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

First Quarterly Report, 2016
(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
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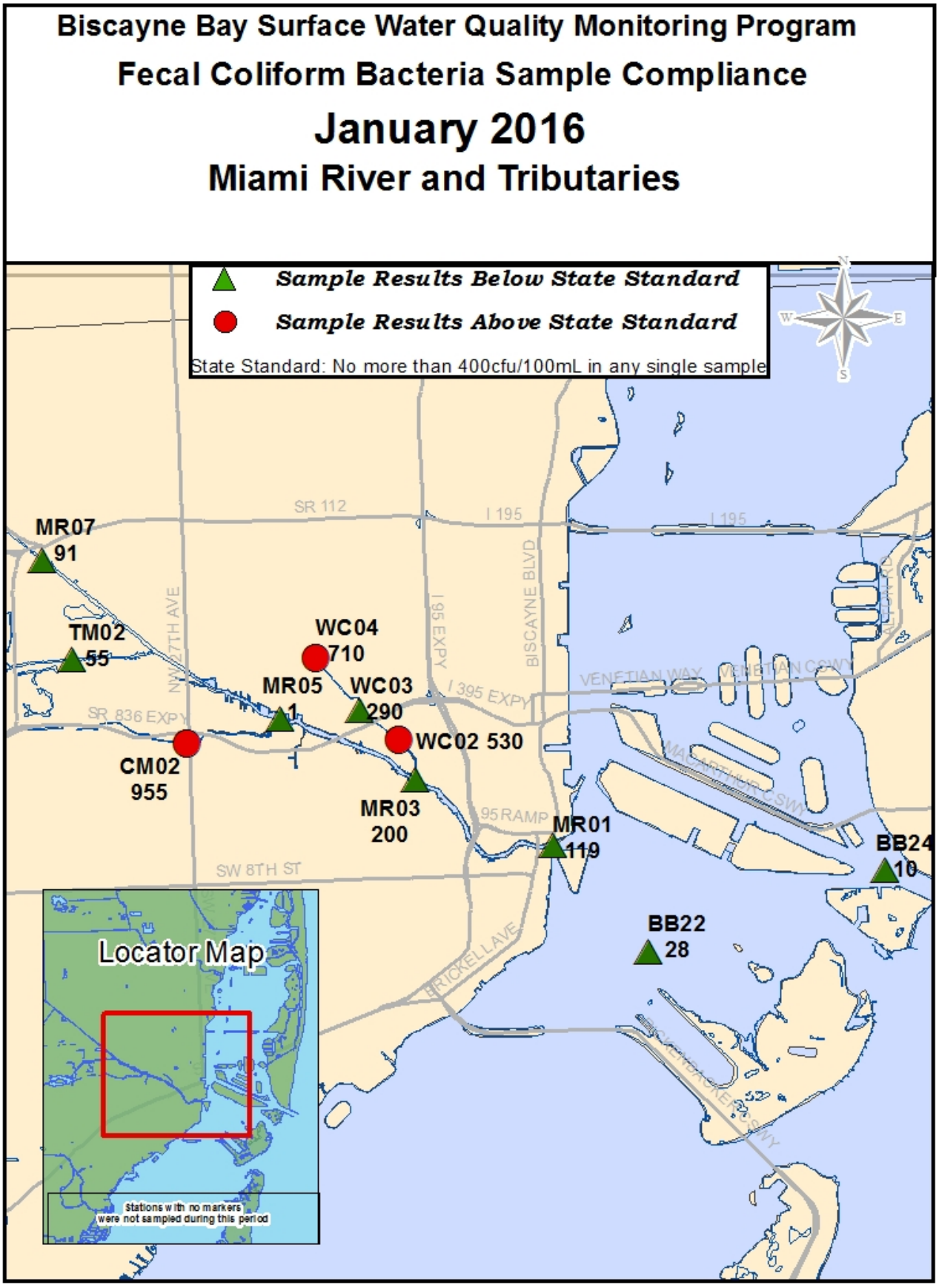
Action Item Status:

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 2016 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.

See **Figures 1 - 3** below for maps that depict where monthly results for stations in the Miami River and the vicinity exceed the single sample standard of 400 cfu/100ml (in red). **Figure 4** is a quarterly composite of Fecal Coliform 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 Fecal Coliform levels in Wagner Creek and its confluence with the Miami River (MR03) from January-March 2016.

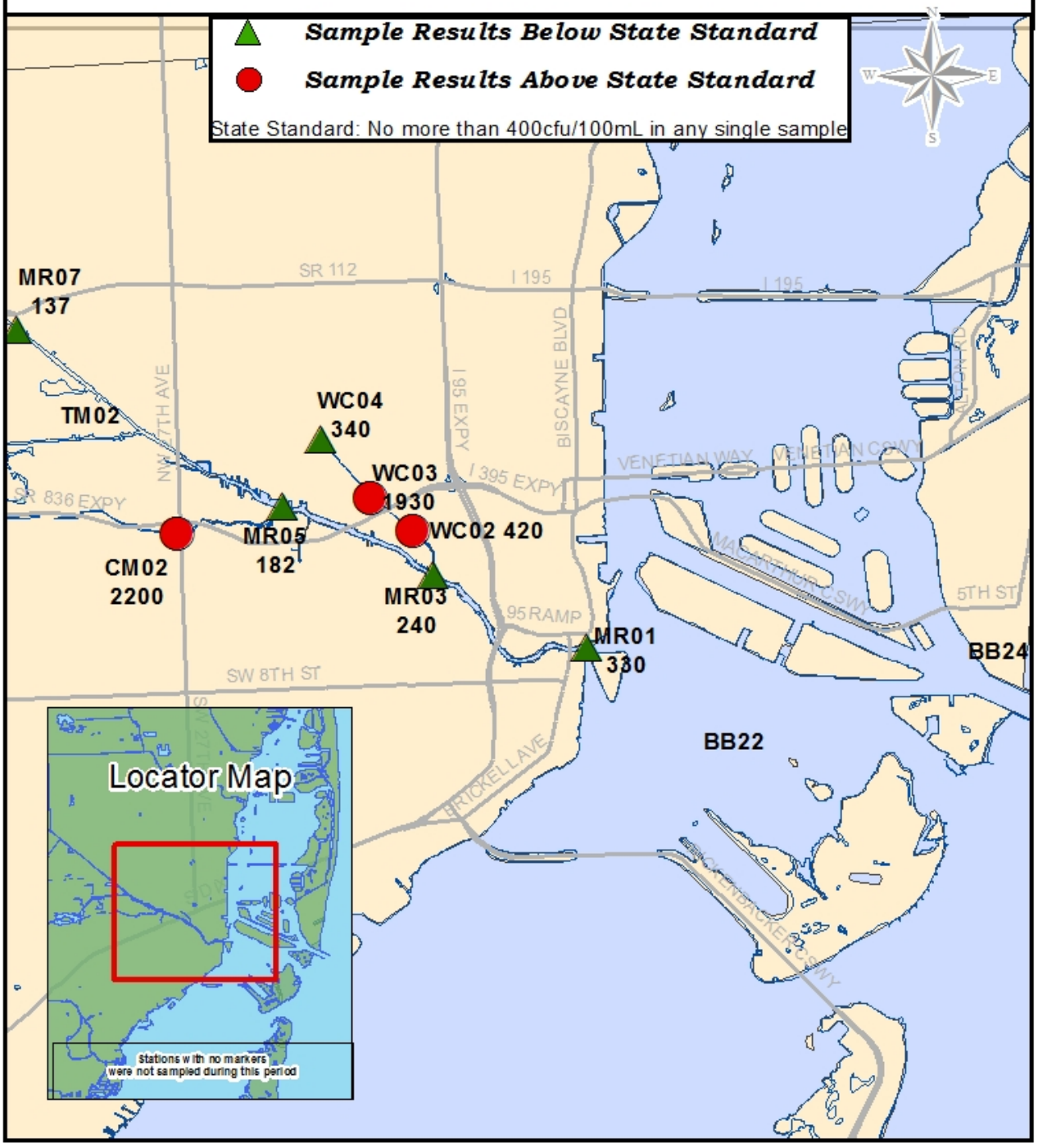

Biscayne Bay Surface Water Quality Monitoring Program
Fecal Coliform Bacteria Sample Compliance
January 2016
Miami River and Tributaries
Sample Results Below State Standard
Sample Results Above State Standard
State Standard: No more than 400cfu/100mL in any single sample
MR07 91
TM02 55
WC04 710
MR05 1
WC03 290
WC02 530
CM02 955
MR03 200
MR01 119
BB24 10
BB22 28
SR 112
I 195
NW 27TH AVE
I 95 EXPY
BISCAYNE BLVD
I 395 EXPY
SR 836 EXPY
VENETIAN WAY
MACARTHUR CSWY
95 RAMP
SW 8TH ST
BRICKELL AVE
Locator Map
Stations with no markers were not sampled during this period

Biscayne Bay Surface Water Quality Monitoring Program

Fecal Coliform Bacteria Sample Compliance

February 2016

Miami River and Tributaries

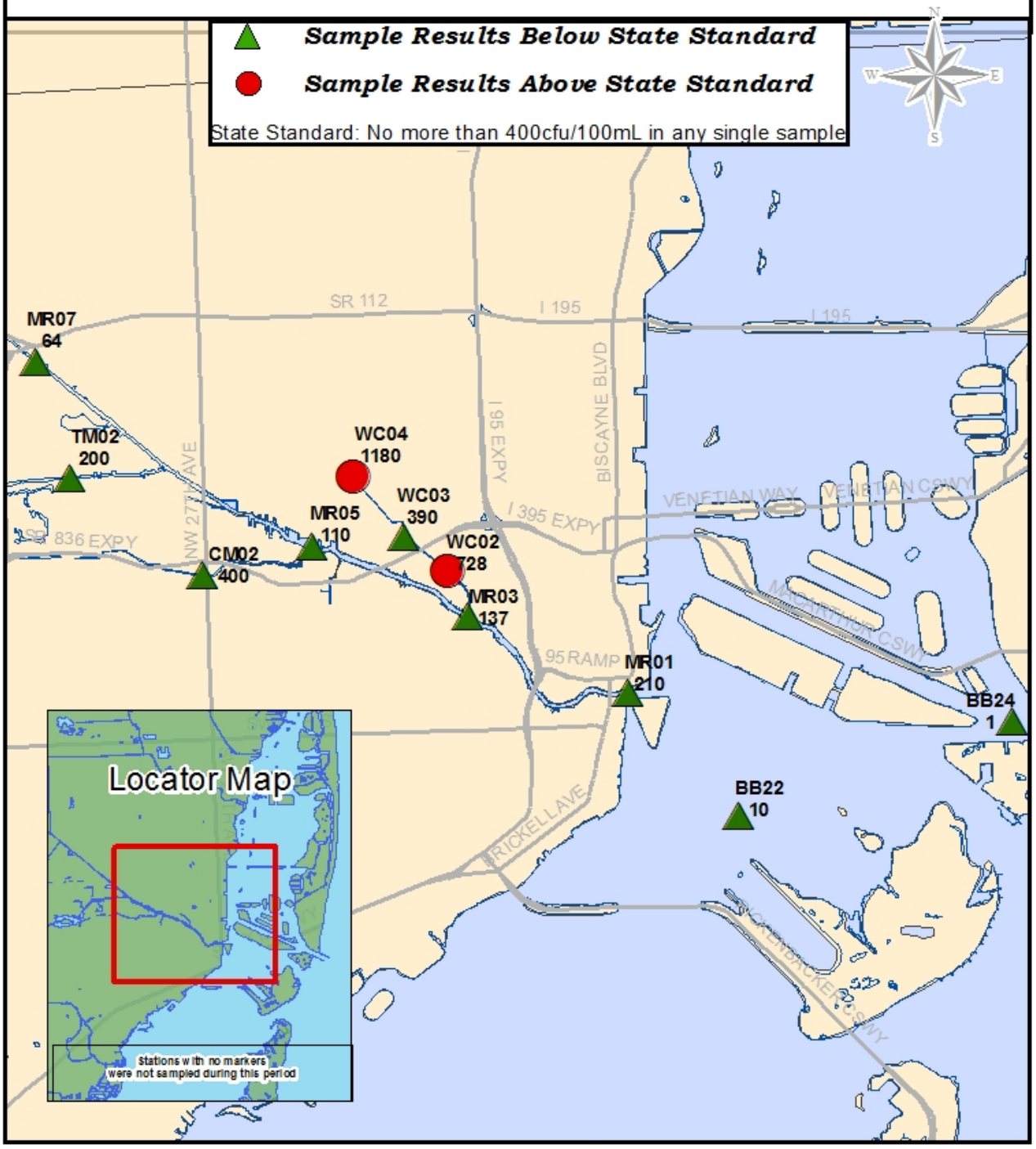


Biscayne Bay Surface Water Quality Monitoring Program

Fecal Coliform Bacteria Sample Compliance

March 2016

Miami River and Tributaries



Biscayne Bay Surface Water Quality Monitoring Program

Quarterly Summary of Fecal Coliform Sample Compliance

January to March 2016

Miami River and Tributaries

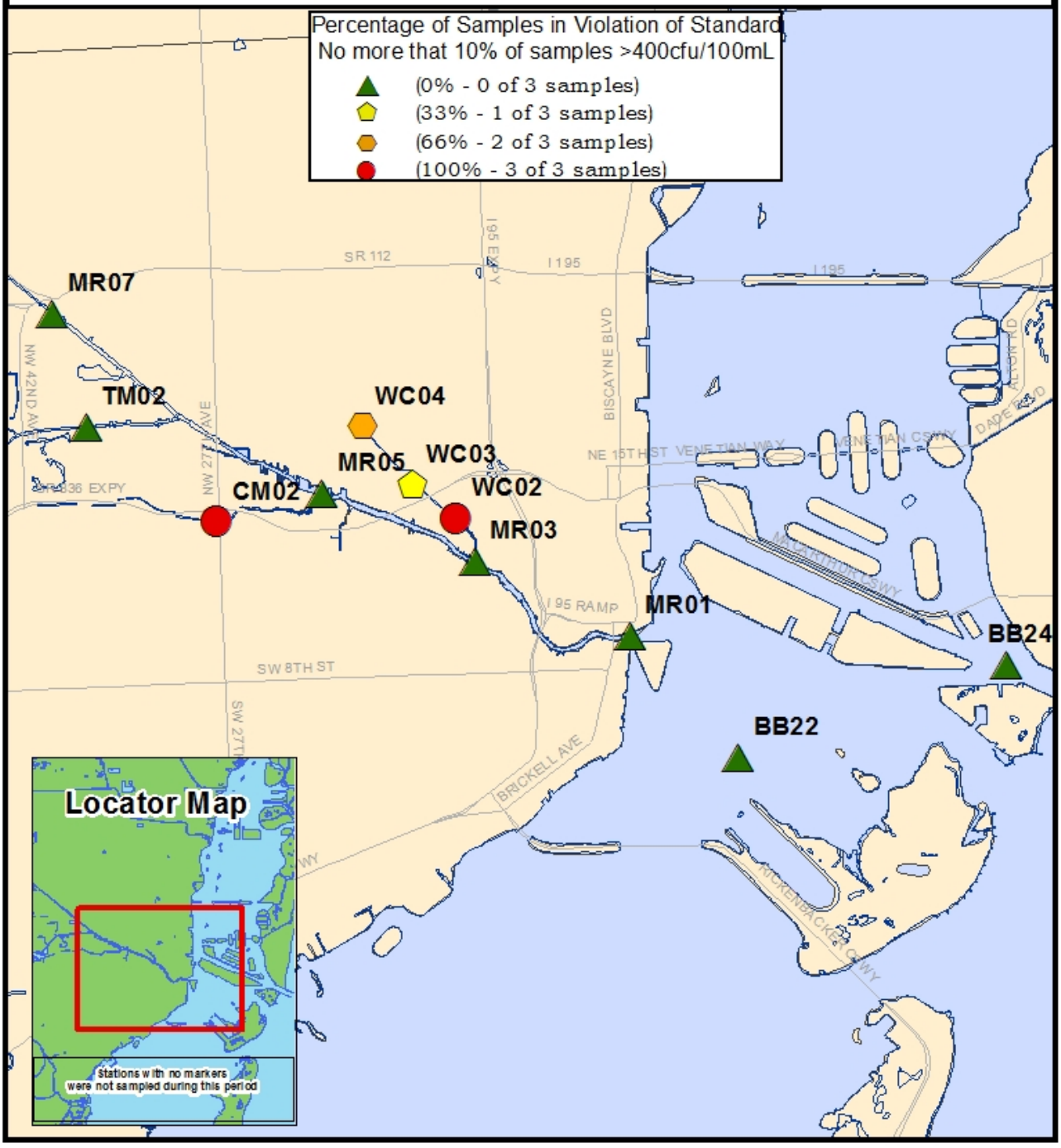


Table 1.

MONTHLY FECAL COLIFORM LEVELS (cfu's/100 ml) IN WAGNER CREEK				
	MR03	**WC02**	**WC03**	**WC04**
January	**200**	**530***	**290**	**710***
February	**240**	**420***	**1930***	**340**
March	**137**	**728***	**390**	**1180***

A" *" indicates results that exceed the State's Standard (400 cfu/100ml); a "0" indicates that the true value was below the method detection limit.

Fourth Quarterly Report, 2016
(January-March)

Action Item:

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

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Action Item Status:

This report presents selected results of the water quality monitoring that occurred in the First Quarter (January-March) of 2016. 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 1-12 for graphs of Ammonia Nitrogen, Total Phosphate, Fecal Coliform, and Turbidity data) throughout the river.

Prior to the 2015 Fourth Quarter report Station MR03 was used as a representative station for the river and compared to a bay station closest to the river (BB22) for those stated parameters. In order to evaluate the river more comprehensively, 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 (2006-2016) period. 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.
All subsequent reports will continue this format.

Chart 1.

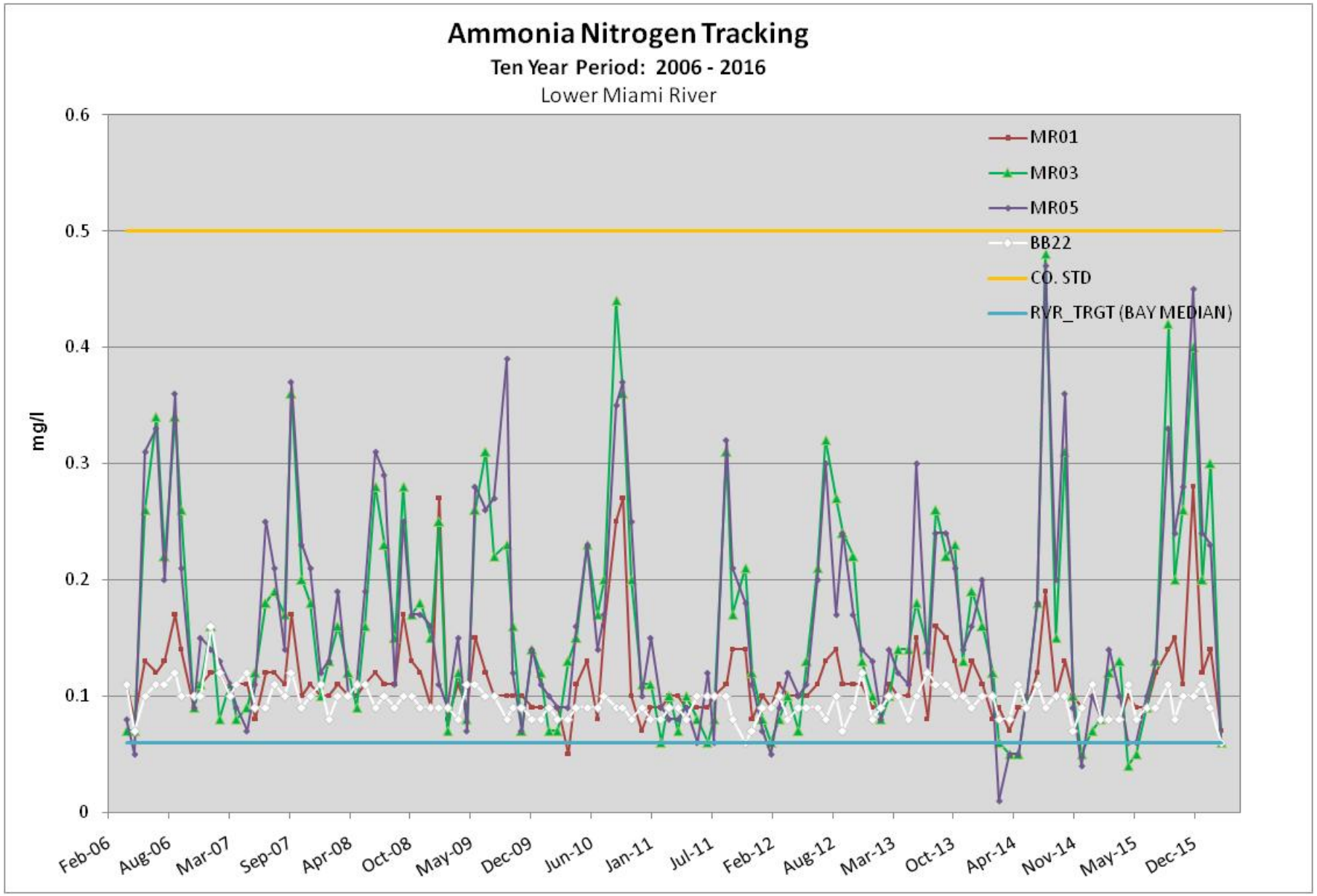

Ammonia Nitrogen Tracking
Ten Year Period: 2006 - 2016
Lower Miami River
mg/l
0.6
0.5
0.4
0.3
0.2
0.1
0
MR01
MR03
MR05
BB22
CO. STD
RVR_TRGT (BAY MEDIAN)
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 2.

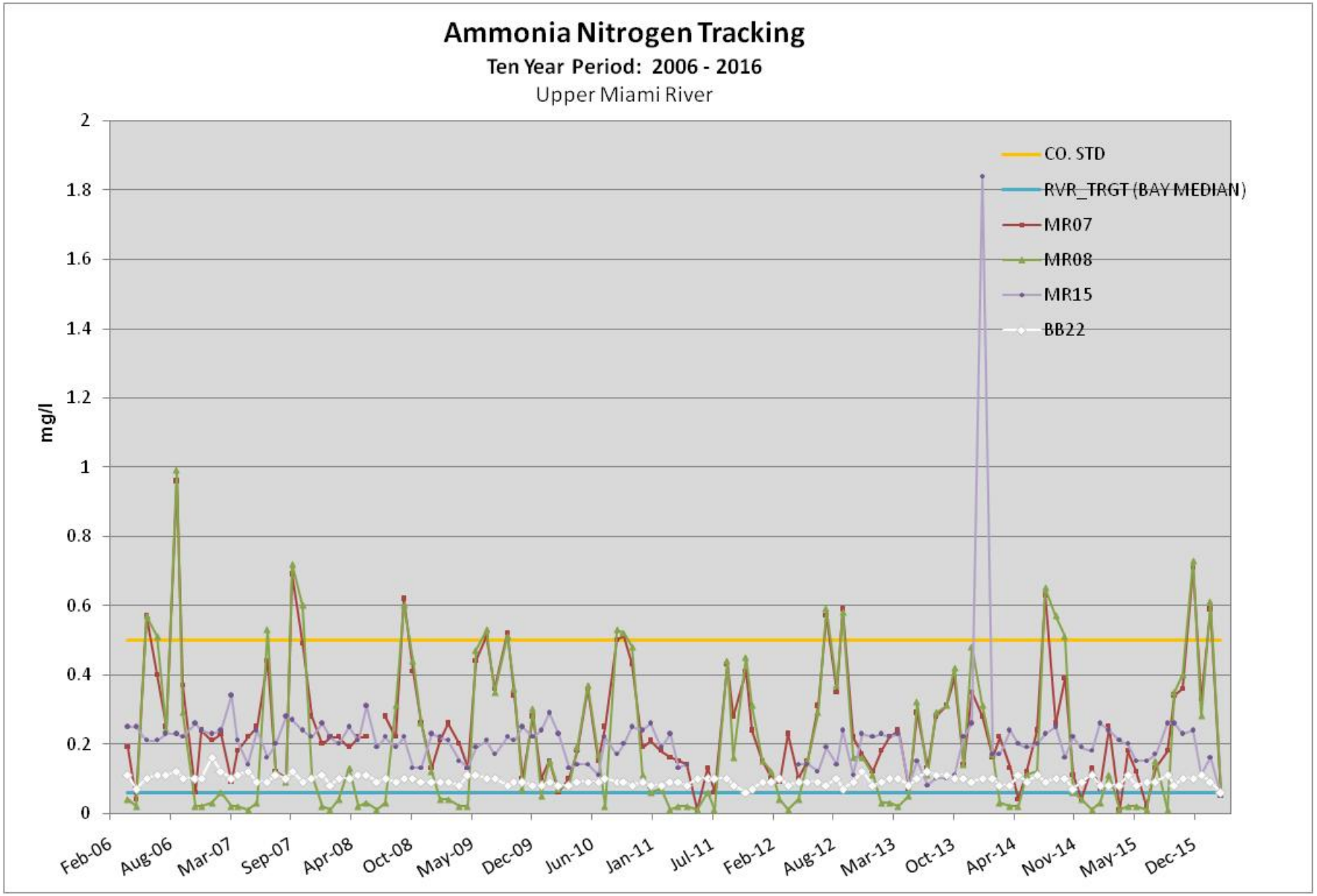

Ammonia Nitrogen Tracking
Ten Year Period: 2006 - 2016
Upper Miami River
mg/l
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
CO. STD
RVR_TRGT (BAY MEDIAN)
MR07
MR08
MR15
BB22
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 3

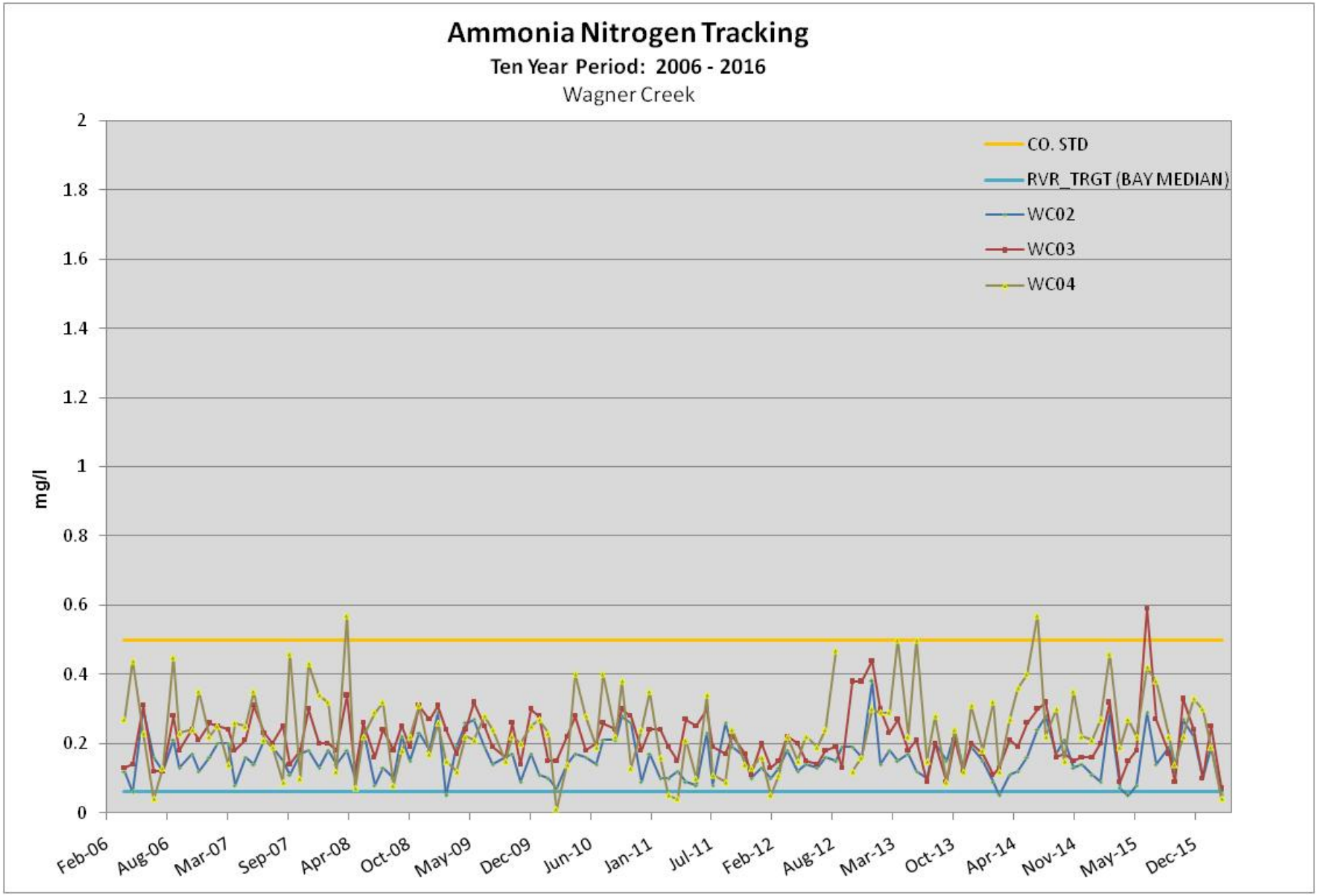

Ammonia Nitrogen Tracking
Ten Year Period: 2006 - 2016
Wagner Creek
mg/l
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
CO. STD
RVR_TRGT (BAY MEDIAN)
WC02
WC03
WC04
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 4.

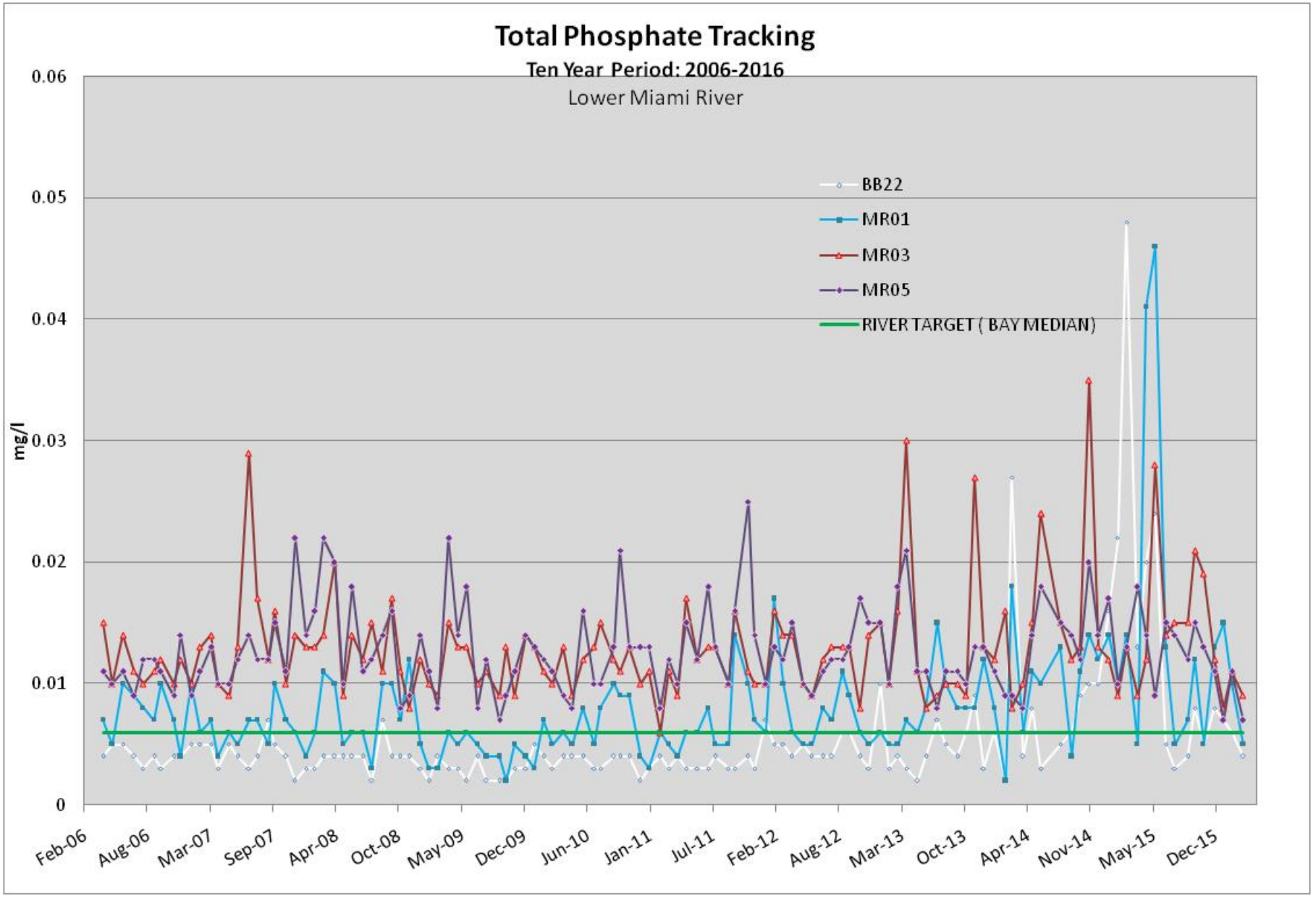

Total Phosphate Tracking
Ten Year Period: 2006-2016
Lower Miami River
BB22
MR01
MR03
MR05
RIVER TARGET (BAY MEDIAN)
mg/l
0.06
0.05
0.04
0.03
0.02
0.01
0
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 5.

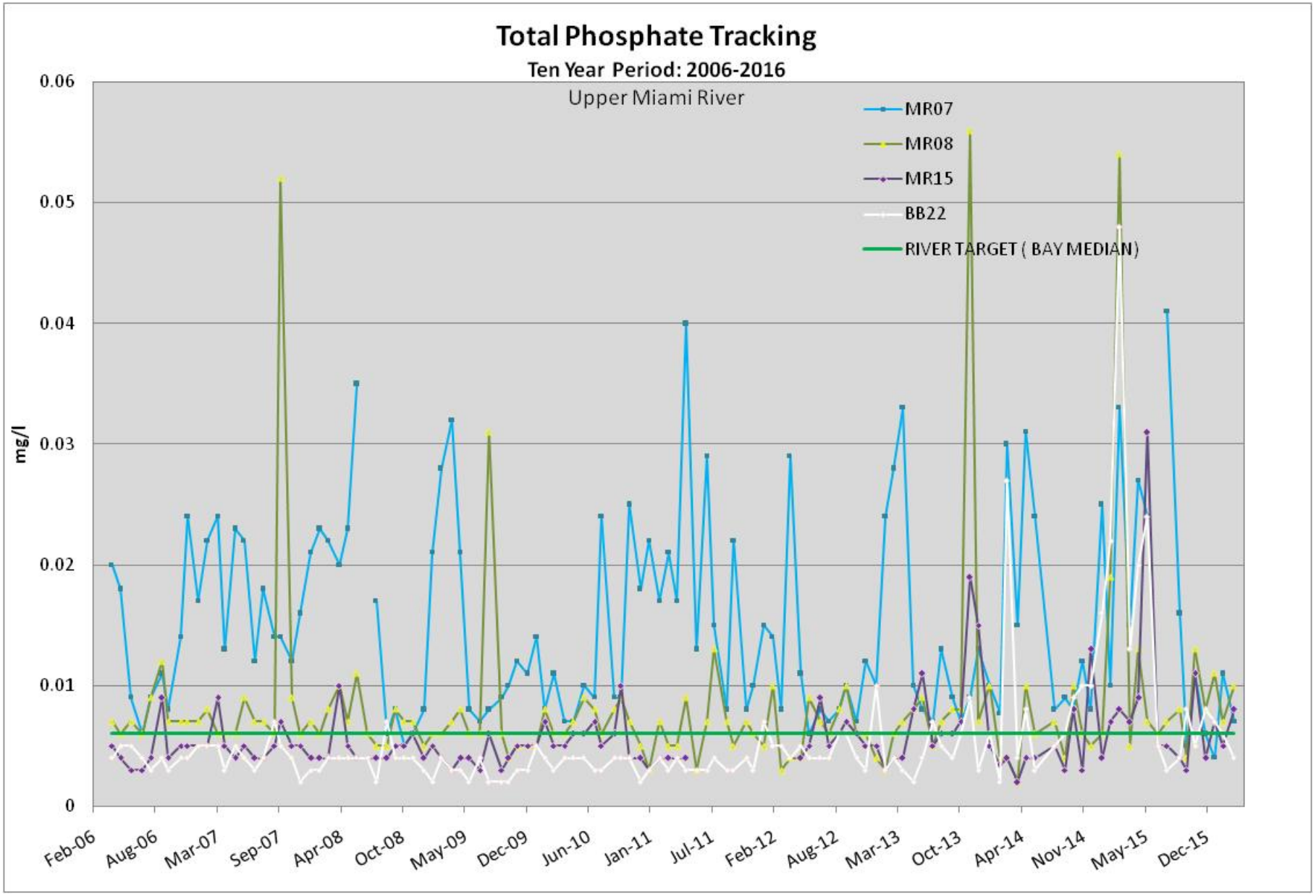

Total Phosphate Tracking
Ten Year Period: 2006-2016
Upper Miami River
MR07
MR08
MR15
BB22
RIVER TARGET (BAY MEDIAN)
mg/l
0.06
0.05
0.04
0.03
0.02
0.01
0
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 6.

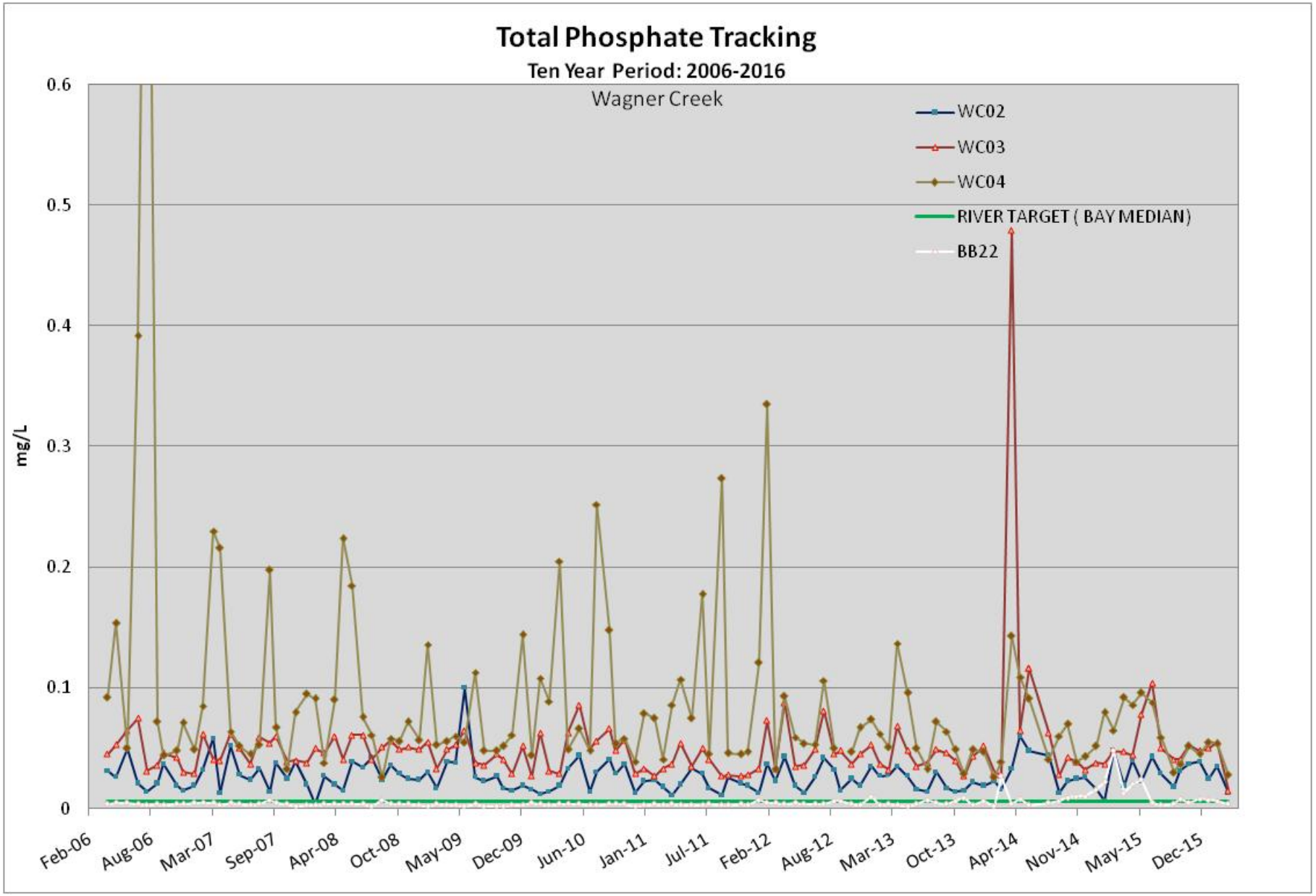

Total Phosphate Tracking
Ten Year Period: 2006-2016
Wagner Creek
WC02
WC03
WC04
RIVER TARGET (BAY MEDIAN)
BB22
mg/L
0.6
0.5
0.4
0.3
0.2
0.1
0
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 7.

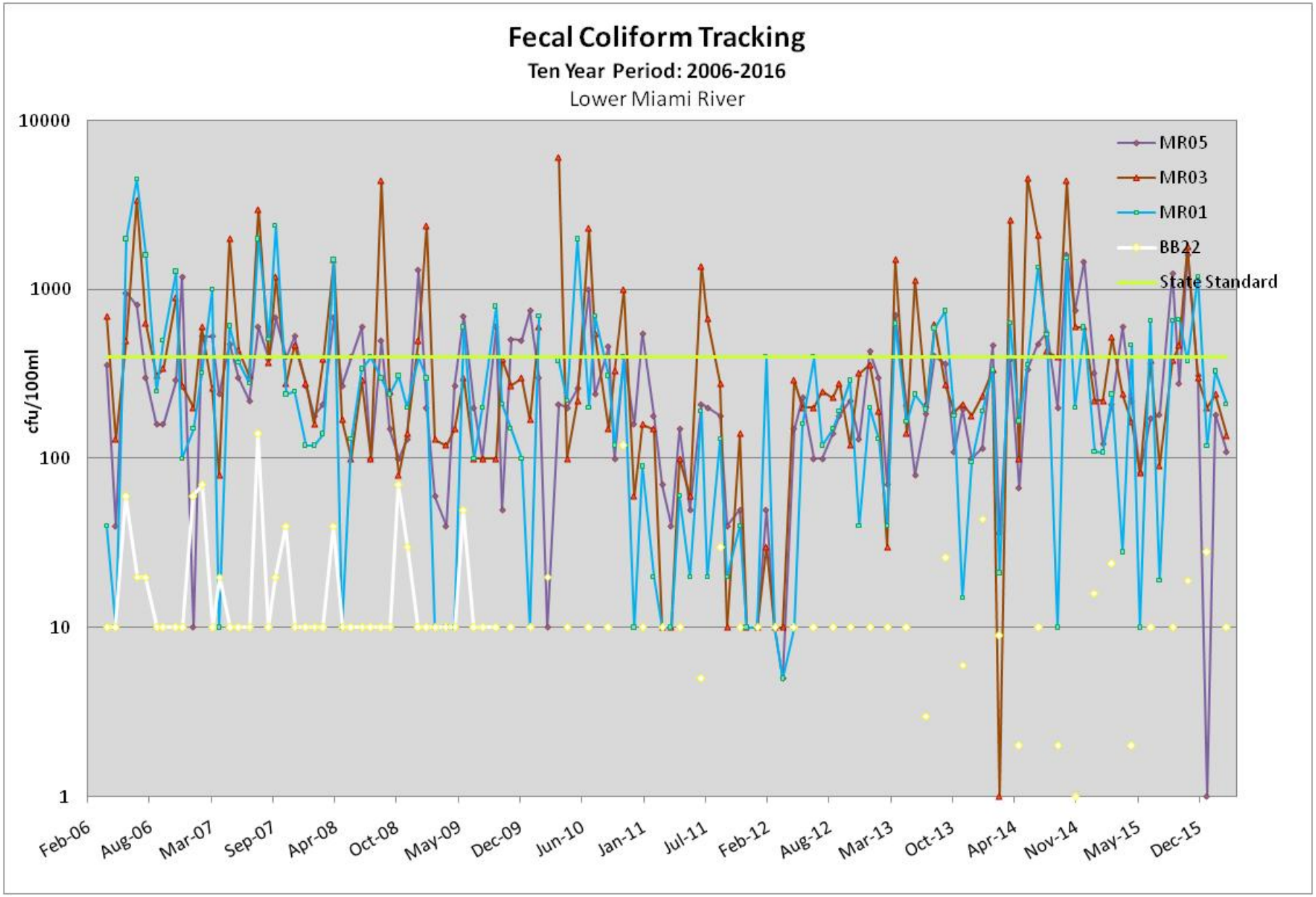

Fecal Coliform Tracking
Ten Year Period: 2006-2016
Lower Miami River
10000
1000
100
10
1
cfu/100ml
MR05
MR03
MR01
BB22
State Standard
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 8.

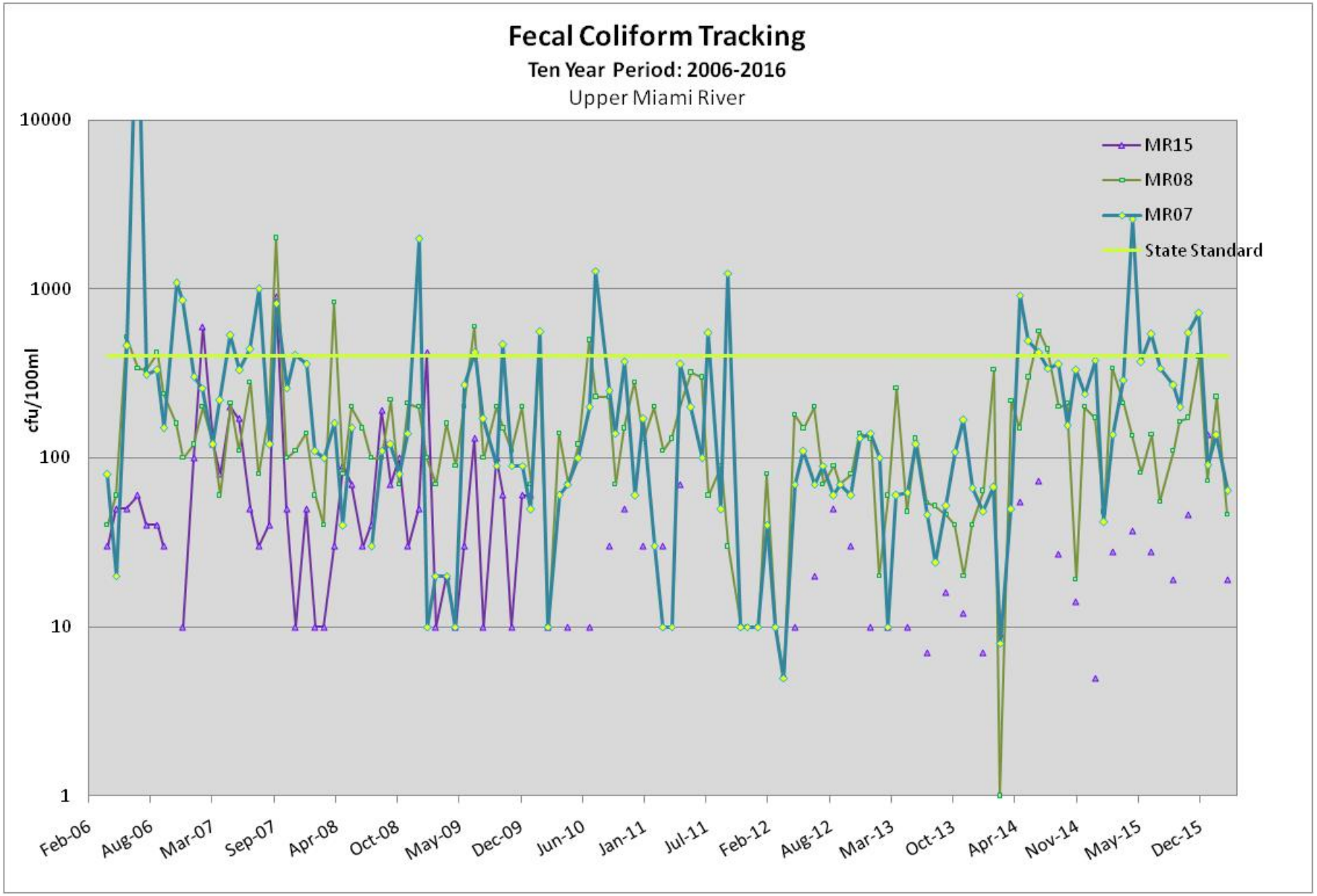

Fecal Coliform Tracking
Ten Year Period: 2006-2016
Upper Miami River
cfu/100ml
10000
1000
100
10
1
MR15
MR08
MR07
State Standard
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 9.

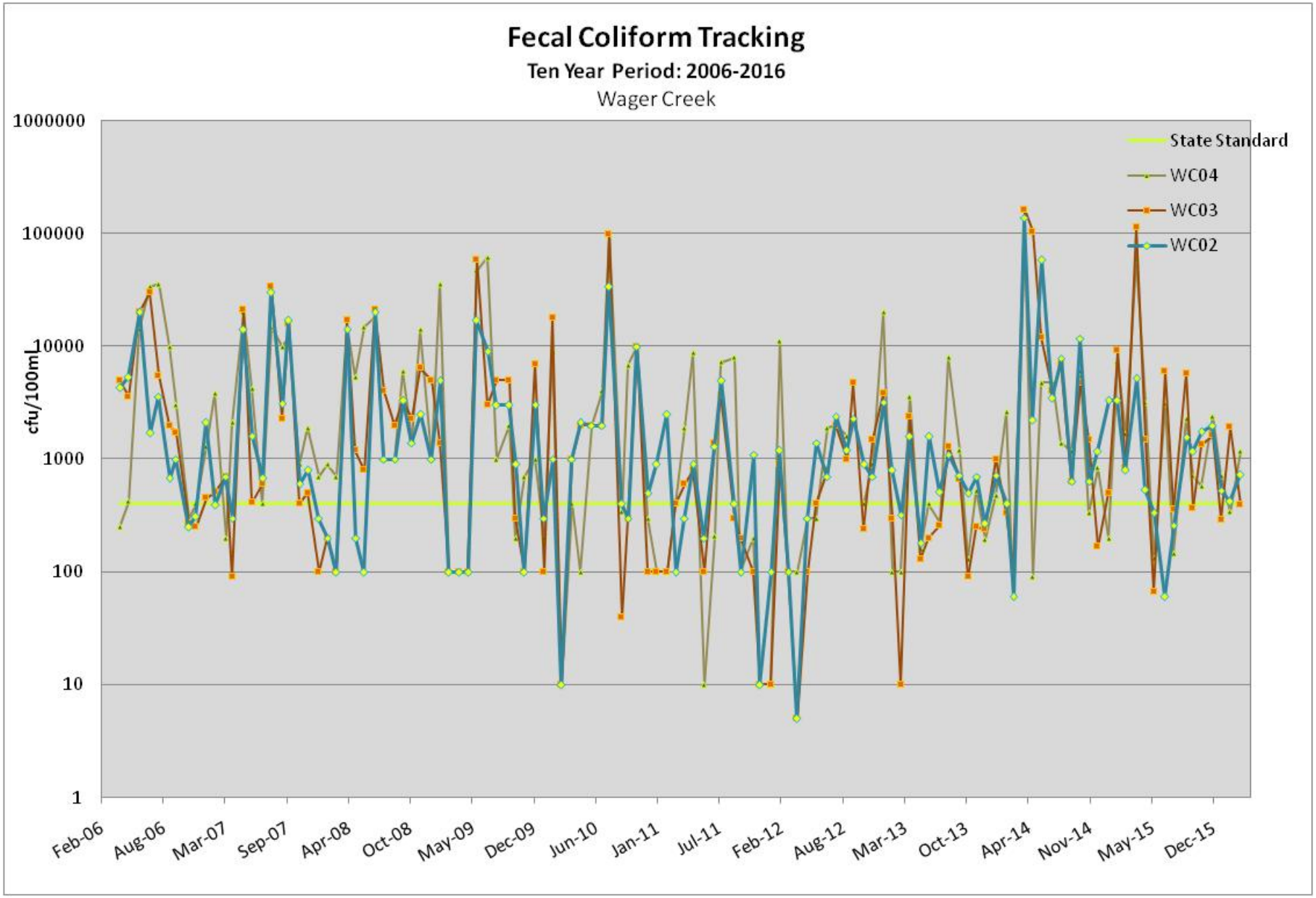
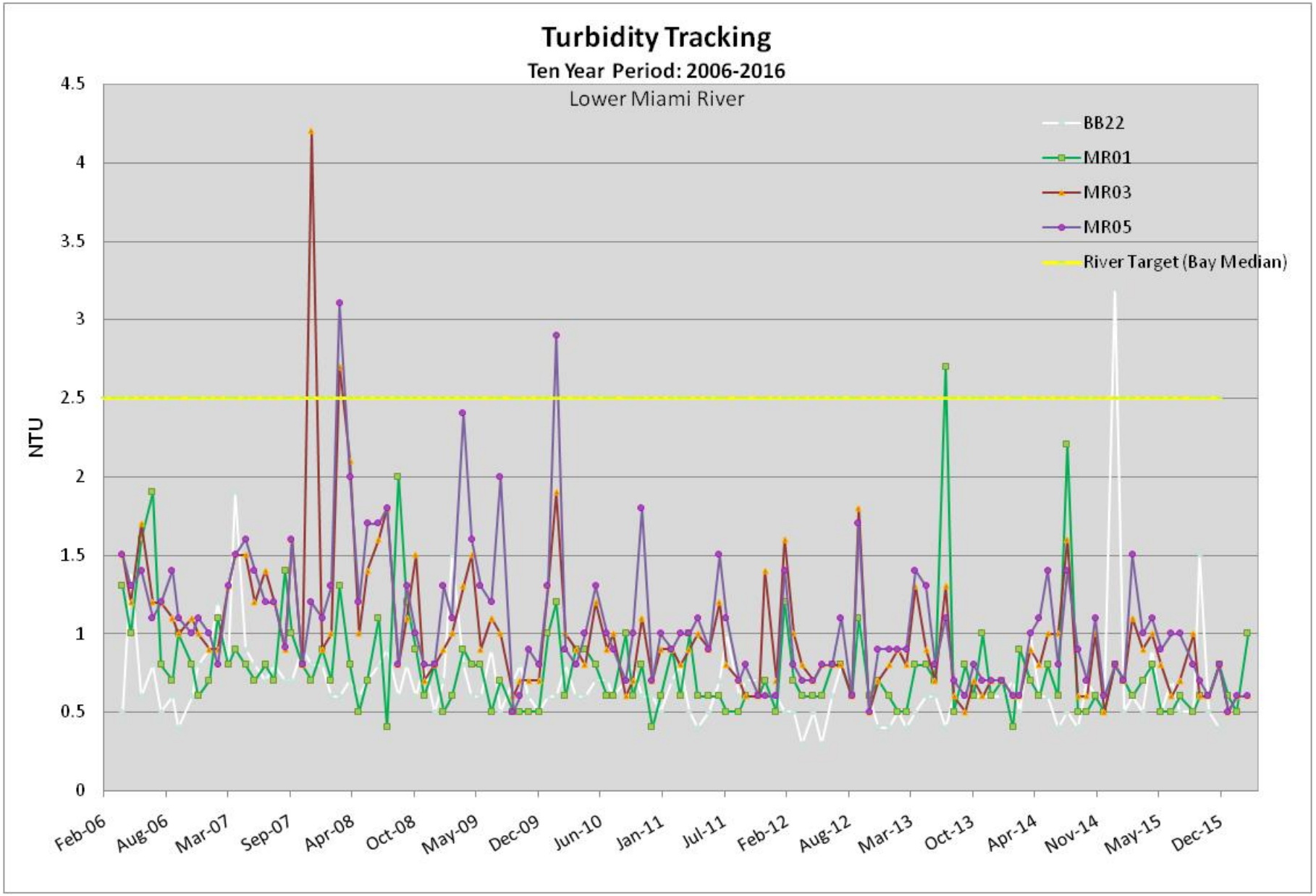

Fecal Coliform Tracking
Ten Year Period: 2006-2016
Wager Creek
cfu/100mL
1000000
100000
10000
1000
100
10
1
State Standard
WC04
WC03
WC02
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
Mar-13
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 10.


Turbidity Tracking
Ten Year Period: 2006-2016
Lower Miami River
BB22
MR01
MR03
MR05
River Target (Bay Median)
NTU
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
Aug-12
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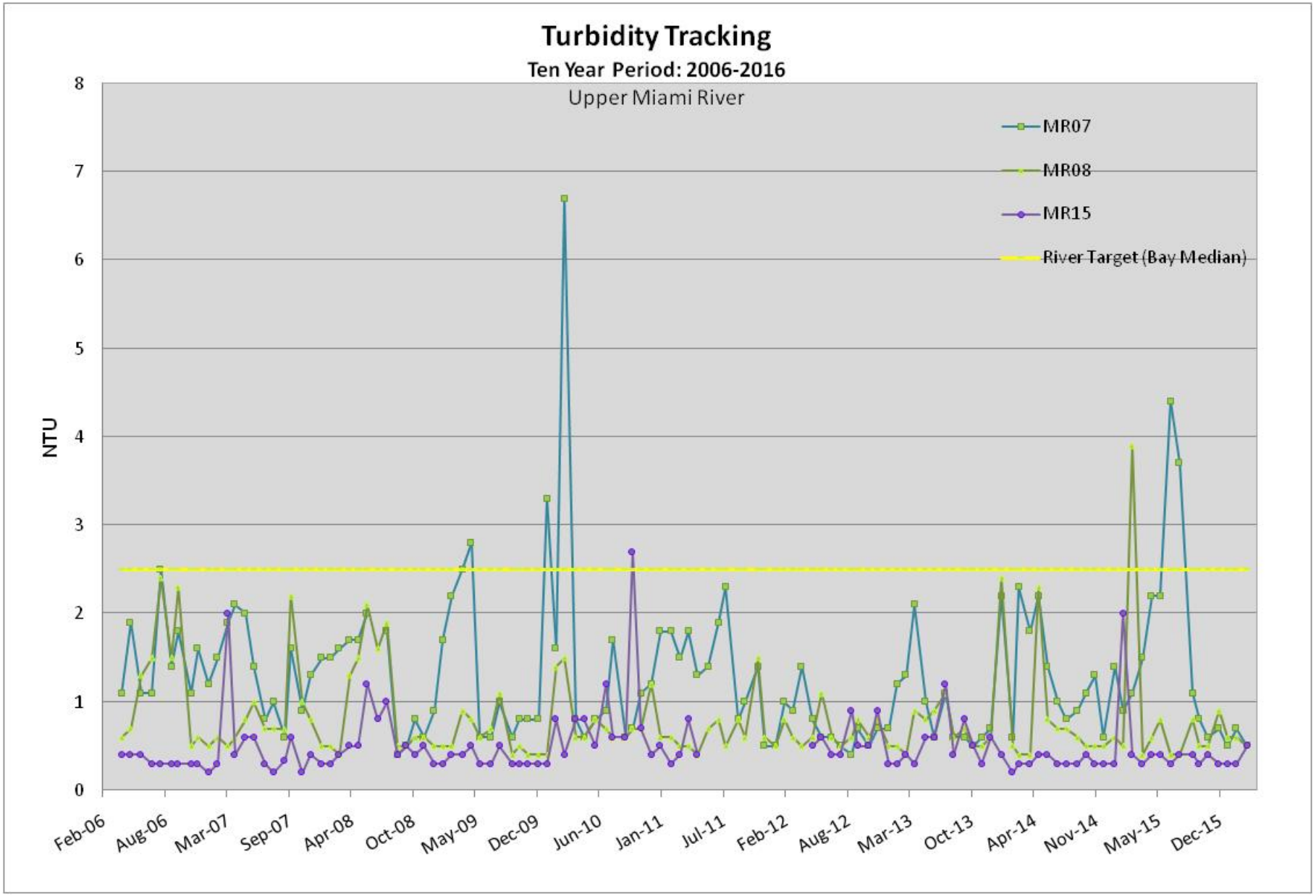
Oct-13
Apr-14
Nov-14
May-15
Dec-15

Chart 11.


Turbidity Tracking
Ten Year Period: 2006-2016
Upper Miami River
NTU
MR07
MR08
MR15
River Target (Bay Median)
0
1
2
3
4
5
6
7
8
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
May-09
Dec-09
Jun-10
Jan-11
Jul-11
Feb-12
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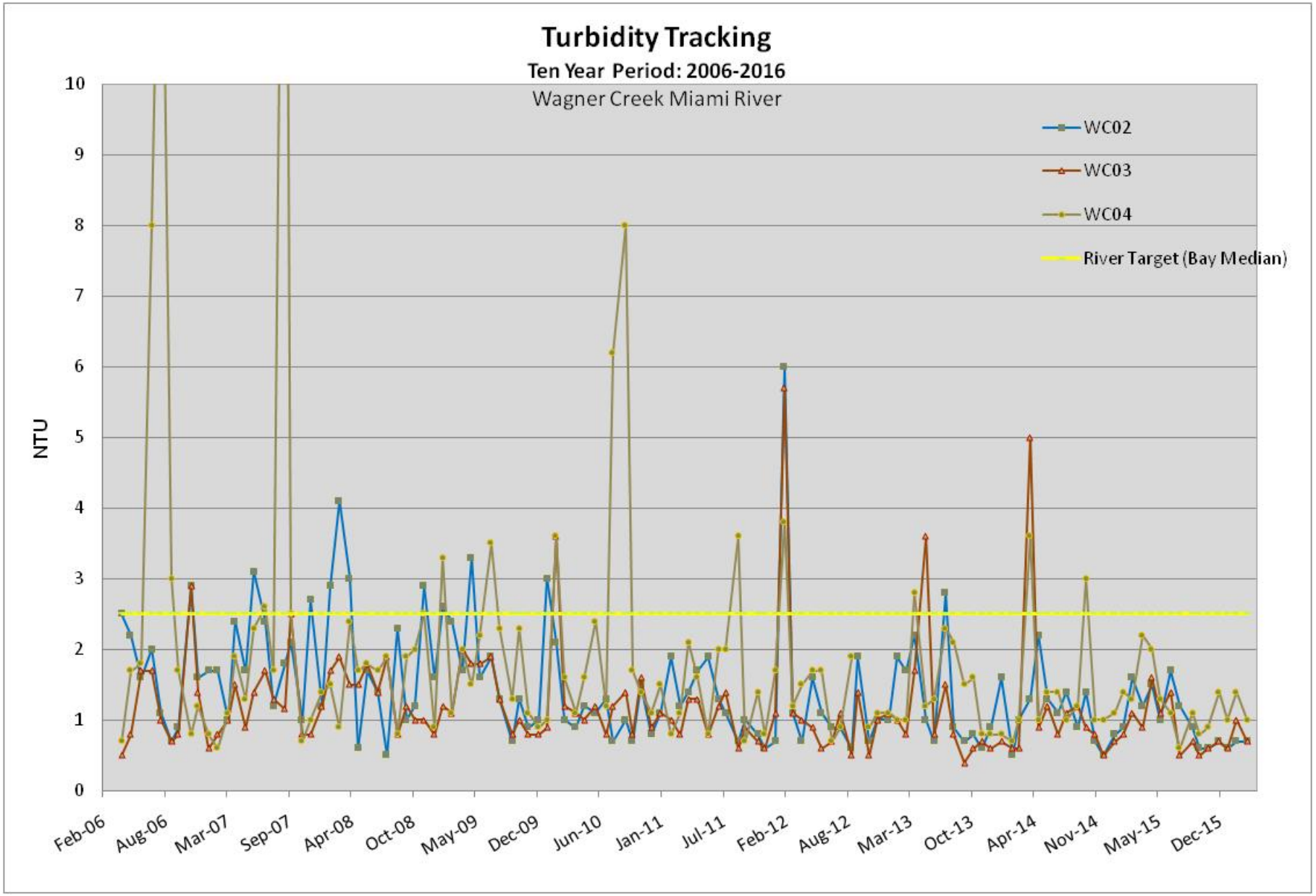
Apr-14
Nov-14
May-15
Dec-15

Chart 12.


Turbidity Tracking
Ten Year Period: 2006-2016
Wagner Creek Miami River
NTU
WC02
WC03
WC04
River Target (Bay Median)
0
1
2
3
4
5
6
7
8
9
10
Feb-06
Aug-06
Mar-07
Sep-07
Apr-08
Oct-08
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