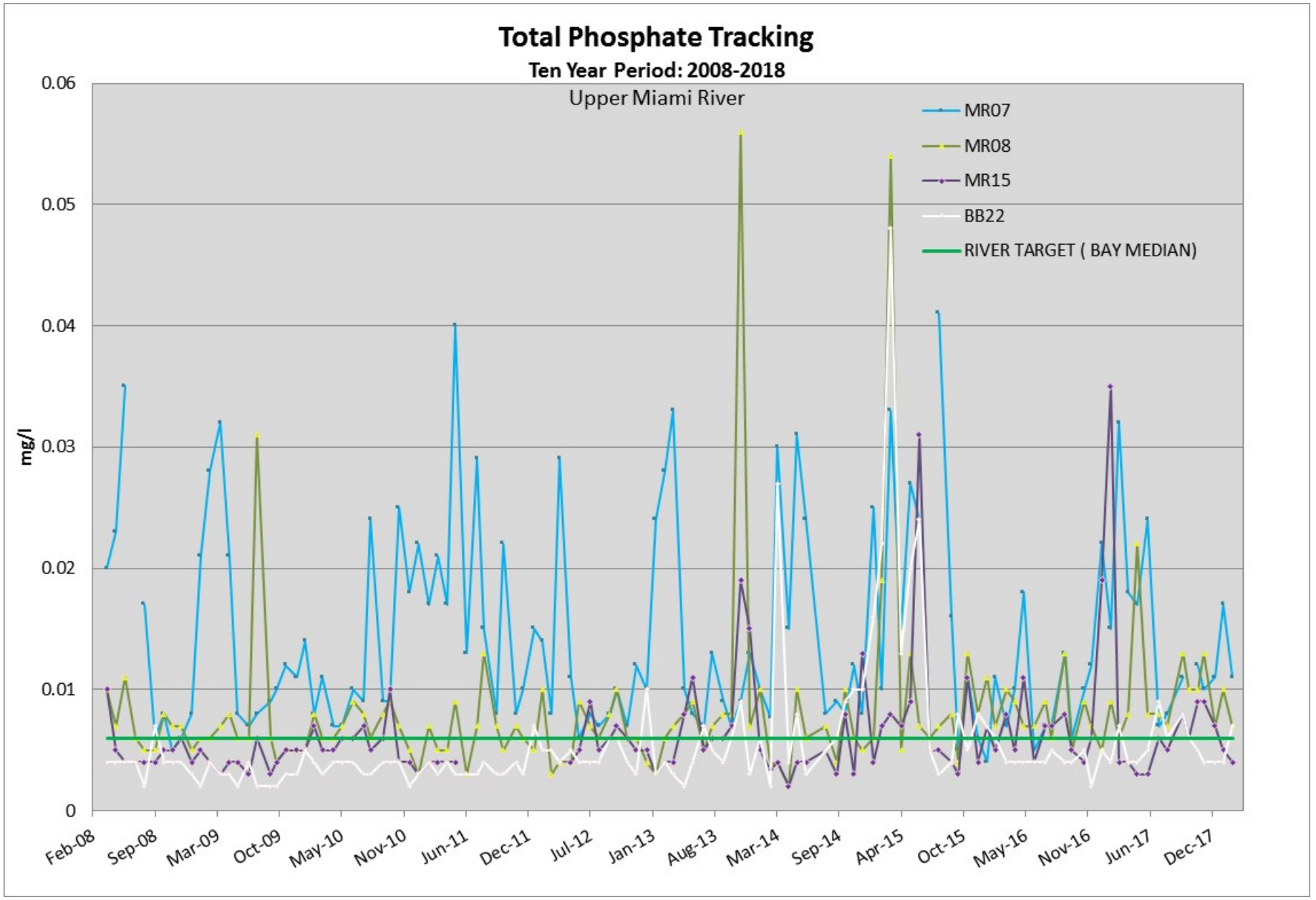

Total Phosphate Tracking
Ten Year Period: 2008-2018
Upper Miami River
MR07
MR08
MR15
BB22
RIVER TARGET (BAY MEDIAN)
mg/l
0.06
0.05
0.04
0.03
0.02
0.01
0
Feb-08
Sep-08
Mar-09
Oct-09
May-10
Nov-10
Jun-11
Dec-11
Jul-12
Jan-13
Aug-13
Mar-14
Sep-14
Apr-15
Oct-15
May-16
Nov-16
Jun-17
Dec-17

Chart 6.

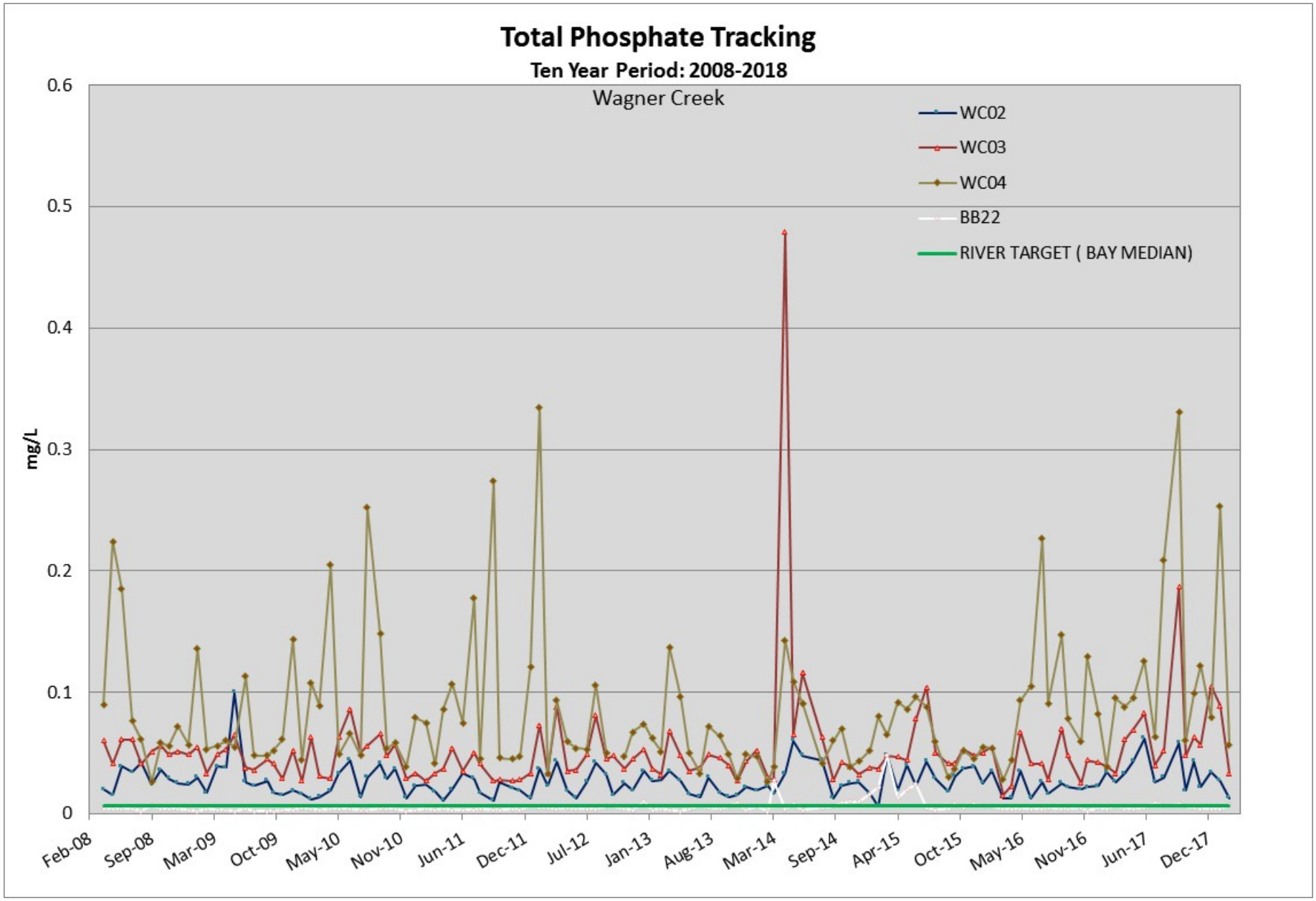

Total Phosphate Tracking
Ten Year Period: 2008-2018
Wagner Creek
WC02
WC03
WC04
BB22
RIVER TARGET (BAY MEDIAN)
mg/L
0.6
0.5
0.4
0.3
0.2
0.1
0
Feb-08
Sep-08
Mar-09
Oct-09
May-10
Nov-10
Jun-11
Dec-11
Jul-12
Jan-13
Aug-13
Mar-14
Sep-14
Apr-15
Oct-15
May-16
Nov-16
Jun-17
Dec-17

Chart 7.

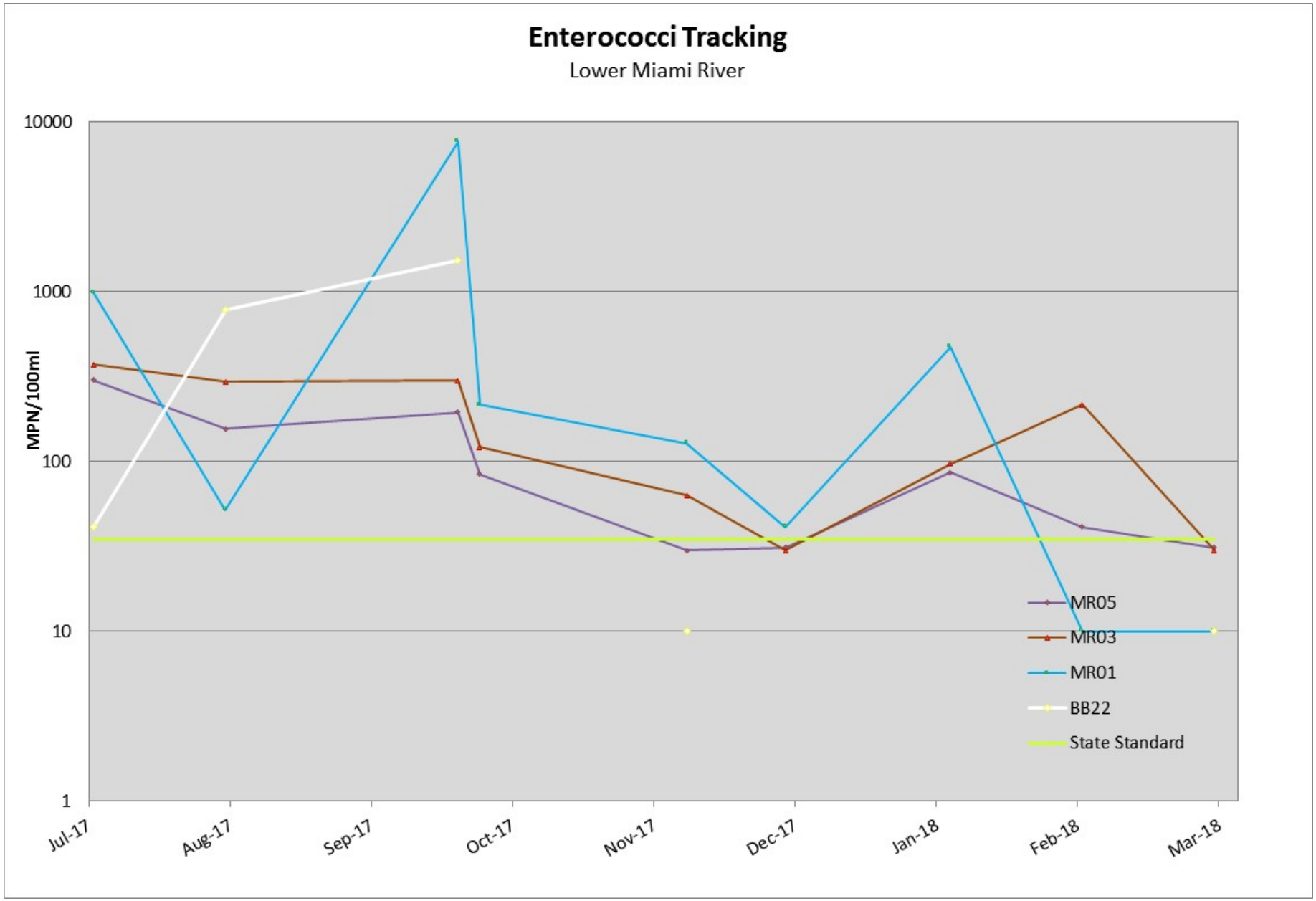

Enterococci Tracking
Lower Miami River
10000
1000
100
10
1
MPN/100ml
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
MR05
MR03
MR01
BB22
State Standard

Chart 8.

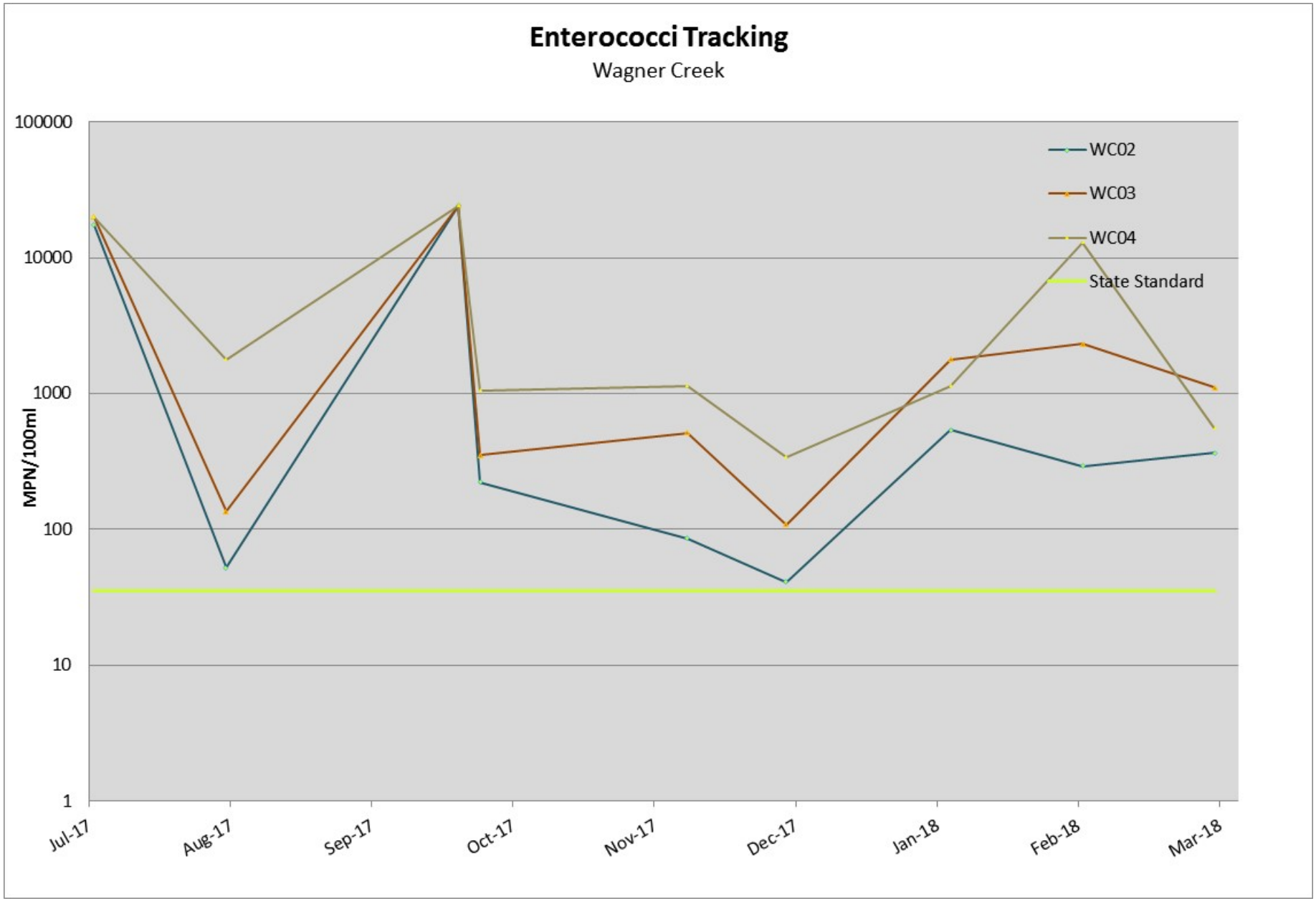

Enterococci Tracking
Wagner Creek
100000
10000
1000
100
10
1
MPN/100ml
WC02
WC03
WC04
State Standard
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18

Chart 9.

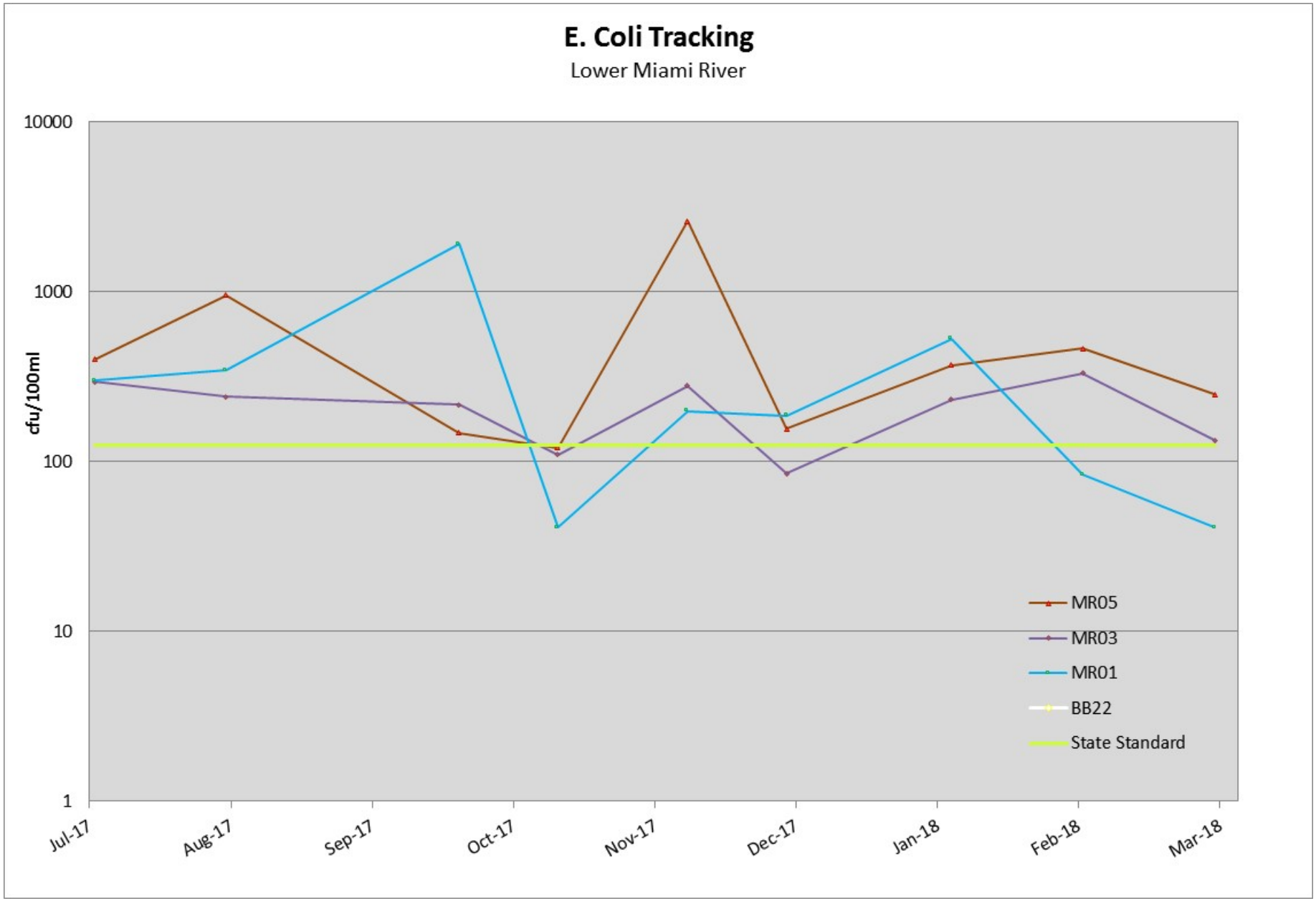

E. Coli Tracking
Lower Miami River
10000
1000
100
10
1
cfu/100ml
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
MR05
MR03
MR01
BB22
State Standard

Chart 10.

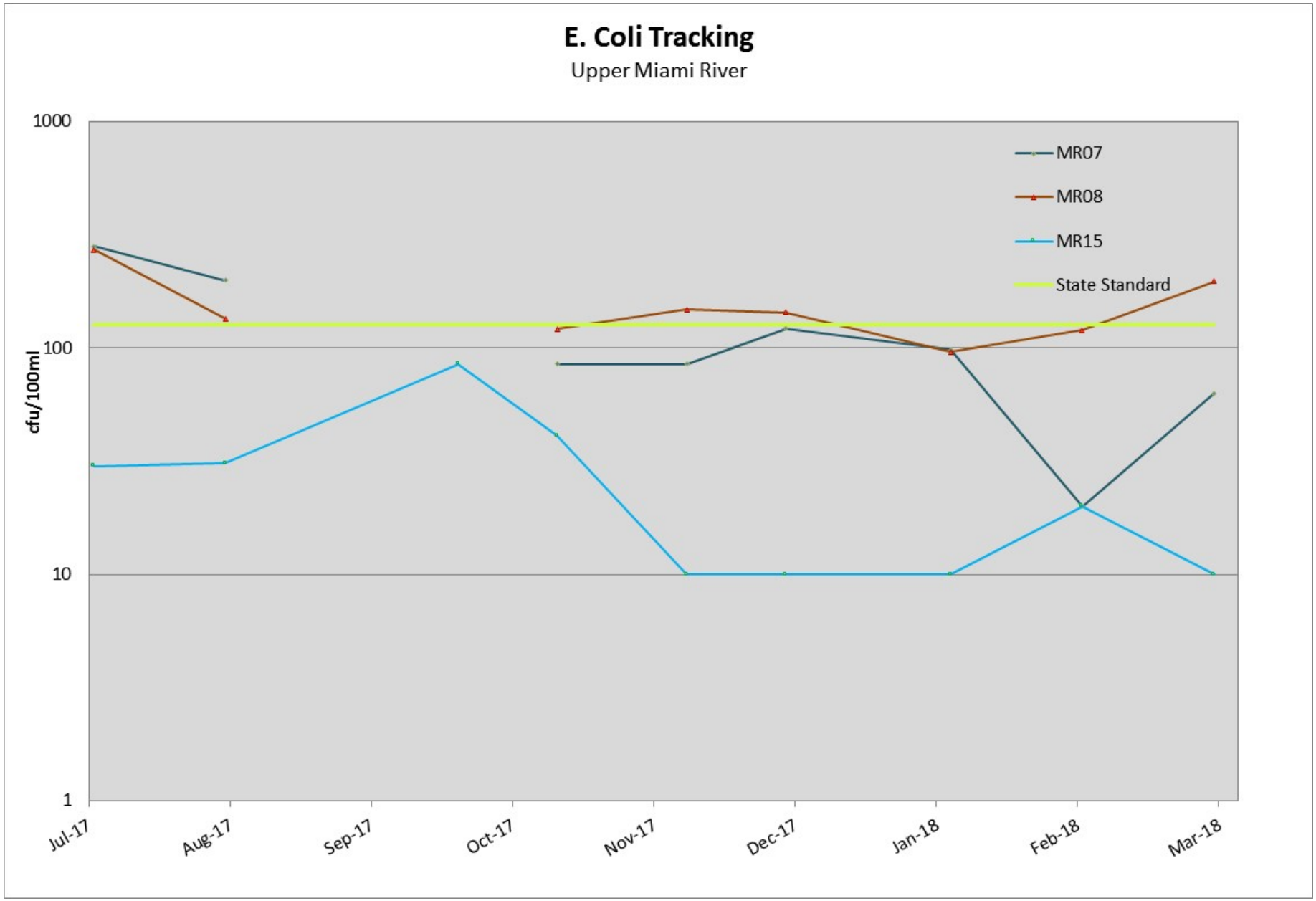

E. Coli Tracking
Upper Miami River
1000
100
10
1
cfu/100ml
MR07
MR08
MR15
State Standard
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18

Chart 11.a

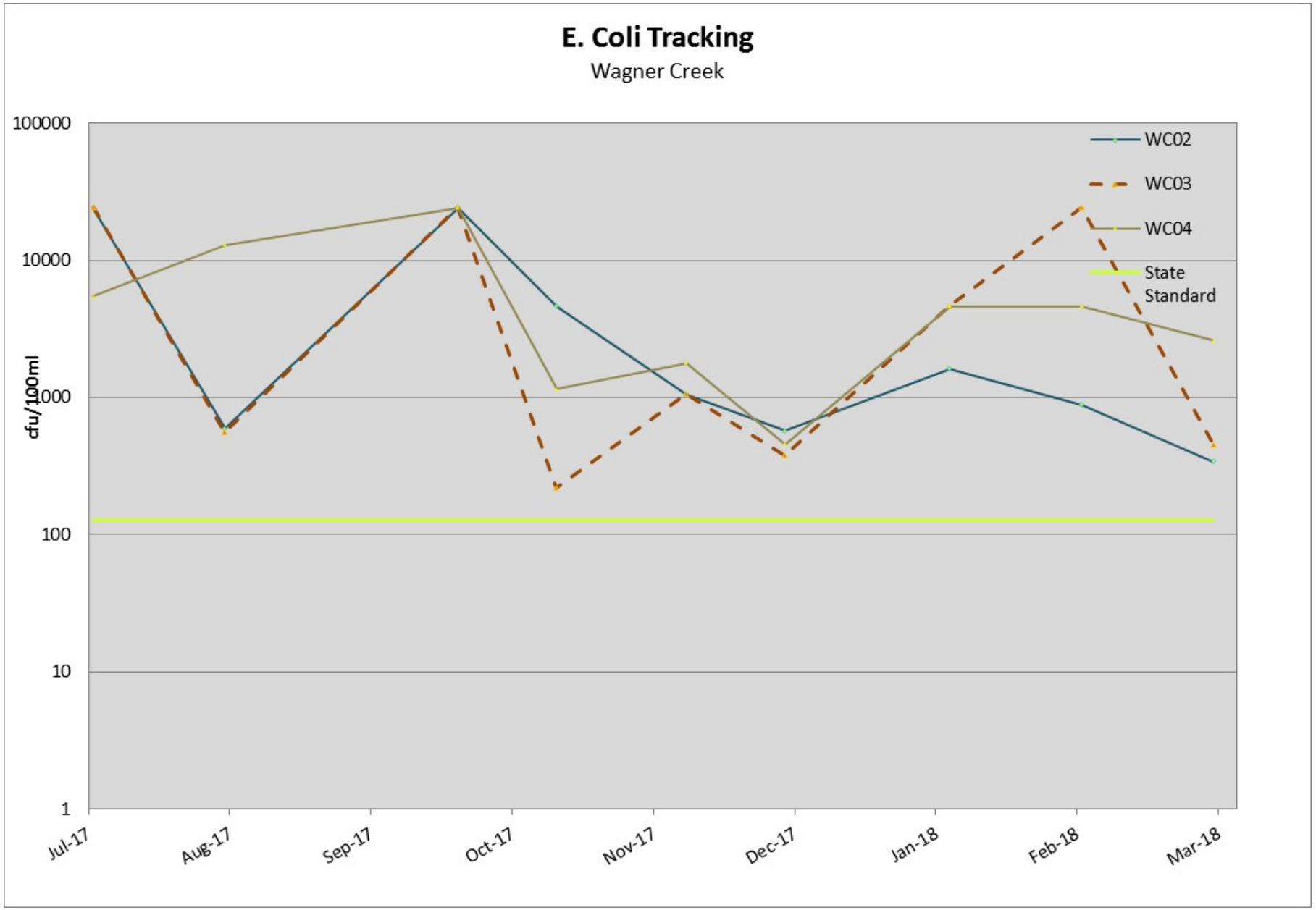

E. Coli Tracking
Wagner Creek
100000
10000
1000
100
10
1
cfu/100ml
WC02
WC03
WC04
State Standard
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18

Chart 12.

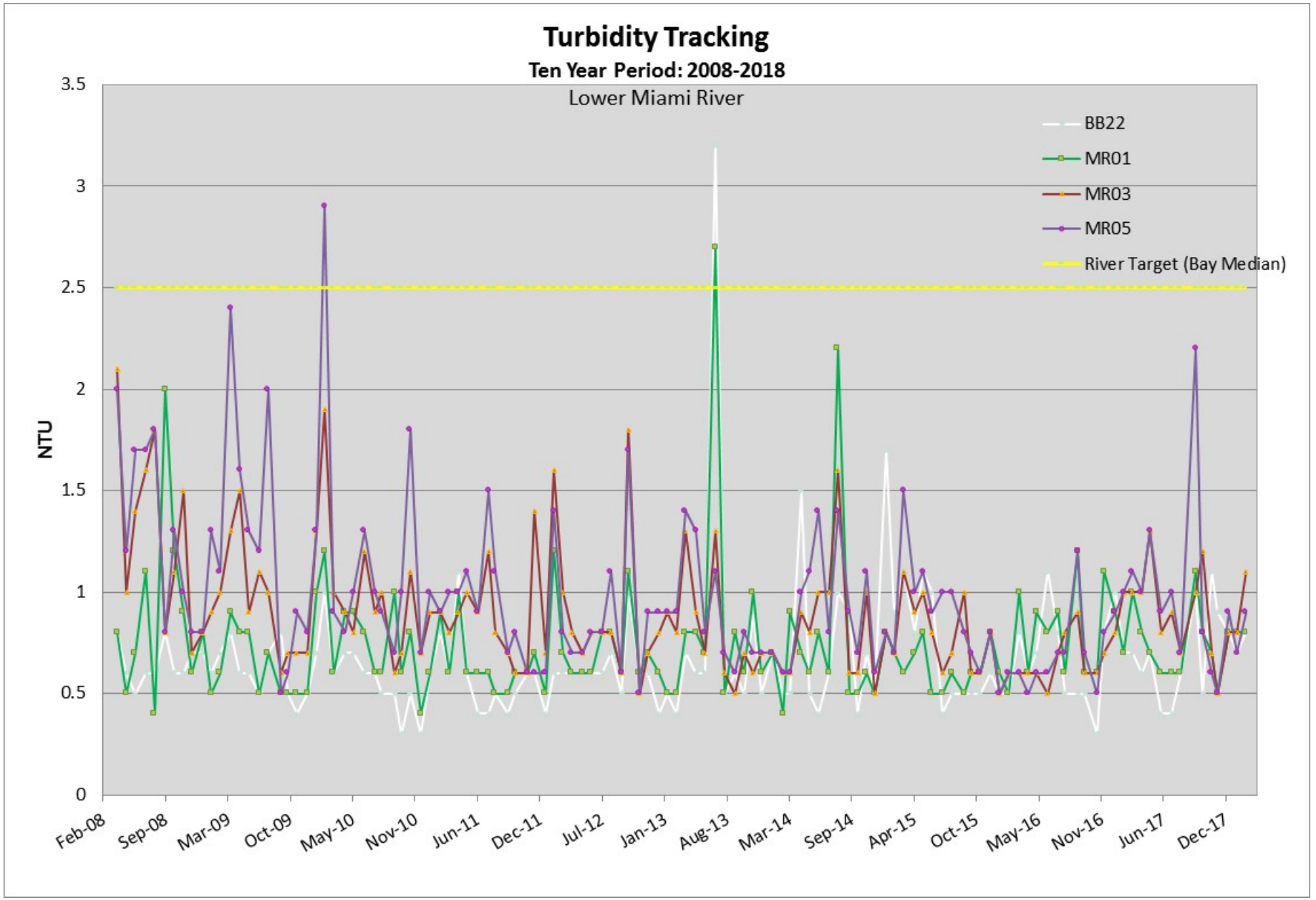

Turbidity Tracking
Ten Year Period: 2008-2018
Lower Miami River
NTU
3.5
3
2.5
2
1.5
1
0.5
0
BB22
MR01
MR03
MR05
River Target (Bay Median)
Feb-08
Sep-08
Mar-09
Oct-09
May-10
Nov-10
Jun-11
Dec-11
Jul-12
Jan-13
Aug-13
Mar-14
Sep-14
Apr-15
Oct-15
May-16
Nov-16
Jun-17
Dec-17

Chart 13.

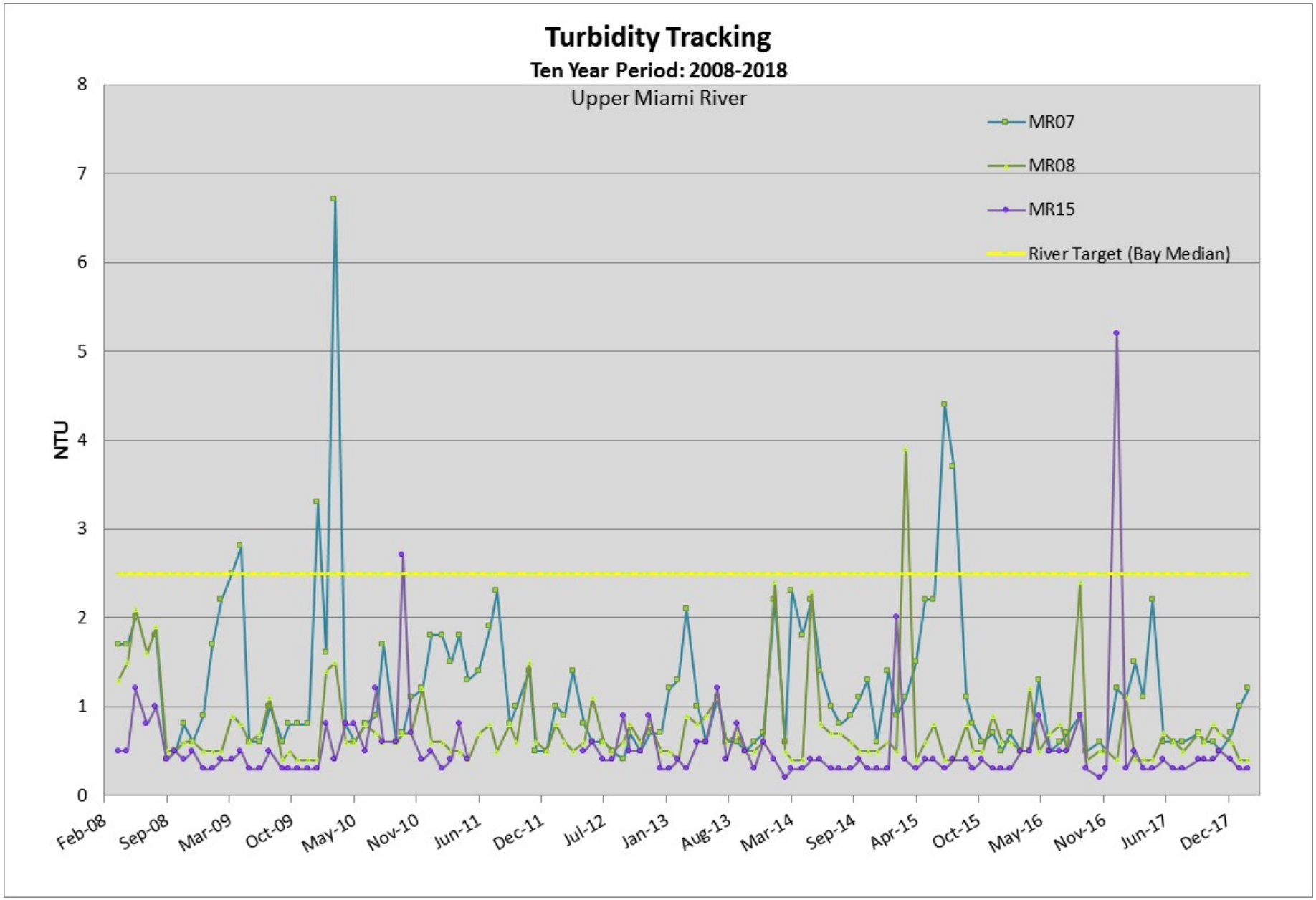
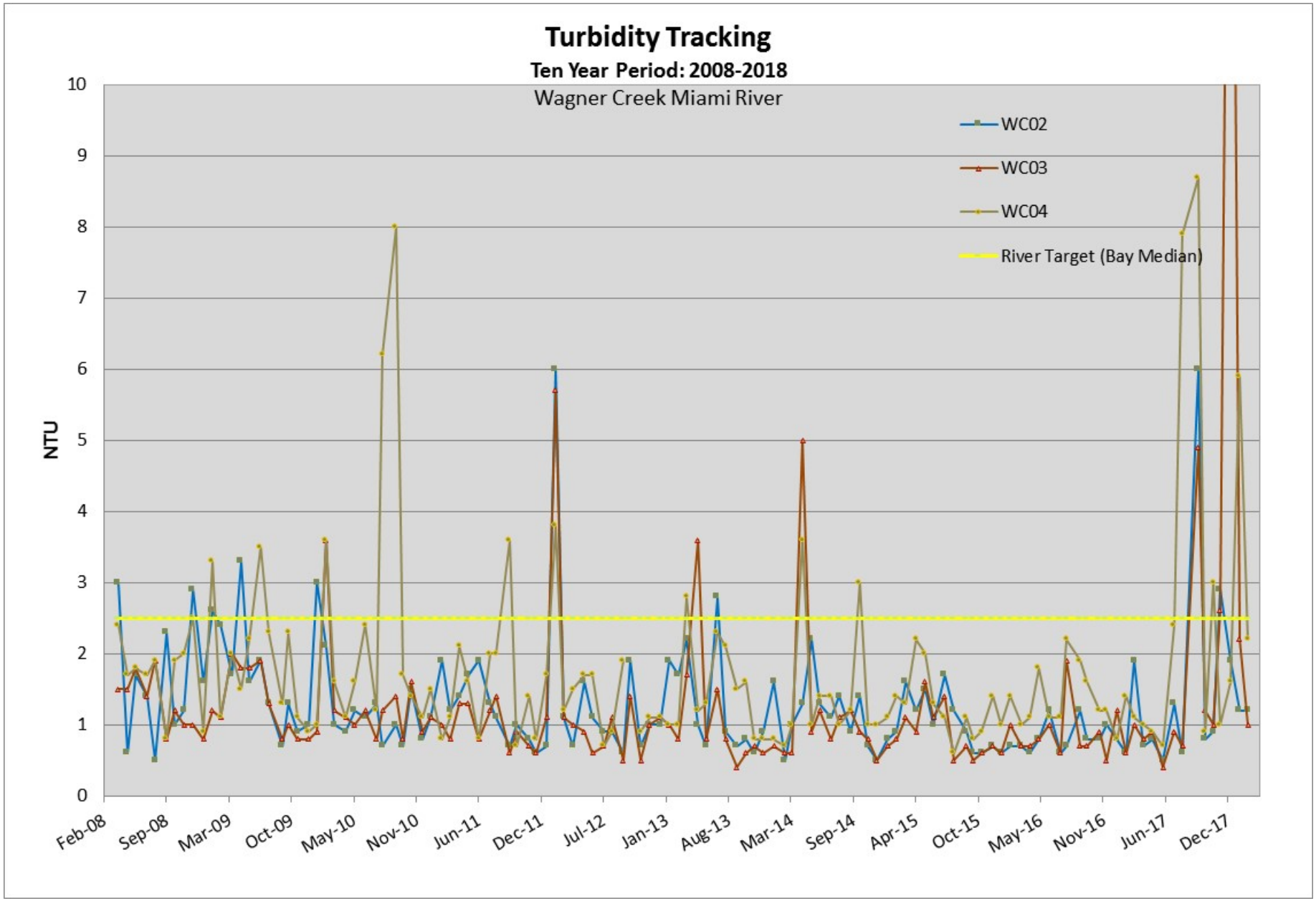

Turbidity Tracking
Ten Year Period: 2008-2018
Upper Miami River
MR07
MR08
MR15
River Target (Bay Median)
NTU
0
1
2
3
4
5
6
7
8
Feb-08
Sep-08
Mar-09
Oct-09
May-10
Nov-10
Jun-11
Dec-11
Jul-12
Jan-13
Aug-13
Mar-14
Sep-14
Apr-15
Oct-15
May-16
Nov-16
Jun-17
Dec-17

Chart 14.


Turbidity Tracking
Ten Year Period: 2008-2018
Wagner Creek Miami River
WC02
WC03
WC04
River Target (Bay Median)
NTU
0
1
2
3
4
5
6
7
8
9
10
Feb-08
Sep-08
Mar-09
Oct-09
May-10
Nov-10
Jun-11
Dec-11
Jul-12
Jan-13
Aug-13
Mar-14
Sep-14
Apr-15
Oct-15
May-16
Nov-16
Jun-17
Dec-17