City of Attleboro, Massachusetts

DEPARTMENT OF WASTEWATER
Government Center, 77 Park Street
Attleboro, Massachusetts 02703
Phone 774-203-1820♦Fax 508-761-9837

Paul A. Kennedy
Superintendent
Department of Wastewater

December 30, 2014

U.S. Environmental Protection Agency
5 Post Office Square-Suite 100
Boston, MA 02109-3912

Permit No. MA0100595

RE: Administrative Order Docket No. 10-013

Subject: Assessment Report Full Scale Pilot Plant 2014

Attention: David Turin

Enclosed is the City of Attleboro's wastewater treatment plant Assessment Report for the 2014 full scale Nitrogen Pilot Plant. The report focuses on plant performance for effluent total phosphorus, total aluminum, and total nitrogen, in addition to pilot plant operations and a recommendation plan for future operations.

If you have any questions, please contact me.

Sincerely,

Paul A. Kennedy
Superintendent of Wastewater

Cc: Mr. David Burns, MA DEP
Mr. Thomas Hayes, City of Attleboro
Mr. David Polcari, CDM, Smith
Mr. William McConnell, CDM Smith
Mayor Kevin J. Dumas, City of Attleboro

Memorandum

To: *Mr. Paul Kennedy, City of Attleboro Wastewater Superintendent*

From: *Matthew Pitta, CDM Smith*

Date: *December 29, 2014*

Subject: *Summary of 2014 Pilot Plant Performance at the Attleboro WWTF*

As required by the Order of Compliance dated June 17, 2010 and the Compliance Schedule Modification dated March 14, 2014 (see attached), this memorandum is being provided as a summary of 2014 pilot plant performance and operation at the Attleboro Wastewater Treatment Facility (WWTF). The memorandum presents the following information:

- A brief summary of the pilot plant program and past performance
- 2014 pilot plant performance related to achieving total phosphorus, total aluminum, and total nitrogen effluent limits
- A summary of pilot operation for 2014
- Recommended Plan for operation in 2015

The City of Attleboro (the City) received an updated National Pollutant Discharge Elimination System (NPDES) Permit (Permit No. MA 0100595) on June 8th, 2008, requiring the WWTF to meet average monthly effluent discharge limits of 8 mg/L for total nitrogen from May through October, 0.1 mg/L for total phosphorus from April through October, and 122 µg/L for aluminum year round. The City subsequently appealed the new permit and was denied, with the permit going into effect on October 1, 2009. A Finding of Violation and Order of Compliance was executed by the Environmental Protection Agency.

In an effort to attempt to meet the new permit limits, the City embarked on a full scale Pilot Plant. The Pilot Plant included installation of submersible mixers to create four anoxic zones in the ten existing aeration basins and electrical and control modifications to help control the process and monitor operation of the treatment system. The pilot plant was constructed and operational by May 2012. These changes did not bring effluent concentrations under permit levels and further modifications, including adjustments to the mechanical aerators to reduce dissolved oxygen concentrations in the anoxic zones and instituting a step feed approach to loading the aeration tanks to provide additional carbon for anoxic processes, were implemented.

These additional operational modifications again failed to bring effluent concentrations under permit levels. It became apparent that a key obstacle was a lack of available Biochemical Oxygen Demand in the anoxic zones. The City then worked to identify a supplemental carbon source (MicroC) and an initial bench test and short duration full scale trial were implemented. In addition to supplemental carbon, a series of loading and flow restrictions were placed on a major source of influent ammonia and Total Kjeldahl Nitrogen (TKN) at a local industry - Metalor Technologies.

During two brief periods in 2012 when MicroC was added and flow from Metalor Technologies was eliminated or restricted, effluent total nitrogen levels fell below the 8 mg/L limit. Based on these results it was decided that MicroC would be used on a consistent basis during 2013 and discharge restrictions were imposed on Metalor Technologies. Pretreatment measures (described in more detail below) were to be installed at the Metalor facility, along with three equalization tanks to reduce peak flow rates.

Issues with the implementation of the pretreatment measures at Metalor Technologies in the spring of 2013 affected nitrogen removal at the Attleboro WWTP. Beginning in July 2013, pretreatment limits were enforced on the flow from Metalor Technologies. Once loads from Metalor Technologies were brought to the agreed upon limits the plant performed well, with an average effluent total nitrogen concentration of 5.5 mg/L between July 1 and October 31, 2013.

Both the 2012 and 2013 Pilot Plant Operations Summary Memoranda are attached to this memorandum.

Metalor Technologies

As documented in the 2012 Pilot Plant Operations Summary Memorandum, Metalor Technologies operates a silver powder and flake manufacturing facility in Attleboro. As part of the silver powder and flake manufacturing processes, significant amounts of ammonia are discharged from the facility. With regard to pounds of TKN discharged, Metalor Technologies represented as much as 1/3rd of the nitrogen load received at the Attleboro WWTF. The City worked closely with Metalor Technologies in identifying the interference in WWTF performance and establishing a local limit for TKN that was approved by the City and EPA and incorporated into the City's Industrial Pretreatment Program (IPP) requirements.

A compliance schedule was agreed to that would ensure Metalor Technologies would comply with the IPP required discharge limits to minimize loadings to the Attleboro WWTF by May 1, 2013. Metalor Technologies provided monthly status reports to the City with regard to their implementation schedule that involved the construction of an ammonia recovery process that would enable them to recycle ammonia for process use, therefore reducing discharge from the facility. Unfortunately, there were delays associated with installing the ammonia recovery process and the system was not in place by May 1, 2013. Based on the effluent total nitrogen data presented in Figure 5, it is evident that the Metalor Technologies discharges impacted the pilot plant performance between May 1 and July 1. The City issued a cease and desist order to Metalor

Technologies in order to enforce compliance with the City's local limits for TKN discharge as the agreed upon compliance date of May 1, 2013 was not met. Metalor Technologies was not allowed to discharge between July 1 and July 15, 2013. After July 15, 2013, Metalor Technologies would only be allowed to discharge at concentrations that comply with the local limits (<691 mg/L TKN).

The impacts of these limits can be seen in the 2012 and 2013 effluent total nitrogen concentrations. The Metalor pretreatment system was operational for the entirety of the 2014 period covered in this memorandum (April 1 to October 31, 2014).

2014 Plant Performance – Effluent Total Phosphorus

The attached Figure 1 shows the performance of the Attleboro WWTF at meeting the monthly average effluent total phosphorus limit of 0.1 mg/L. The effluent phosphorus mass loads are shown on Figure 2. The effluent daily average total phosphorus was below the monthly average permit limit of 0.1 mg/L, from April 1 through October 31, with an average effluent total phosphorus concentration of 0.05 mg/L.

2014 Plant Performance – Effluent Total Aluminum

The attached Figure 3 shows the performance of the Attleboro WWTF at meeting the monthly average effluent total aluminum limit of 122 µg/L. The effluent aluminum mass loads are shown on Figure 4. As shown, there were only three exceedances of the monthly average for Total Aluminum: April (123 ug/L), September (147.3 µg/L), and October (124.4 µg/L). The maximum daily limit of 950 µg/L was not exceeded.

2014 Plant Performance – Effluent Total Nitrogen

The total nitrogen effluent concentration at the Attleboro WWTF and the monthly average limit of 8 mg/L are shown of the attached Figure 5. The effluent total nitrogen mass loading is shown on Figure 6. As shown, the plant was successful at meeting the average monthly limit of 8 mg/L from May through October 2014 even during the time period when the system was being stressed by taking one of the ten aeration basins off line (August 5 to October 6, 2014). The average effluent total nitrogen concentration from April 1 to October 31, 2014 was 5.7 mg/L. During the nitrogen permitting season (May 1 to October 31) the average was 5.4 mg/L. There were no months when the average concentration exceeded the limit.

2014 Pilot Plant Operations

Based on the data presented above, the Attleboro WWTF was successful at providing phosphorus removal between April and October 2014, and successful at providing nitrogen removal from May to October 2014. These successes relative to previous years are due largely to restrictions on flows and loads from Metalor Technologies and the addition of supplemental carbon. Figures 7 and 8 show the influent ammonia concentrations and loadings observed during 2014. Figure 9 shows the WWTF flows during the phosphorus/nitrogen permitting period.

System stressing during the 2014 permitting season was successful. The feed rate of MicroC was varied throughout the permitting season with good results.

Recommended Plan for Future Operations

Based on the results obtained during the three seasons of pilot operation, the City of Attleboro is confident that the improvements implemented to date are capable of achieving compliance with the NPDES effluent permit limits of 8 mg/L total nitrogen and 0.1 mg/L total phosphorus. The City is committed to continuing operation beginning in April 2015. The City has decided to delay the implementation of further system improvements and permanent system upgrades until the limits of the next permit are established. This will help to ensure that the scope of improvements is optimized to meet new permit limits. The City had previously considered (and may still, depending on the final total nitrogen limit) the following improvements:

- Additional mixers in existing tanks to allow for redundancy and operational flexibility in flow options should the need arise to remove a tank from service.
- Improvements to the aeration system to control dissolved oxygen and further optimize the aerobic and anoxic zone use. This may the installation of diffused aeration in tanks immediately upstream of anoxic zones for better control of dissolved oxygen levels.
- A permanent supplemental carbon feed system with increased storage capacity to better optimize delivery costs.
- Integration of the additional mixers, the carbon feed system and other improvements into the WWTF SCADA system.

The Attleboro WWTF currently operates with an interim limit of 33 mg/L total effluent nitrogen. During 2015 the City will continue to stress their systems and vary MicroC feed rates. Particular attention will be paid to conditions and performance during early May and late October, when cold weather conditions represent the most challenging conditions for meeting the required effluent total nitrogen limits.

To reduce high effluent aluminum concentrations the City intends on refining the polyaluminum chloride (PaCl) dosage and trying to maintain neutral pH levels in the aeration basins to maximize PaCl effectiveness. Positive results were achieved by using the previously mentioned methods at the end of the 2014 season.

cc: David Polcari, CDM Smith
William McConnell, CDM Smith

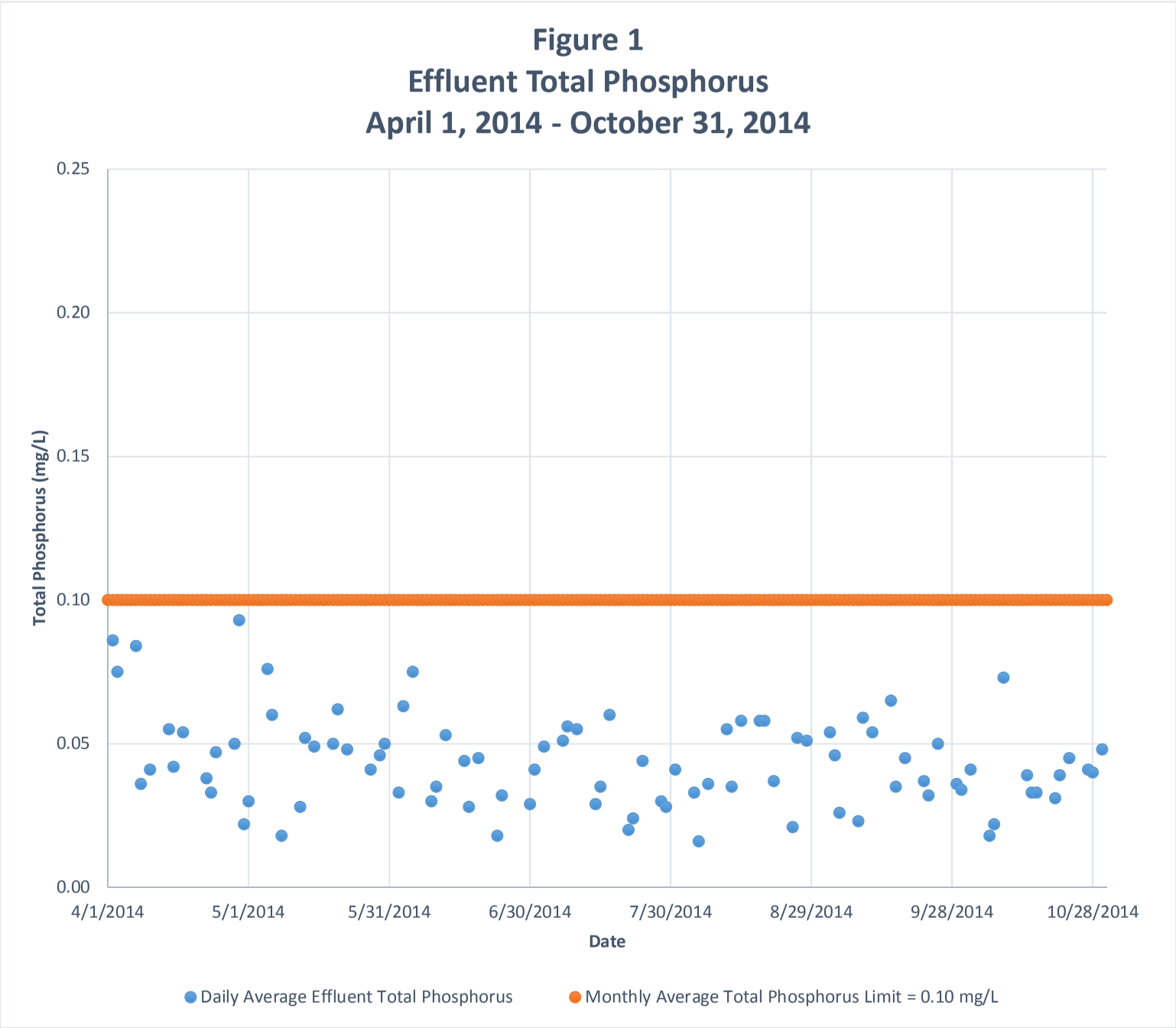
Figure 1
Effluent Total Phosphorus
April 1, 2014 - October 31, 2014
Total Phosphorus (mg/L)
0.25
0.20
0.15
0.10
0.05
0.00
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Daily Average Effluent Total Phosphorus
Monthly Average Total Phosphorus Limit = 0.10 mg/L

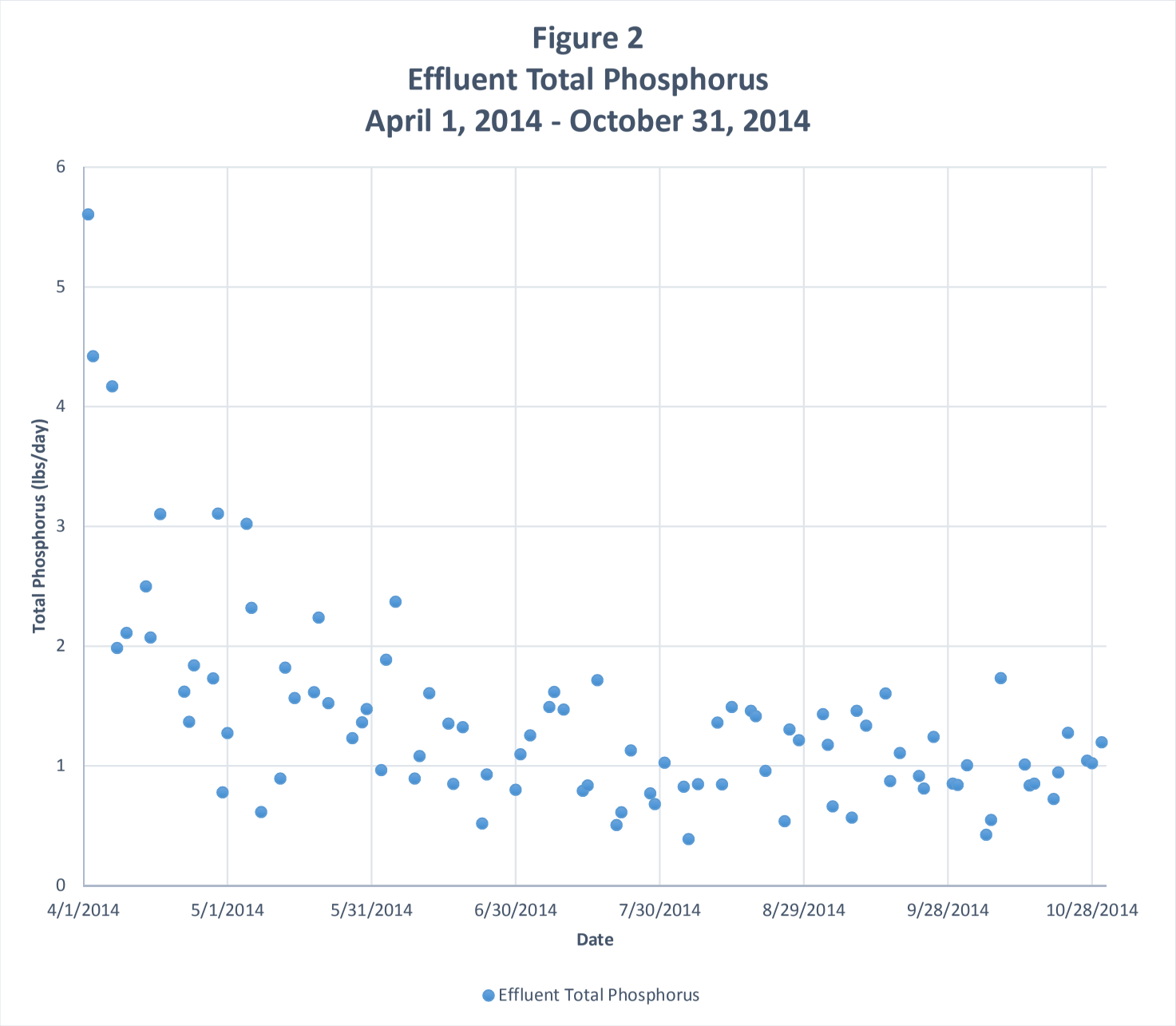
Figure 2
Effluent Total Phosphorus
April 1, 2014 - October 31, 2014
Total Phosphorus (lbs/day)
0
1
2
3
4
5
6
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Effluent Total Phosphorus

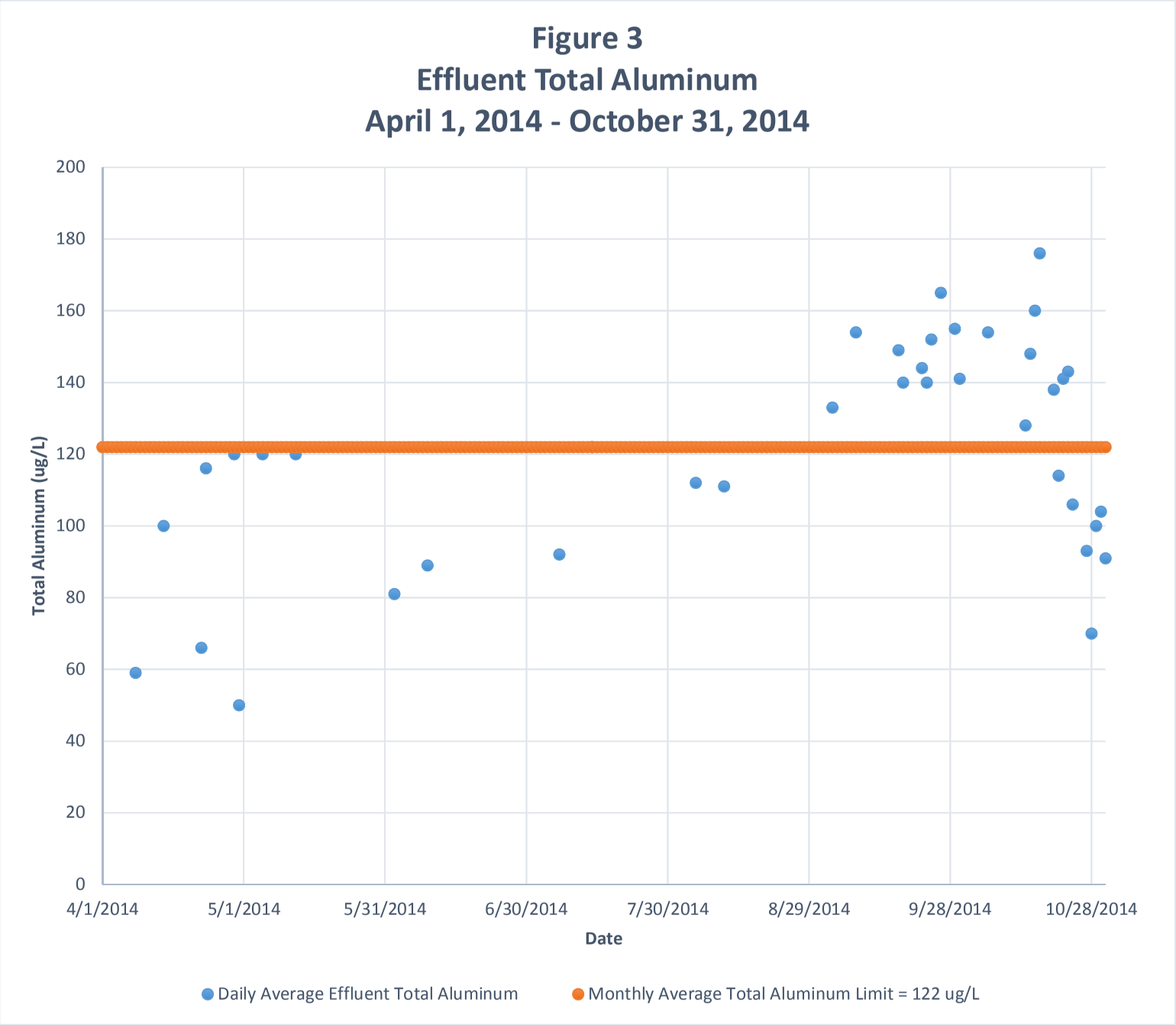
Figure 3
Effluent Total Aluminum
April 1, 2014 - October 31, 2014
Total Aluminum (ug/L)
200
180
160
140
120
100
80
60
40
20
0
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Daily Average Effluent Total Aluminum
Monthly Average Total Aluminum Limit = 122 ug/L

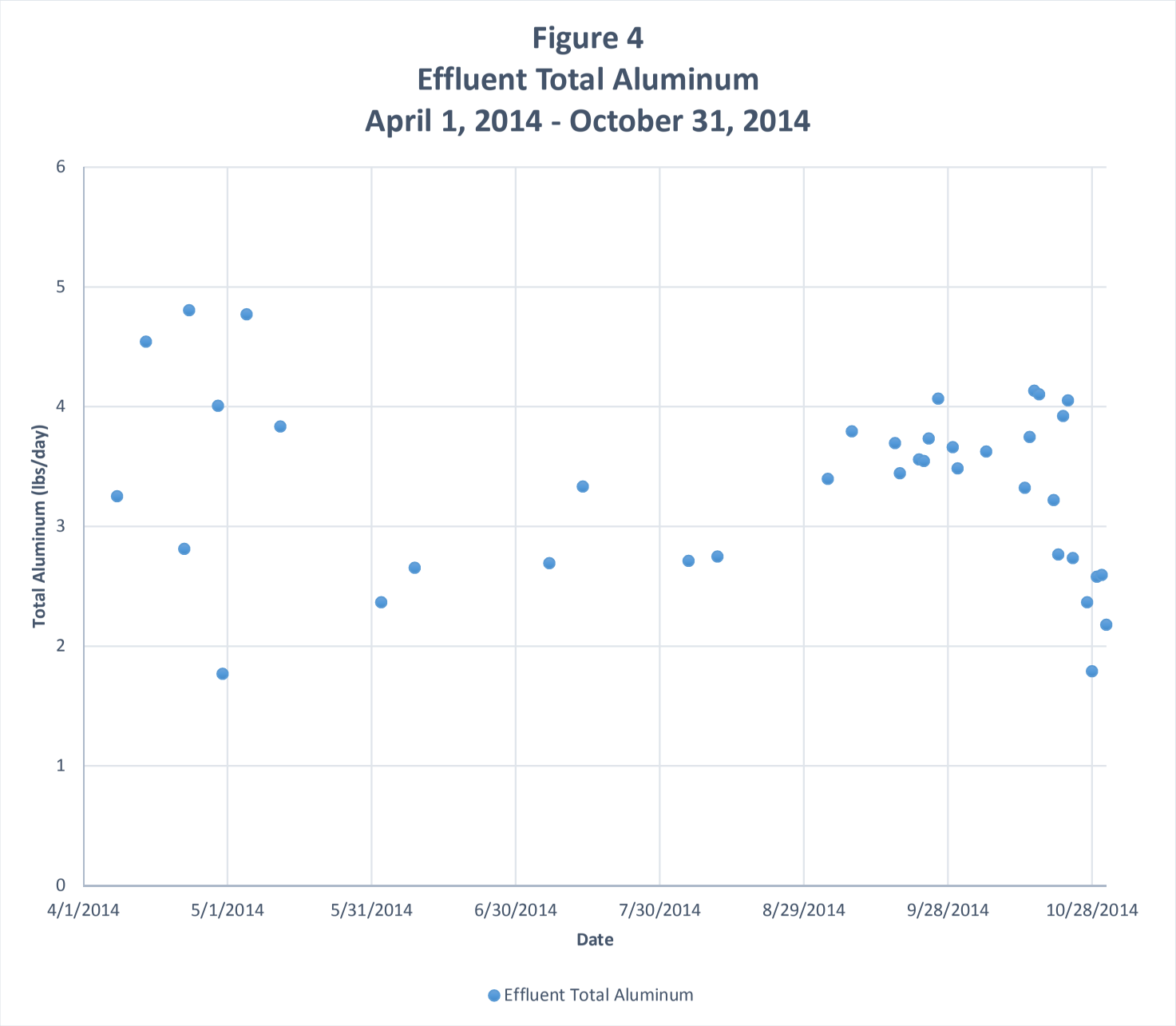
Figure 4
Effluent Total Aluminum
April 1, 2014 - October 31, 2014
Total Aluminum (lbs/day)
0
1
2
3
4
5
6
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Effluent Total Aluminum

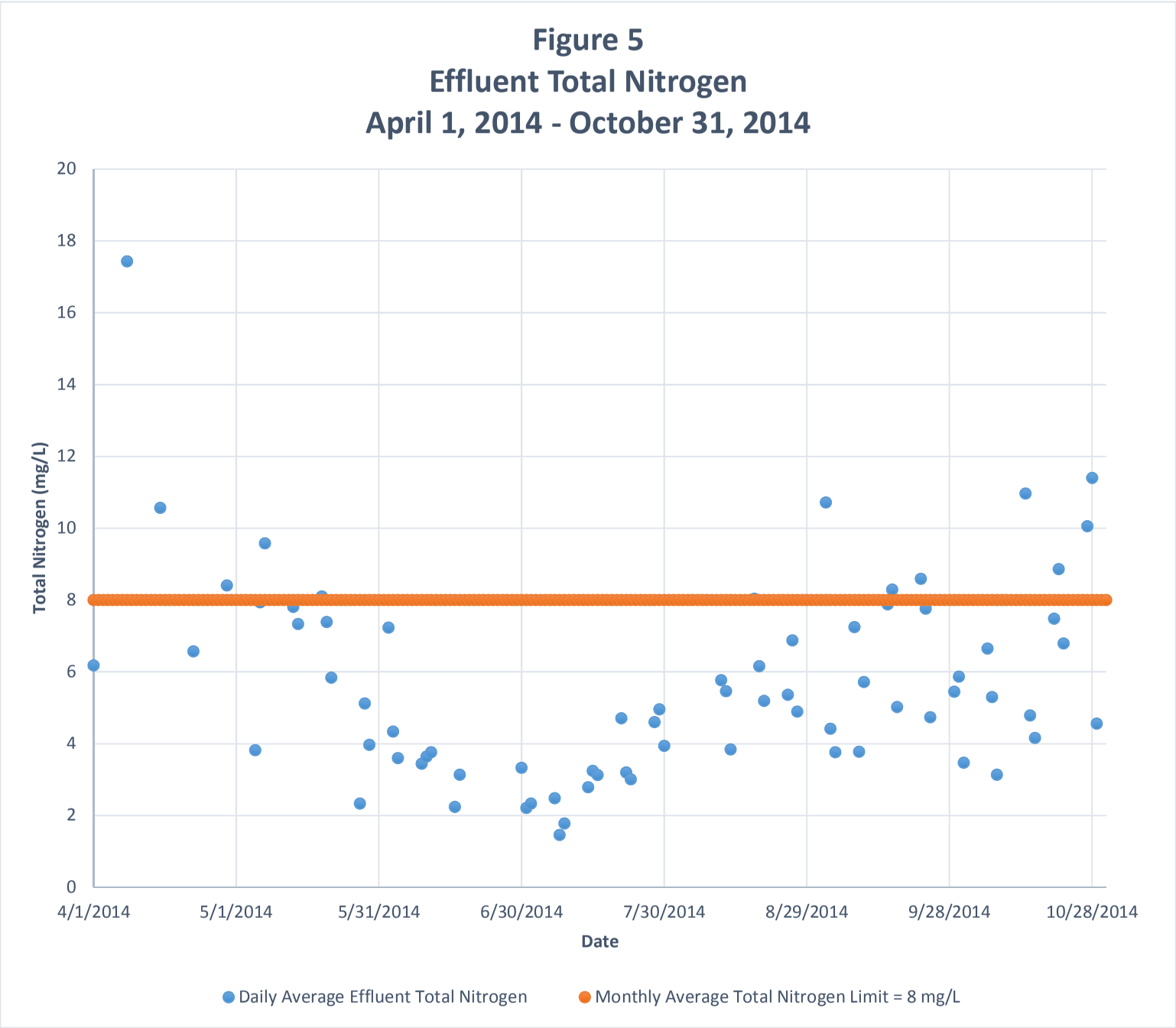
Figure 5
Effluent Total Nitrogen
April 1, 2014 - October 31, 2014
Total Nitrogen (mg/L)
20
18
16
14
12
10
8
6
4
2
0
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Daily Average Effluent Total Nitrogen
Monthly Average Total Nitrogen Limit = 8 mg/L

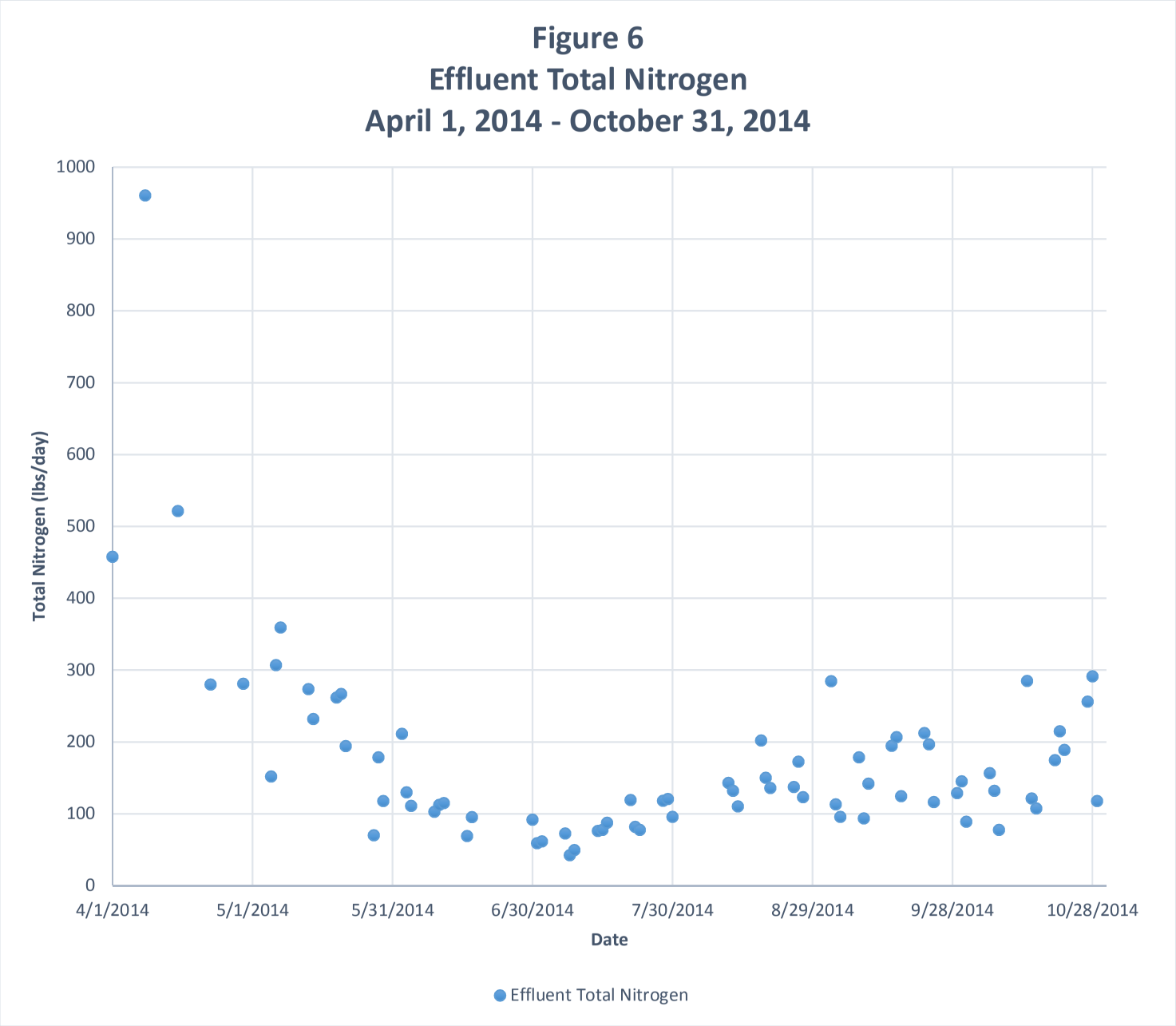
Figure 6
Effluent Total Nitrogen
April 1, 2014 - October 31, 2014
Total Nitrogen (lbs/day)
1000
900
800
700
600
500
400
300
200
100
0
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Effluent Total Nitrogen

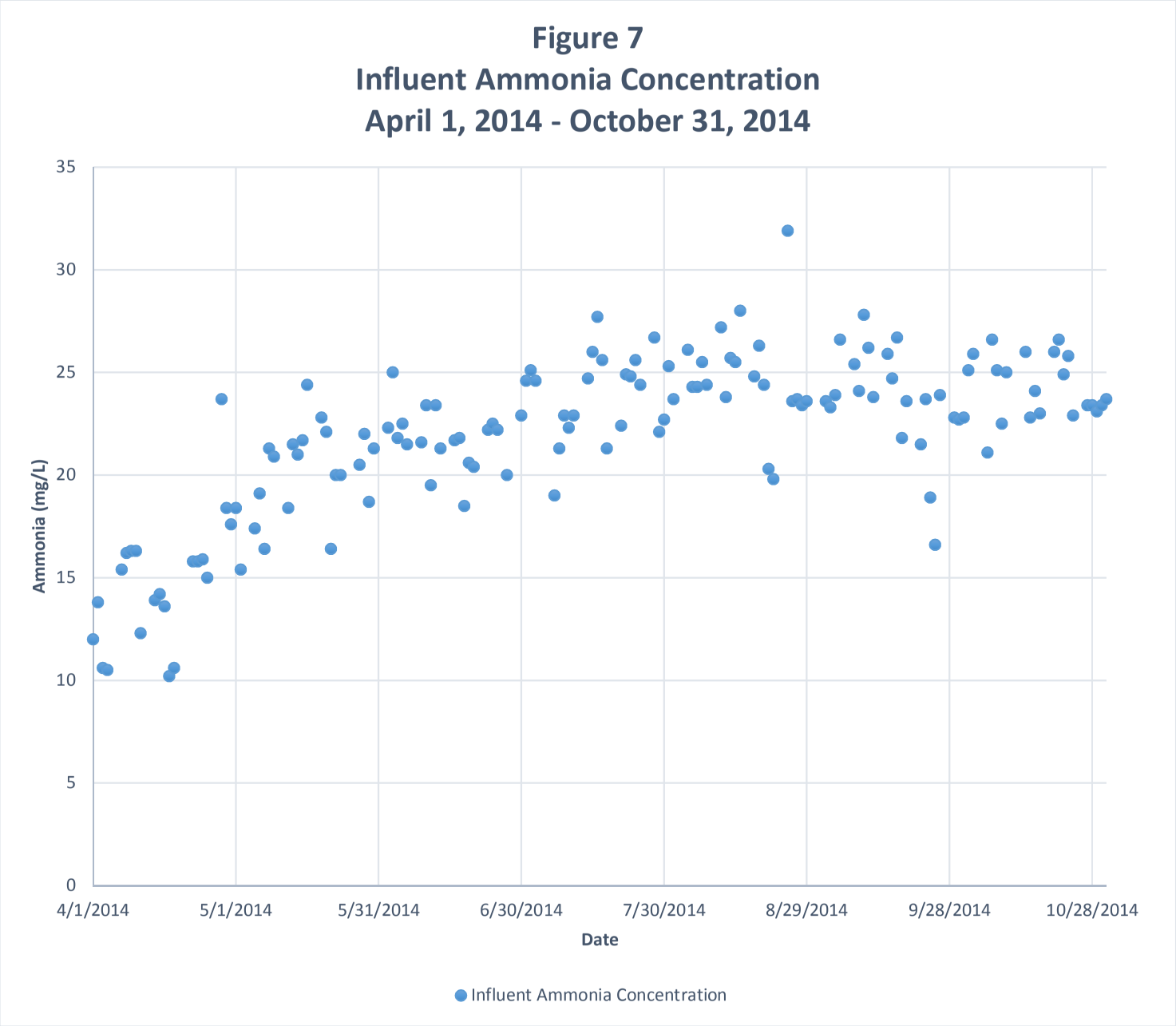
Figure 7
Influent Ammonia Concentration
April 1, 2014 - October 31, 2014
Ammonia (mg/L)
35
30
25
20
15
10
5
0
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Influent Ammonia Concentration

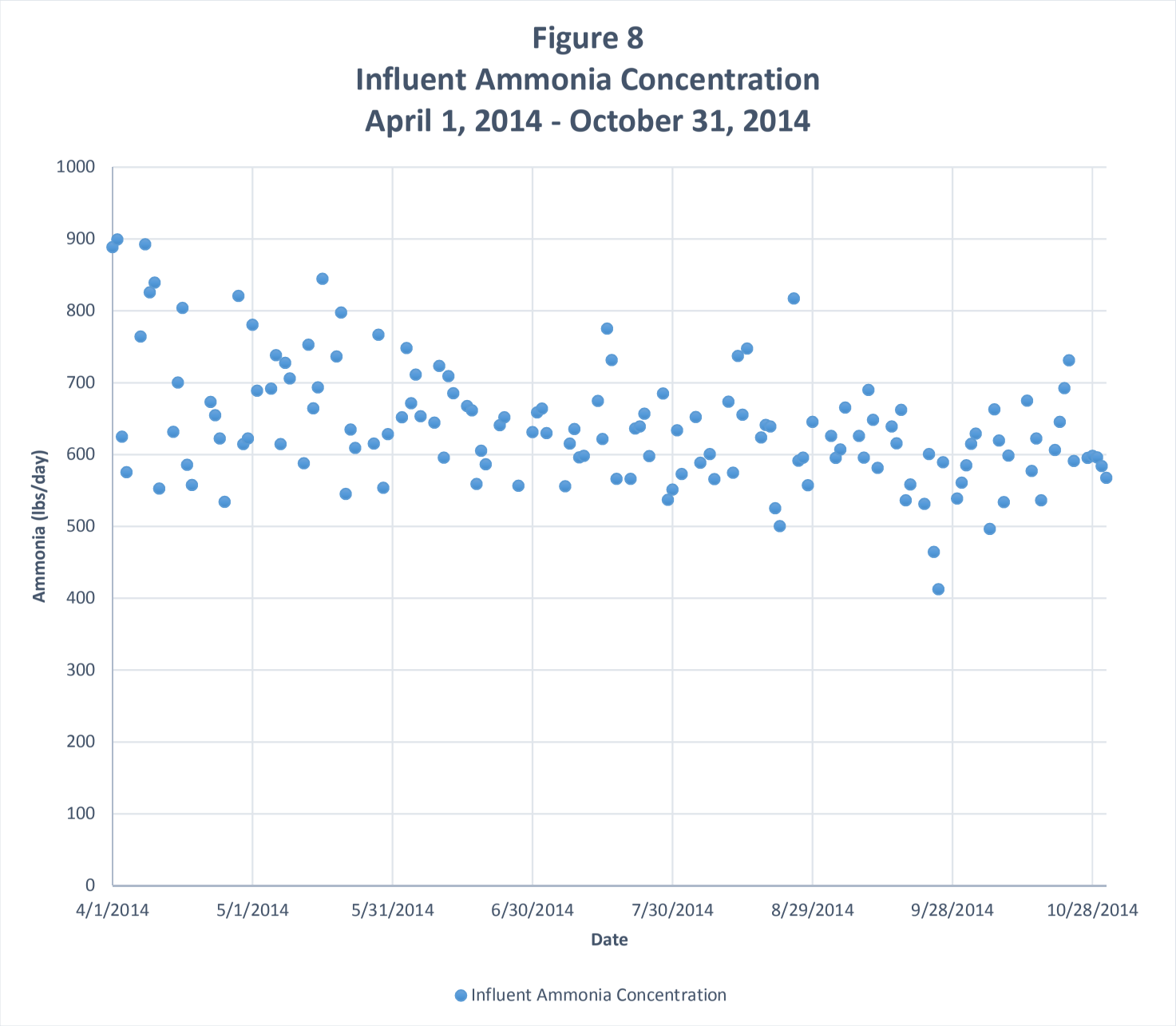
Figure 8
Influent Ammonia Concentration
April 1, 2014 - October 31, 2014
Ammonia (lbs/day)
1000
900
800
700
600
500
400
300
200
100
0
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Influent Ammonia Concentration

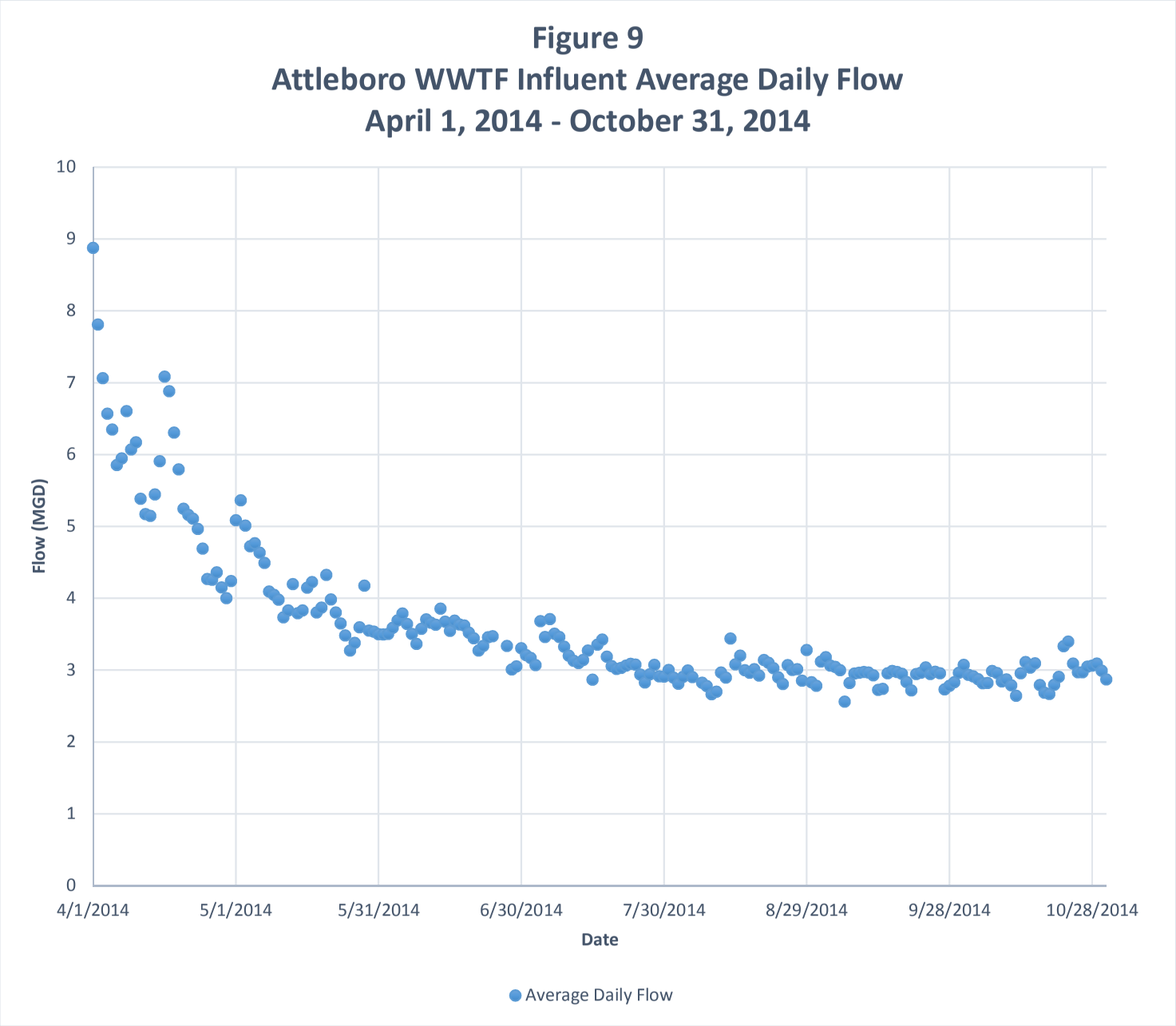
Figure 9
Attleboro WWTF Influent Average Daily Flow
April 1, 2014 - October 31, 2014
Flow (MGD)
10
9
8
7
6
5
4
3
2
1
0
4/1/2014
5/1/2014
5/31/2014
6/30/2014
7/30/2014
8/29/2014
9/28/2014
10/28/2014
Date
Average Daily Flow

United States Environmental Protection Agency
Region I – New England
5 Post Office Square - Suite 100
Boston, MA 02109-3912

MAR 14 2014

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MAR 17 2014
DEPARTMENT OF WASTEWATER

Honorable Kevin J. Dumas
City of Attleboro, Massachusetts
Attleboro City Hall
77 Park Street
Attleboro, MA 02703

RE: Administrative Order Docket No. 10-013
Compliance Schedule Modification

Dear Mayor Dumas:

On June 21, 2010, the US Environmental Protection Agency ("EPA") issued the City of Attleboro ("City") the above-referenced Administrative Order ("Order"), requiring, among other things, that the City develop, construct, and test a full-scale pilot system for the removal of nitrogen at the City's wastewater treatment plant ("WWTF"). EPA has reviewed the 2013 pilot plant performance summary report, submitted to EPA on February 28, 2014 ("2013 Summary Report"). In this report, the City summarizes plant performance over the past two years of pilot testing and describes additional testing of the nitrogen removal system that the City would like to perform over the next two seasons to address limitations to the pilot testing conducted to date.

According to the report, high loadings of ammonia from a local industry adversely impacted the performance of the pilot system during significant periods of testing over the past two seasons. While the data showed that system performance was sufficient to meet the final permit limits during the periods of operations not impacted by the industry source, the City is requesting an extension of the interim limits for total nitrogen to allow for additional testing of the system during colder weather and under stressed conditions, such as when all treatment equipment is not available.

Based on our review, EPA is granting this request and modifying the Order as follows:

1. By December 31, 2014, the City shall submit to EPA and the Massachusetts Department of Environmental Protection ("MassDEP") a report assessing the full-scale pilot plant operations during the 2014 nutrient removal season and its ability to achieve nitrogen removal and maintain compliance with the 8 milligram/liter total nitrogen monthly average concentration limit contained in the NPDES Permit ("2014 Report"). If the City determines that the continued implementation of the full-scale pilot will result in compliance with the total nitrogen limits contained in its NPDES Permit, it shall implement the 2015 capital improvements described in the 2013 Summary Report. If the City determines that continued implementation of the full-scale pilot will not result in compliance with the total nitrogen limits contained in its NPDES Permit, the 2014 Report shall include a plan to comply with the limits contained in the NPDES Permit.

2. By December 31, 2015, the City shall submit a final report to the EPA and MassDEP summarizing the results of the WWTF pilot program and the effectiveness of any additional modifications made to the system.

3. The City shall, at a minimum, comply with the monitoring requirements and interim effluent limitations for total nitrogen in Attachment 1 of the Order until the earliest of: (a) May 1, 2016; (b) EPA modifies the interim limit based on full-scale pilot plant operations; or (c) the date, if any, that EPA determines that the City has not complied with any portion of the Order or this Modification, at which time the limits in the NPDES permit become effective.

The City shall also comply with all other effluent limitations, monitoring requirements and other conditions specified in the NPDES Permit and the Order not addressed by this Modification. It is Attleboro's obligation to properly operate and maintain its WWTF at all times.

Please contact David Turin at (617) 918-1598 or turin.david@epa.gov, or have your attorney contact Toni Bandrowicz at (617) 918-1734, if you have any questions.

Sincerely,

Susan Studlien

Susan Studlien, Director
Office of Environmental Stewardship

CC: Paul Kennedy, Wastewater Superintendent, Attleboro
David Burns, MassDEP
Toni Bandrowicz, EPA

City of Attleboro, Massachusetts

DEPARTMENT OF WASTEWATER
Government Center, 77 Park Street
Attleboro, Massachusetts 02703
Phone 774-203-1820 ♦ Fax 508-761-9837

Paul A. Kennedy
Superintendent
Department of Wastewater

February 27, 2014

U.S. Environmental Protection Agency
5 Post Office Square-Suite 100
Boston, MA 02109-3912

Permit No. MA0100595

Subject: **Summary of the 2013 Pilot Plant Performance**

Attention: David Turin

Enclosed is the City of Attleboro's wastewater treatment plant summary of the 2013 pilot plant performance. The report focuses on plant performance for effluent total phosphorus, total aluminum, and total nitrogen, in addition to pilot plant operations and a recommendation plan for future operations.

If you have any questions, please contact me.

Sincerely,

Paul A. Kennedy
Superintendent of Wastewater

Cc: Mr. David Burns, MA DEP
Mr. Benjamin Levesque, CDM Smith

Memorandum

To: *Mr. Paul Kennedy, City of Attleboro Wastewater Superintendent*

From: *Benjamin Levesque, CDM Smith*

Date: *February 26, 2014*

Subject: *Summary of 2013 Pilot Plant Performance at the Attleboro WWTF*

As required by the Order of Compliance dated June 17, 2010, this memorandum is being provided as a summary of 2013 pilot plant performance and operation at the Attleboro Wastewater Treatment Facility (WWTF). The memorandum presents the following information:

- A brief summary of the pilot plant program
- 2013 pilot plant performance related to achieving total phosphorus, total aluminum, and total nitrogen effluent limits
- A summary of pilot operation for 2013
- Recommended Plan for operation in 2014 and 2015

The City of Attleboro (the City) received an updated National Pollutant Discharge Elimination System (NPDES) Permit (Permit No. MA 0100595) on June 8th, 2008, requiring the WWTF to meet an effluent discharge limit of 8 mg/L for total nitrogen from May through October, 0.1 mg/L for total phosphorus from April through October, and 122 µg/L for aluminum year round. The City subsequently appealed the new permit and was denied, with the permit going into effect on October 1, 2009. A Finding of Violation and Order of Compliance was executed by the Environmental Protection Agency.

In an effort to try and meet the new permit limits, the City embarked on a full scale Pilot Plant. The Pilot Plant included installation of submersible mixers to create four anoxic zones in the ten existing aeration basins and electrical and control modifications to help control the process and monitor operation of the treatment system. The pilot plant was constructed and operational by May 2012. These changes did not bring effluent concentrations under permit levels and further modifications, including adjustments to the mechanical aerators to reduce dissolved oxygen concentrations in anoxic zones and instituting a step feed approach to filling aeration tanks to provide additional carbon for anoxic processes, were implemented.

These additional operational modifications again failed bring effluent concentrations under permit levels. It became apparent that a key obstacle was a lack of available Biochemical Oxygen Demand (BOD). The City then worked to identify a supplemental carbon source (MicroC) and an initial bench test and short duration full scale trial were implemented. In addition to supplemental carbon, a series of loading and flow restrictions were placed on the primary source of influent ammonia and Total Kjeldahl Nitrogen (TKN); at a local industry - Metalor Technologies.

During two brief periods in2012 when MicroC was added and flow from Metalor Technologies was eliminated or restricted, effluent total nitrogen levels fell below the 8 mg/L limit. Based on these results it was decided that MicroC would be used on a consistent basis during 2013 and discharge restrictions were imposed on Metalor Technologies. Pretreatment measures (described in more detail below) were installed at the Metalor facility, along with three equalization tanks to reduce peak flow rates.

2013 Plant Performance – Effluent Total Phosphorus

The attached Figure 1 shows the performance of the Attleboro WWTF at meeting the effluent total phosphorus limit of 0.1 mg/L. The effluent phosphorus loads are shown in pounds per day on Figure 2. There were two instances when the effluent total phosphorus exceeded the permit limit of 0.1 mg/L, both of which appear to be isolated incidents. From April 1 through October 31, the Attleboro WWTF averaged 0.05 mg/L effluent total phosphorus.

2013 Plant Performance – Effluent Total Aluminum

The attached Figure 3 shows the performance of the Attleboro WWTF at meeting the effluent total aluminum limit of 122 µg/L. The effluent aluminum loads are shown in pounds per day on Figure 4. As shown, four of the 17 recorded concentrations are above the effluent limit, which is attributed to the addition of polyaluminum chloride utilized as part of the total phosphorus removal process. There were no instances of concentrations exceeding the limit between April 1 and October 10 during 2012. During 2013, the aluminum concentration during pilot operation averaged 106ug/L.

2013 Plant Performance – Effluent Total Nitrogen

The total nitrogen effluent concentration at the Attleboro WWTF and the limit of 8 mg/L are shown of the attached Figure 5. The effluent total nitrogen loading in terms of pounds per day is shown on Figure 6. Effluent concentrations in April through June often exceed the permitted limit. Concentrations remained under the limit until the middle of October, with one exception. Beginning in the middle of October effluent total nitrogen levels exceed the limit, averaging 10.9 mg/L.

The timeframe when most concentrations are under the limit coincides with the enforcement of discharge limits and finalization of improvements to Metalor Technologies pretreatment system at the end of June. The rise in effluent total nitrogen at the end of the reporting period is related to attempts at “stressing” the pilot plant operation by removing an aeration tank from service. Even

with these issues included, the nitrogen removal pilot plant averaged a total nitrogen discharge of 8.3 mg/L between April 1 (even though permitting started on May 1) and October 31, 2013.

2013 Pilot Plant Operations

Based on the data presented above, the Attleboro WWTF was successful at providing nitrogen and phosphorus removal between April/May and October 2013. Performance was particularly successful when Metalor Technologies completed installation and start-up of their ammonia recovery system. Figures 7 and 8 show the influent ammonia concentrations and loadings observed during 2013. Figure 9 shows the WWTF flows during the phosphorus/nitrogen permitting period.

As documented in the 2012 Pilot Plant Operations Summary Memorandum (attached to this memorandum), Metalor Technologies operates a silver powder and flake manufacturing facility in Attleboro. As part of the silver powder and flake manufacturing processes, significant amounts of ammonia are discharged from the facility. With regard to pounds of TKN discharged, Metalor Technologies represented as much as 1/3rd of the nitrogen load received at the Attleboro WWTF. The City worked closely with Metalor Technologies in identifying the interference in WWTF performance and establishing a local limit for TKN that was approved by the City and EPA and incorporated into the City's Industrial Pretreatment Program (IPP) requirements.

A compliance schedule was agreed to that would ensure Metalor Technologies comply with the IPP required discharge limits to minimize loadings to the Attleboro WWTF by May 1, 2013. Metalor Technologies provided monthly status reports to the City with regard to their implementation schedule that involved the construction of an ammonia recovery process that would enable them to recycle ammonia for process use therefore reducing discharge from the facility. Unfortunately, there were delays associated with installing the ammonia recovery process and the system was not in place by May 1, 2013. Based on the effluent total nitrogen data presented in Figure 5, it is evident that the Metalor Technologies discharges impacted the pilot plant performance between May 1 and July 1. The City issued a cease and desist order to Metalor Technologies in order to enforce compliance with the City's local limits for TKN discharge as the agreed upon compliance date of May 1, 2013 was not met. Metalor Technologies was not allowed to discharge between July 1 and July 15, 2013. After July 15, 2013, Metalor Technologies would only be allowed to discharge at concentrations that comply with the local limits (<691 mg/L TKN).

Pilot plant operation from July 1 to October 31, 2013 averaged 5.5 mg/L effluent total nitrogen. Performance was adversely impacted between April 1 and July 1, 2013 by the high nitrogen discharges from Metalor Technologies.

Recommendation Plan for Future Operations

Based on the results obtained during the two seasons of pilot operation, the City of Attleboro is optimistic that the improvements implemented to date are capable of achieving compliance with

the NPDES effluent permit limits of 8 mg/L total nitrogen and 0.1 mg/L total phosphorus. The City is committed to continuing operation beginning in April 2014. However, it is recommended that the City request the following be considered for continued operation:

Continuation of the Interim Nitrogen Discharge Limit for the 2014 and 2015 Nutrient Removal Seasons (May – October)

The Attleboro WWTF currently operates with an interim limit of 33 mg/L total effluent nitrogen. It is recommended that this interim limit be continued through the year 2015 to collect additional information related to pilot plant performance and based on anticipated capital improvements described in more detail below.

Additional Piloting for 2014

As was observed for the 2013 data, there is indeed indication that the current configuration at the Attleboro WWTF is capable of meeting the permitted effluent discharge requirement of 8 mg/L total nitrogen. However, as shown with the data throughout 2012 and beginning and end of 2013, there were still times where compliance was not achieved. It is recommended that additional piloting be performed for the 2014 season for the following reasons:

- It is important to collect more information on performance during cold weather and under "stressed" conditions. The pilot plant has not been effective at removing nitrogen in early May in either year. We believe this is mostly due to the significant impairments associated with Metalor Technologies interferences; however, there is a need to confirm performance as cold weather conditions observed in early May and mid to late October represent the most challenging conditions for meeting the required effluent total nitrogen limits.

- Extension of the pilot would also give the City the opportunity to continue to "stress" the system and monitor performance without all 10 aeration/anoxic tanks available. As described further below, the City is working towards a more robust and permanent set-up for continuing to achieve nitrogen removal and the additional data will assist in selection of equipment needed.

- The City will continue the addition of supplemental carbon for the 2014 piloting season. This may include an evaluation of additional and potentially less costly supplemental carbon sources.

- The results from additional operation in 2014 will assist in developing and securing funding for capital improvements intended for 2015 that will result in a more permanent and robust treatment facility to meet the required permit limits (explained further below).

Capital Improvements for 2015

Based on the additional information collected as part of the extended 2014 pilot, the City anticipates working to install a more permanent set-up for maintaining permit compliance. This would involve anticipated construction in 2015 that would include:

- Additional mixers in existing tanks to allow for redundancy and operational flexibility in flow options should the need arise to remove a tank from service.
- Improvements to the aeration system to control dissolved oxygen and further optimize the aerobic and anoxic zone use. This may involve the implementation of variable frequency drives on select mechanical aerators or the installation of diffused aeration in tanks immediately upstream of anoxic zones for better control of dissolved oxygen levels.
- A permanent supplemental carbon feed system with increased storage capacity is recommended to better optimize delivery costs.
- Integration of the additional mixers, the carbon feed system and other improvements into the WWTF SCADA system.

cc: David Polcari, CDM Smith

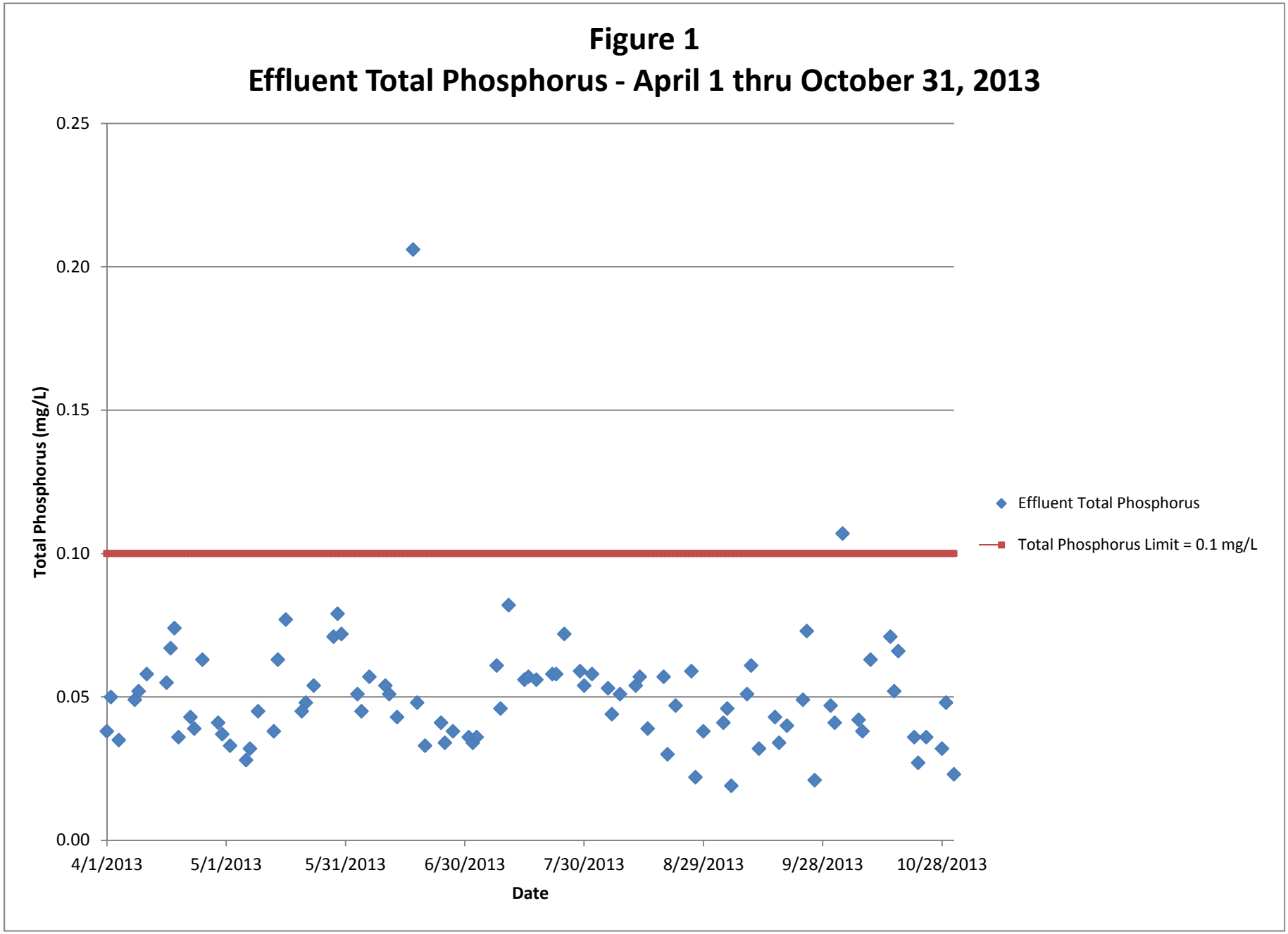
Figure 1
Effluent Total Phosphorus - April 1 thru October 31, 2013
Total Phosphorus (mg/L)
0.25
0.20
0.15
0.10
0.05
0.00
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date
Effluent Total Phosphorus
Total Phosphorus Limit = 0.1 mg/L

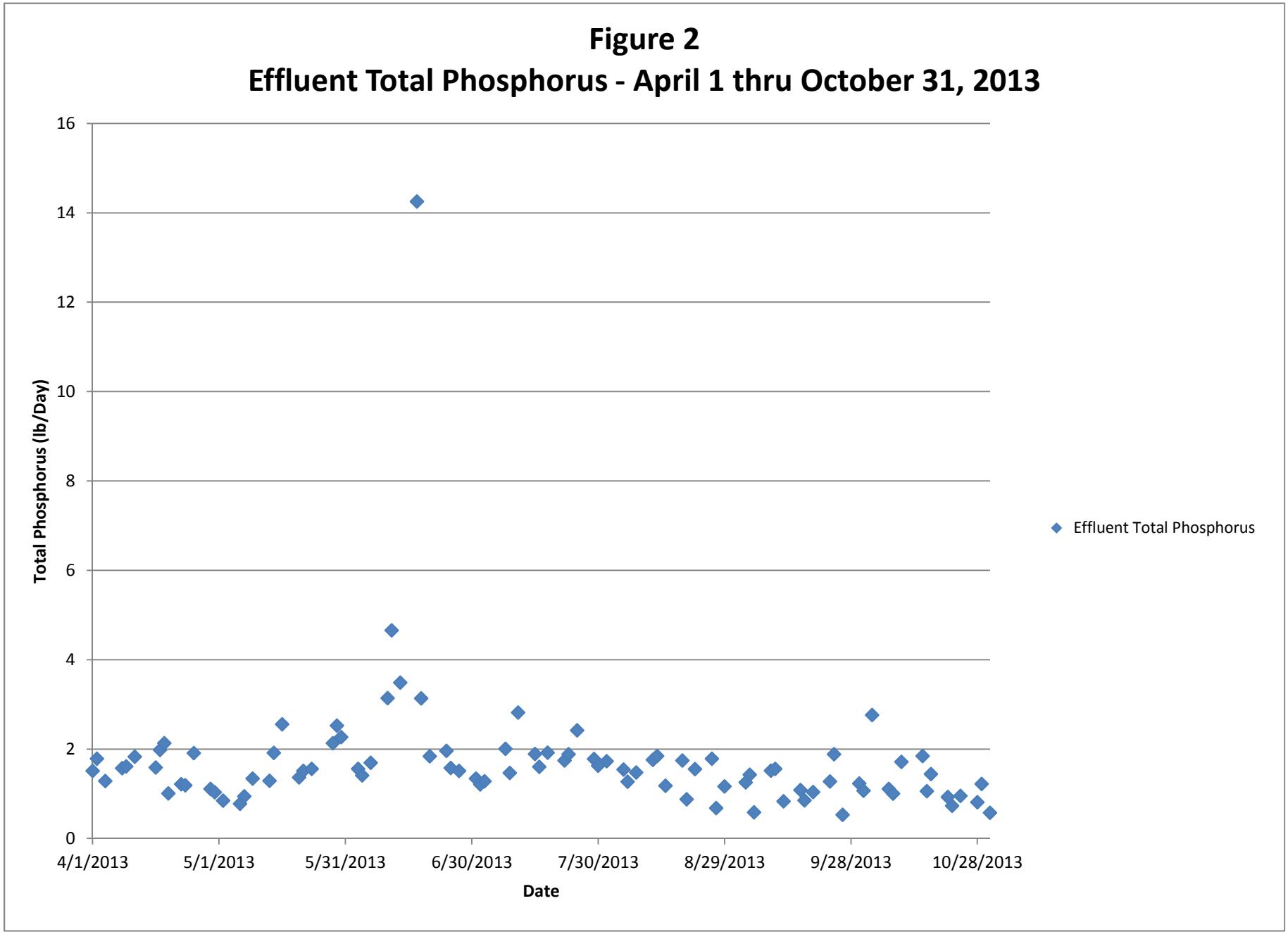
Figure 2
Effluent Total Phosphorus - April 1 thru October 31, 2013
Total Phosphorus (lb/Day)
16
14
12
10
8
6
4
2
0
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date
Effluent Total Phosphorus

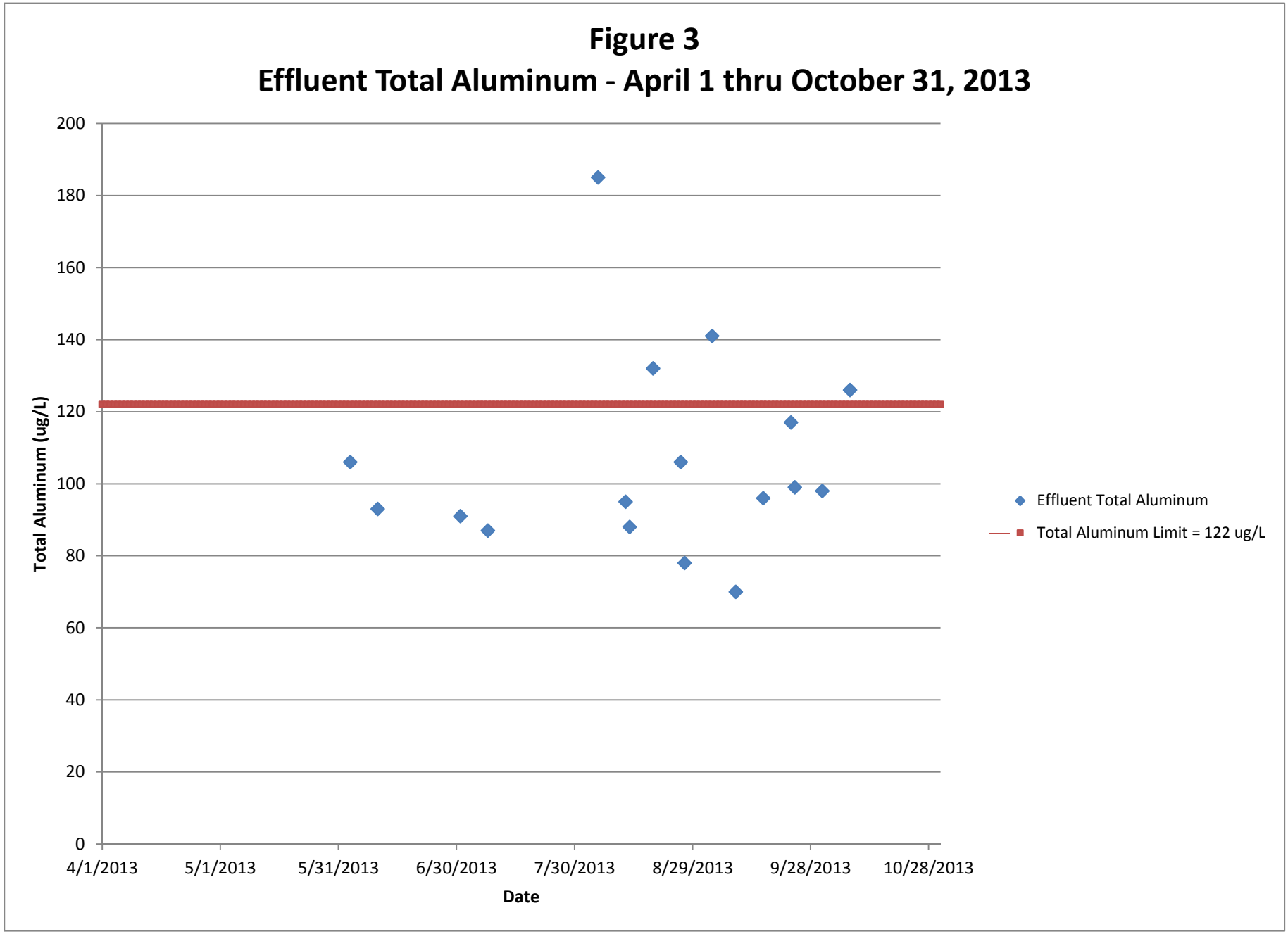
Figure 3
Effluent Total Aluminum - April 1 thru October 31, 2013
Total Aluminum (ug/L)
200
180
160
140
120
100
80
60
40
20
0
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date
Effluent Total Aluminum
Total Aluminum Limit = 122 ug/L

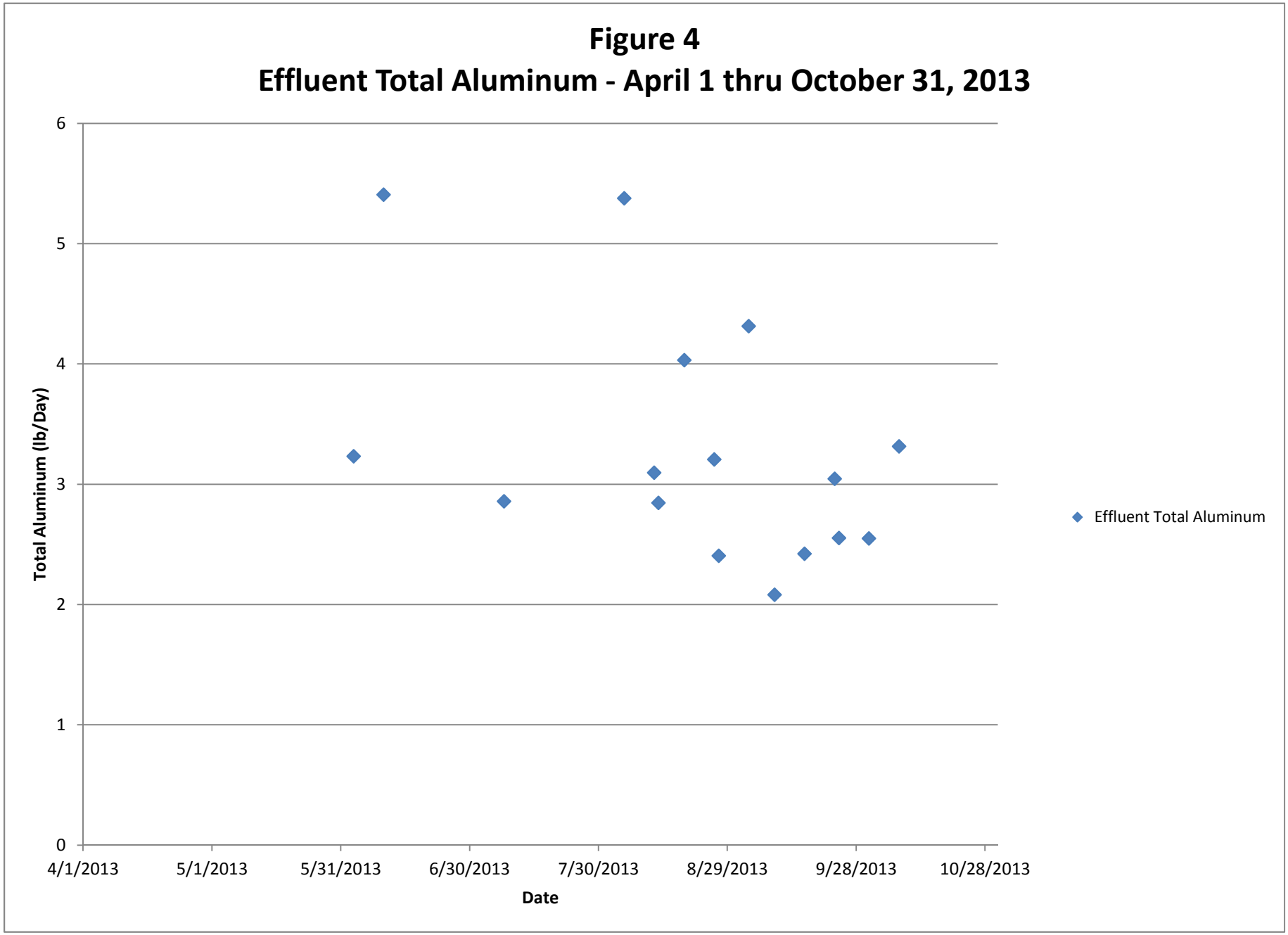
Figure 4
Effluent Total Aluminum - April 1 thru October 31, 2013
Total Aluminum (lb/Day)
6
5
4
3
2
1
0
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date
Effluent Total Aluminum

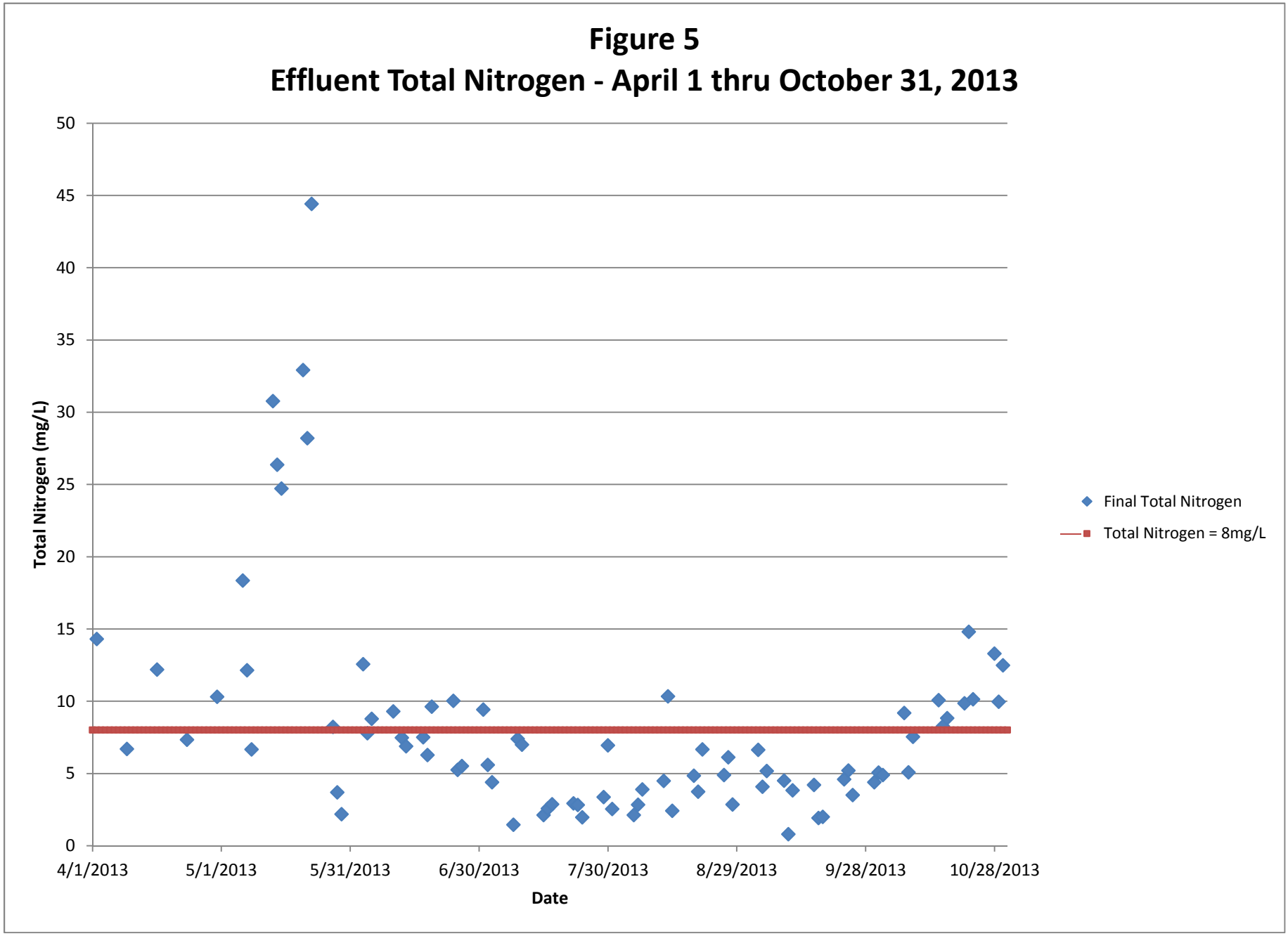
Figure 5
Effluent Total Nitrogen - April 1 thru October 31, 2013
Total Nitrogen (mg/L)
50
45
40
35
30
25
20
15
10
5
0
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date
Final Total Nitrogen
Total Nitrogen = 8mg/L

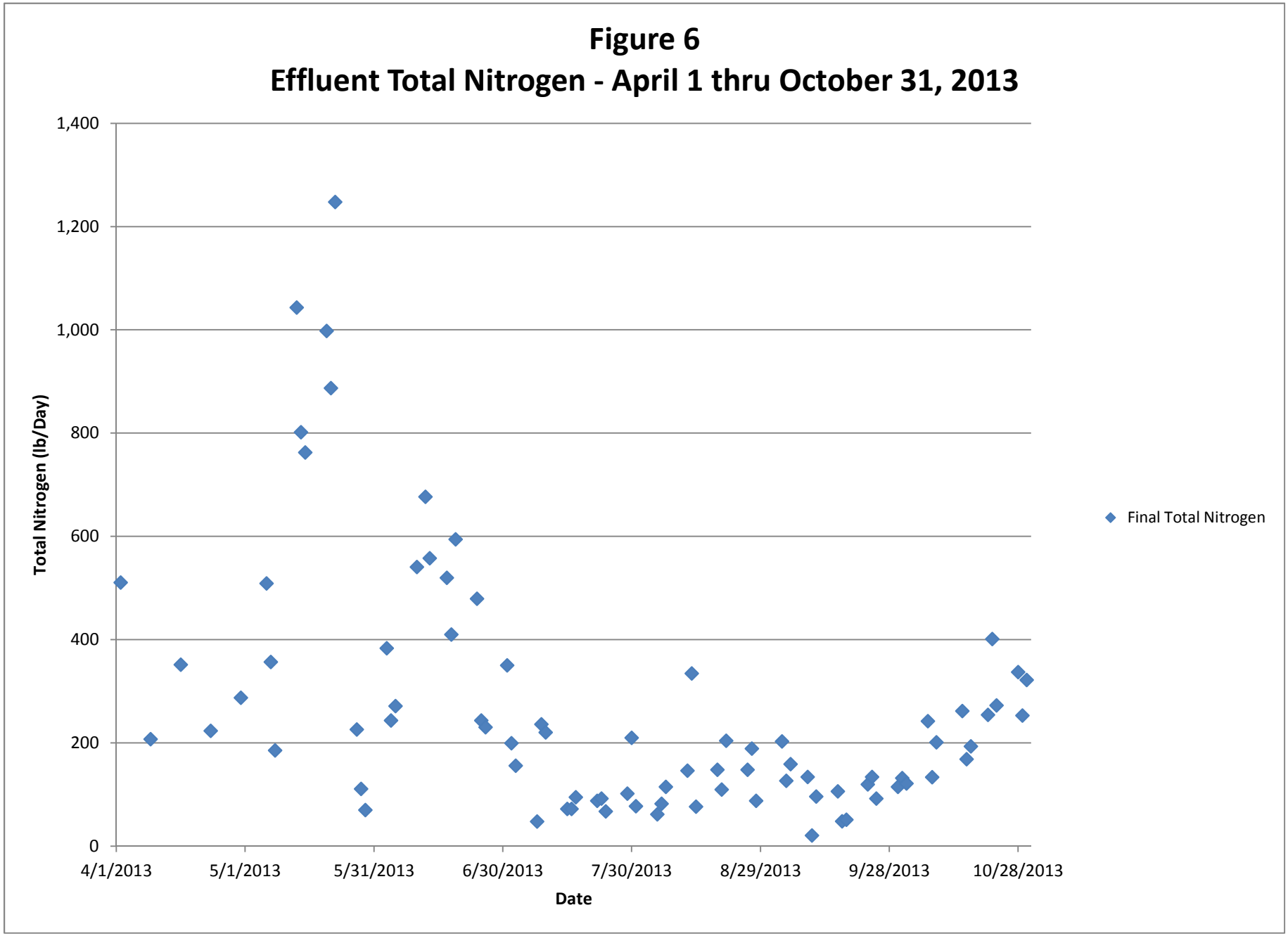
Figure 6
Effluent Total Nitrogen - April 1 thru October 31, 2013
Total Nitrogen (lb/Day)
1,400
1,200
1,000
800
600
400
200
0
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date
Final Total Nitrogen

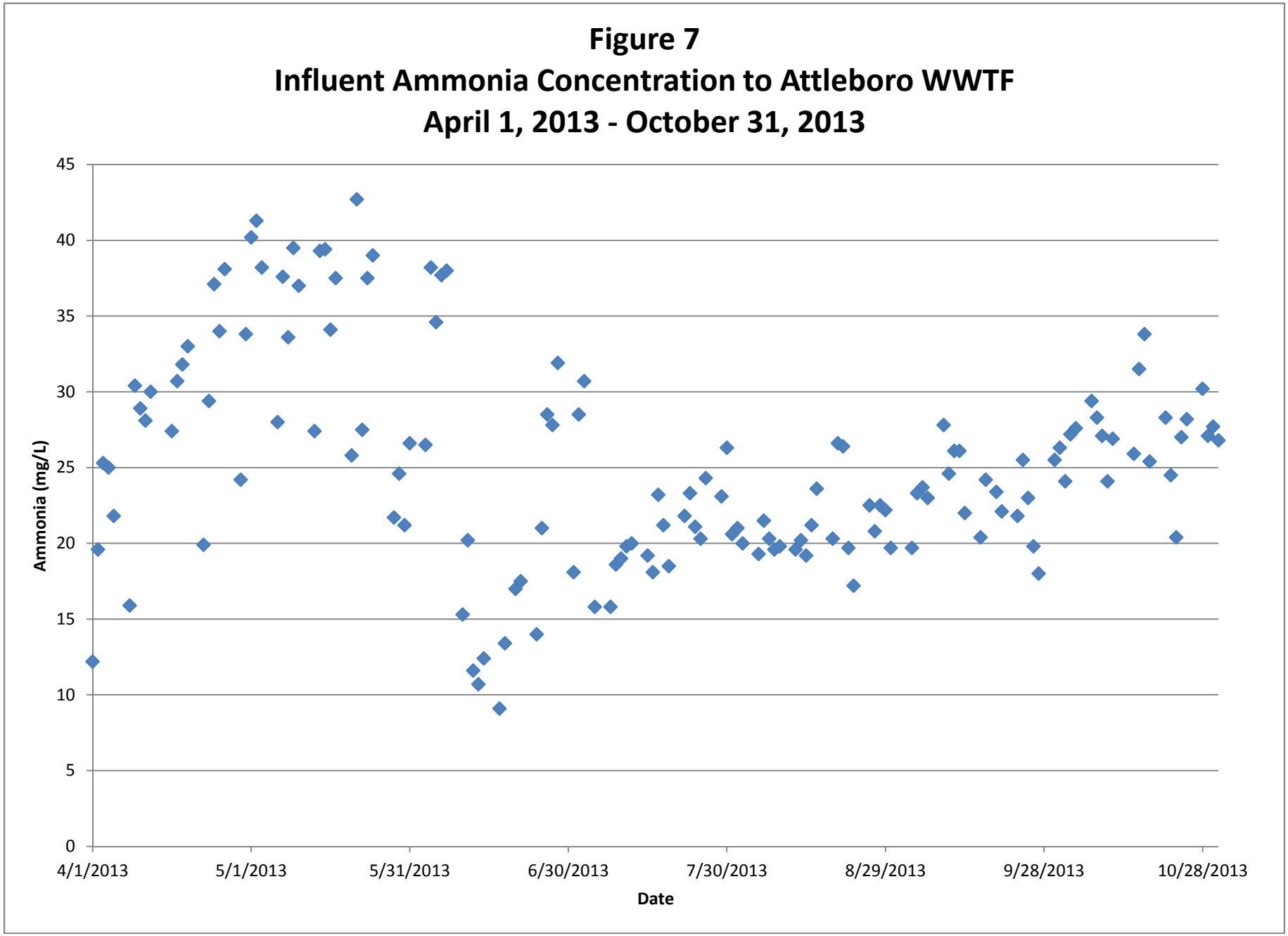
Figure 7
Influent Ammonia Concentration to Attleboro WWTF
April 1, 2013 - October 31, 2013
Ammonia (mg/L)
45
40
35
30
25
20
15
10
5
0
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date

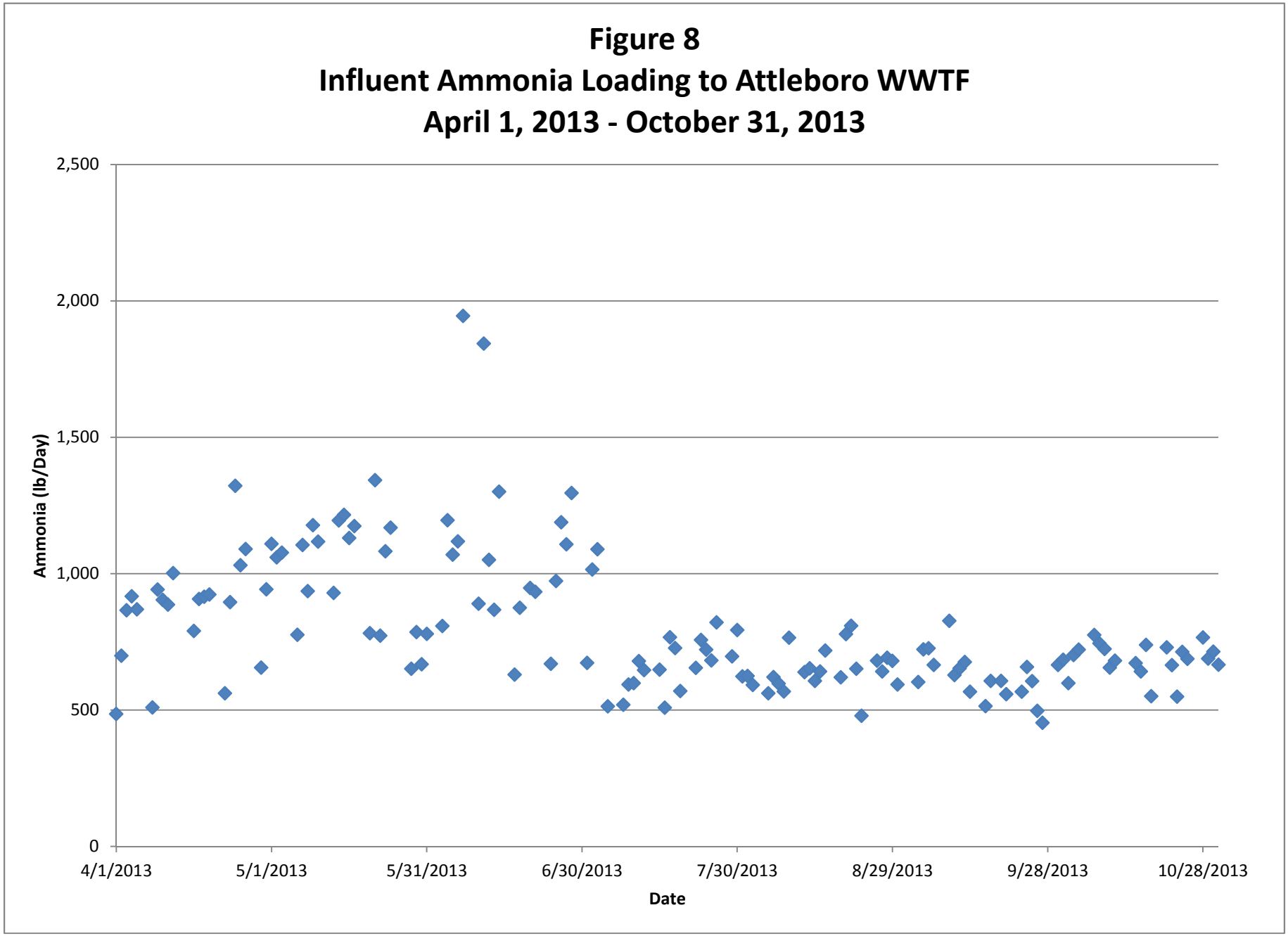
Figure 8
Influent Ammonia Loading to Attleboro WWTF
April 1, 2013 - October 31, 2013
2,500
2,000
1,500
1,000
500
0
Ammonia (lb/Day)
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date

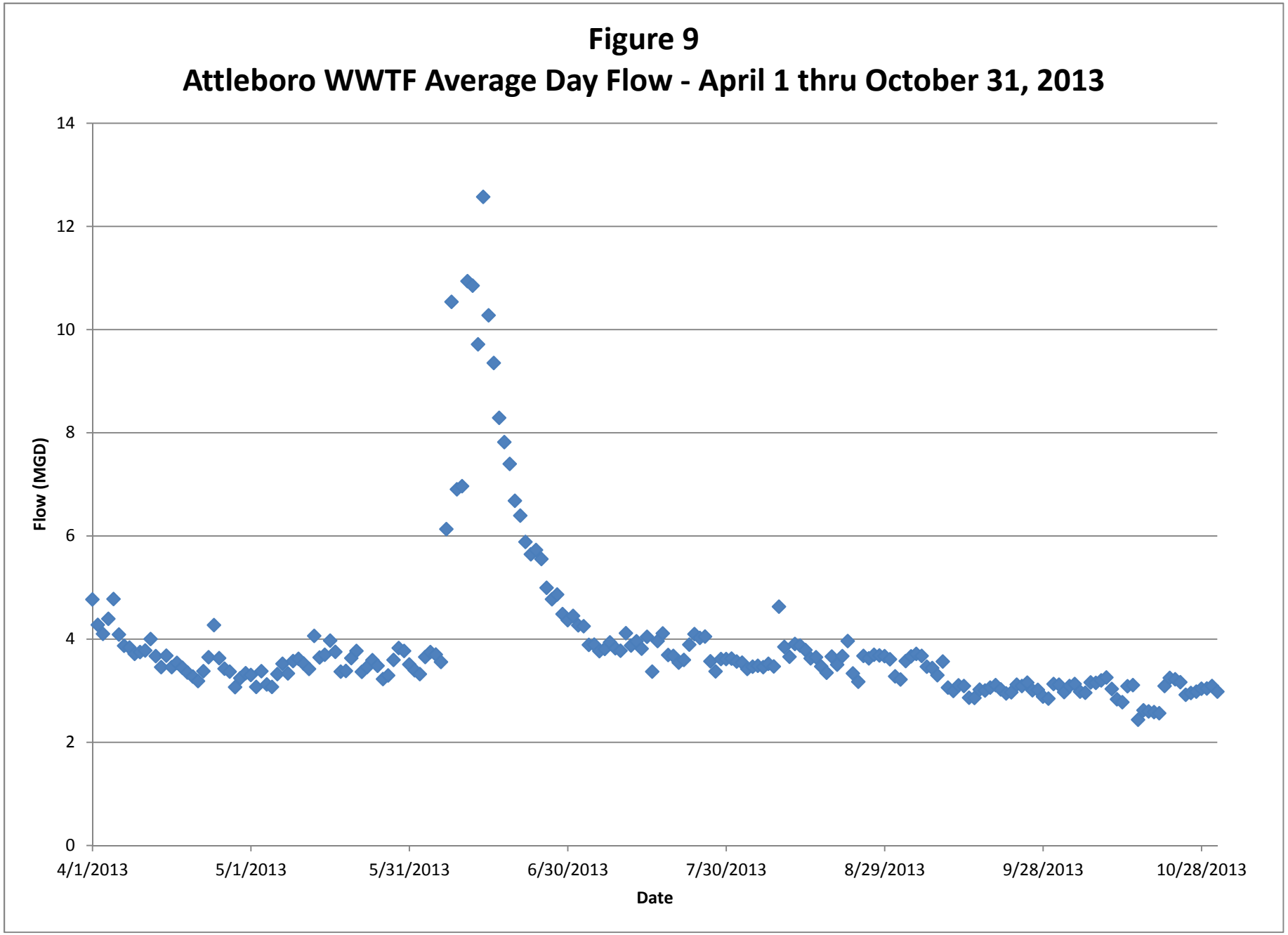
Figure 9
Attleboro WWTF Average Day Flow - April 1 thru October 31, 2013
Flow (MGD)
14
12
10
8
6
4
2
0
4/1/2013
5/1/2013
5/31/2013
6/30/2013
7/30/2013
8/29/2013
9/28/2013
10/28/2013
Date

Commonwealth of Massachusetts
County of Bristol
The Superior Court

CIVIL DOCKET# **BRCV2013-00647**

RE: **Attleboro v Metalor Technologies USA Corporation**

PRELIMINARY INJUNCTION

This action came on to be heard before the Court Richard T. Moses, Justice upon the Stipulation of the Parties for Entry of A Preliminary Injunction, and upon consideration thereof,

It is **ORDERED and ADJUDGED** that upon payment to the clerk of the sum of $90.00, and until further order of the Court, the application under the prayers of the complaint is hereby granted; and the defendant, Metalor Technologies USA Corporation its agents, servants, attorneys and deputies are **ENJOINED** as per the terms of the within Stipulation, pending further order of the Court. (Richard T. Moses, Justice)

Dated at New Bedford, Massachusetts this 11th day of July, 2013.

Richard T. Moses, Justice

BY:.....
Marc J. Santos, Clerk/Magistrate

Telephone: (508) 996-2051

#2

COMMONWEALTH OF MASSACHUSETTS

BRISTOL, ss

SUPERIOR COURT DEPARTMENT
DOCKET NO. BRCV2013- 647-B

CITY OF ATTLEBORO Plaintiff, v. METALOR TECHNOLOGIES USA CORPORATION Defendant.	BRISTOL, SS SUPERIOR COURT FILED JUL 11 2013 MARC J. SANTOS, ESQ. CLERK/MAGISTRATE

STIPULATION OF THE PARTIES FOR ENTRY OF A PRELIMINARY INJUNCTION

Plaintiff, City of Attleboro ("Attleboro") and the Defendant, Metalor Technologies USA Corporation ("Metalor") stipulate and agree that a Preliminary Injunction shall issue in this action forthwith, as follows:

1. Metalor is prohibited from discharging any wastewater to the Attleboro Wastewater treatment plant from 12:00 a.m. on July 4, 2013 until 11:59 p.m. on July 14, 2013.

2. Beginning at 12:00 a.m. on July 15, 2013 and until the end of the Segregated Discharge Period (as defined in paragraph 4 below), Metalor shall segregate its wastewater streams and discharge to the Attleboro wastewater treatment plant only wastewater that conforms to the Total Kjeldahl Nitrogen ("TKN") Limit of 691 mg/L ("TKN Limit") as set forth in the modified Industrial User permit No. 026.

3. Metalor shall diligently carry out plant improvements intended to bring TKN discharge levels into conformity with the TKN Limit. The required plant improvements consist of the installation, start-up and operation of an Ammonia Recovery Process

7/11/13 It is hereby ordered that the defendant Metalor Technologies USA Corporation is preliminarily enjoined as per the terms of the within stipulation, pending further order of the Court. (Judith Moran JSC)

("ARP") system currently being fabricated and manufactured by ThermoEnergy Corporation, working under contract with Metalor.

4. So long as Metalor continues to diligently pursue the installation, start-up and operation of the ARP system referenced above, it is permitted to discharge a segregated, compliant component of its wastewater to the Attleboro wastewater treatment plant beginning on July 15, 2013 and until such time as Metalor's ARP system is operational (the "Segregated Discharge Period"). The Segregated Discharge Period will end upon Metalor's successful installation, start-up and operation of its ARP system.

5. During the Segregated Discharge Period, wastewater which does not conform to the TKN Limit shall not be discharged at any time to the Attleboro wastewater treatment plant, and shall be removed and disposed of off-site, in accordance with all applicable laws, ordinances, by-laws, and regulations.

6. During the Segregated Discharge Period, on each day that Metalor produces wastewater, prior to any discharge to the Attleboro wastewater treatment plant, all wastewater produced during that day shall be segregated and held by Metalor in a separate tank, and tested as set forth in paragraph 7, below. The segregated wastewater shall be held in that separate tank by Metalor until such time as the testing results confirm that it conforms to the TKN Limit. Once the testing results have been received for that day's discharge, if the segregated wastewater conforms to the TKN Limit, it may be discharged to the Attleboro wastewater treatment plant, appropriately metered, at no more than 20 gallons/minute, over a 15-hour period. Segregated wastewater which does not conform to the TKN Limit shall be handled as set forth in paragraph 5, above. This process shall be repeated for each day's wastewater, which shall be segregated from the

prior day's wastewater, in alternating tanks, until such time as the testing results confirm the segregated wastewater may be discharged, or handled as set forth in paragraph 5, above.

7. On each day that it is producing wastewater during the Segregated Discharge Period, Metalor shall collect and cause to be analyzed at its own expense, by a certified laboratory reasonably deemed suitable to Attleboro, a representative sample of that day's wastewater, and shall submit a copy of the analytical results of each such sampling event to Attleboro promptly upon receipt from the analytical laboratory. Metalor may also perform its own side-by-side testing of each sample sent for testing, and, if it does so, shall provide those analytical results to Attleboro. Should Metalor achieve compliance with the TKN Limit for thirty (30) consecutive days, and should the analytical results from the certified laboratory be consistent with the analytical results from Metalor's side-by-side testing for those thirty (30) consecutive days, Metalor may apply in writing to Attleboro to conduct the required analytical testing of the wastewater samples in-house. Any decision to allow such in-house testing is solely within the reasonable discretion of Attleboro. In any event, should such in-house testing be allowed, Metalor will still be required to send a representative sample to the certified laboratory for independent testing at least every four (4) days wastewater is being produced.

8. During the Segregated Discharge Period, Attleboro shall have the right to enter the premises, unannounced, to do its own spot checks and sampling of the segregated wastewater, at its own expense.

9. Metalor shall be deemed to be in breach of its obligations under this Stipulation for Preliminary Injunction and/or Preliminary Injunction if it: (i) fails to perform the daily

sampling as required in paragraph 7, above; (ii) obtains a valid sampling result showing a concentration in excess of the TKN Limit as required in paragraph 7, above; or (iii) fails to properly segregate its wastewater pursuant to paragraphs 5, 6 and 7, above. Any breach of this Stipulation for Preliminary Injunction and/or Preliminary Injunction shall be deemed a material breach of this Stipulation for Preliminary Injunction and/or Preliminary Injunction.

10. Should Metalor breach its obligations under this Stipulation for Preliminary Injunction and/or Preliminary Injunction, Metalor shall cease and desist from discharging any wastewater to the Attleboro wastewater treatment plan. For purposes of this paragraph, whether Metalor is in breach of the obligations set forth herein shall be determined by Attleboro, and such determination shall be made in good faith.

11. Nothing set forth in this Stipulation for Preliminary Injunction and/or Preliminary Injunction shall be construed to relieve Metalor of achieving compliance with all other obligations, requirements, and limits set forth in modified Industrial User permit No. 026.

12. This Stipulation for Preliminary Injunction and/or Preliminary Injunction shall supplant the Cease and Desist Order issued on June 4, 2013.

13. All proceedings in this action shall be stayed until December 31, 2013, excepting this Stipulation for Preliminary Injunction and/or Preliminary Injunction, and any actions taken to enforce either.

Executed as a sealed instrument on this 11th day of July, 2013

Metalor Technologies USA Corporation
By its attorney,

Peter Alpert

Peter A. Alpert, BBO# 554251
Ropes & Gray LLP
800 Boylston Street
Boston, MA 02199
617.951.7106

City of Attleboro,
By its attorneys,

Robert S. Mangiaratti, BBO# 317400
Karis L. North, BBO# 648998
Murphy Hesse Toomey & Lehane
300 Crown Colony Drive
Quincy, MA 02169
617.479.5000

736161v1

City of Attleboro, Massachusetts

DEPARTMENT OF WASTEWATER
Government Center, 77 Park Street
Attleboro, Massachusetts 02703
Phone 774-203-1820 ♦ Fax 508-761-9837

Paul A. Kennedy
Superintendent
Department of Wastewater

December 19, 2012

Discharge Monitoring Reports (OES4-SMR)
U.S. Environmental Protection Agency
5 Post Office Square Suite-100
Boston, MA 02109-3912

RE: Docket No. 10-013 Findings of Violation and Order for Compliance

Attention: David Turin

As required, enclosed is the report assessing the full scale nitrogen pilot plant during the previous year that is due on December 31, 2012.

If you have any questions, please contact me.

Sincerely,

Paul A. Kennedy
Superintendent of Wastewater

Cc: David Burns, DEP
Marie McDonald, EPA
Benjamin Levesque, CDM Smith

CDM Smith

Memorandum

To: *Mr. Paul Kennedy, City of Attleboro Wastewater Superintendent*

From: *Benjamin Levesque, CDM Smith*

Date: *December 18, 2012*

Subject: *Summary of 2012 Pilot Plant Performance at the Attleboro WWTF*

As required by the Order of Compliance dated June 17, 2010, the following memorandum is provided as a summary of 2012 Pilot Plant Performance and operation at the Attleboro wastewater treatment facility (WWTF). The memorandum will present the following information:

- A brief background summary of the pilot plant program
- 2012 Pilot Plant performance related to achieving total phosphorus, total aluminum and total nitrogen effluent limits
- Modifications to improve pilot plant performance conducted throughout 2012
- Plan for 2013 Pilot Plant Operation

Background

The City of Attleboro received an updated National Pollution Discharge Elimination System (NPDES) permit (Permit No. MA 0100595) on June 8th, 2008 that required the WWTF to meet an effluent discharge for total nitrogen of 8 mg/L from May 1st through October 31st, as well as 0.1 mg/L total phosphorus (April thru October) and 122 ug/L total aluminum year round. The City's appeal was denied and effective as of October 1, 2009 the WWTF has been in violation of the total nitrogen levels in their NPDES Permit.

A Findings of Violation and Order For Compliance was executed by the Environmental Protection Agency (EPA) on 6/17/2010 requiring that by July 31, 2010 the City shall prepare and submit to EPA and the Massachusetts Department of Environmental Protection (MADEP) a Technical Memorandum describing the proposed modifications to the Attleboro WWTF. These modifications included changes to the WWTF's aeration basins (installation of submersible mixers for use in creating four anoxic tanks within the existing ten aeration basins at the facility), necessary control and electrical modifications to operate the mixers in order to achieve compliance with the total nitrogen limits contained in its NPDES Permit. The plant modifications were constructed and implemented by November 30, 2011 and the pilot plant was operational by May 2012 to correspond with the start of the 2012 nitrogen and phosphorus removal season.

2012 Pilot Plant Performance – Effluent Total Phosphorus

The attached Figure 1 shows the performance of the Attleboro WWTF at meeting the effluent total phosphorus limit of 0.1 mg/L. Utilizing dual point chemical addition of ferric chloride and polyaluminum chloride, as well as the existing sand filters, the Attleboro WWTF was able to achieve the required limit for most of the time period between April 1 and October 31, 2012.

There was one time period (August 2012) where the monthly average was 0.15 mg/L, which exceeded the 0.1 mg/L monthly limit. This occurred primarily because of results observed between August 13 and August 24, 2012. It is believed that these results of greater than 0.1 mg/L of effluent total phosphorus were the result of sewer cleaning/jetting that occurred as part of collection system maintenance during August. Once the cleaning was completed, effluent total phosphorus returned to below 0.1 mg/L monthly average. This is believed to be an isolated incident and not indicative of future issues that would impact achieving permit compliance.

2012 Pilot Plant Performance – Effluent Total Aluminum

The attached Figure 2 shows the performance of the Attleboro WWTF with regard to effluent total aluminum. The effluent limit is 122 ug/L of total aluminum and this limit was not exceeded at any point during 2012 to date. Particular attention was focused on the time period between April 1 and October 31, 2012 as that corresponds to the addition of polyaluminum chloride as part of the WWTF operation to remove total phosphorus and meet the 0.1 mg/L effluent limit. During other time periods throughout the year, there were no issues observed with meeting the total aluminum limit as there is no polyaluminum chloride addition at the facility at those times.

2012 Pilot Plant Performance – Effluent Total Nitrogen

The attached Figure 3 shows the performance of the Attleboro WWTF full scale pilot pilot plant operation as it relates to meeting a total nitrogen limit of 8 mg/L. As shown, there was limited success with consistently achieving the desired level of nitrogen removal utilizing the available aeration system configuration installed as part of the pilot plant to incorporate anoxic zones. Figure 4 shows the Attleboro WWTF influent ammonia concentrations and Figure 5 shows average daily plant flow between May 1st and October 31st, 2012.

Modifications to Improve Pilot Plant Performance

The following modifications to the pilot plant operation were initiated to improve performance during the permit time period:

- Adjustments to mechanical aerator speed to address issues related to high dissolved oxygen concentration in anoxic zones.

- Initiated step feed to aeration tanks to provide additional carbon for the anoxic processes.

The above operational modifications were not successful in lowering the effluent total nitrogen to less than 8 mg/L. It was noted during initial operation that influent concentrations of BOD to the Attleboro WWTF was lower than originally evaluated during the conceptual design of the aeration tank modifications. The availability of BOD (or lack thereof) can impact the denitrification process as it acts as a carbon source for the microorganisms that convert nitrate to nitrogen gas. It was also observed that a significant influent concentration of TKN was being discharged by one of the City's industrial dischargers, Metalor Technologies. The City began the process of both addressing the lack of carbon available for denitrification, as well as reviewing options for limiting nitrogen discharge from Metalor Technologies.

Metalor Technologies Interference

Metalor Technologies operates a silver powder and flake manufacturing facility in Attleboro. As part of the silver powder and flake manufacturing processes, significant amounts of ammonia are discharged from the facility. With regards to pounds of TKN discharged, Metalor Technologies represents 1/3rd of the nitrogen load received at the Attleboro WWTF. Figure 6 shows the concentration of ammonia and TKN discharged from Metalor Technologies between May 1st and October 31st 2012.

The City of Attleboro monitors Metalor Technologies discharges through their Industrial Pretreatment Program (IPP). Based on the amount of nitrogen discharged to the Attleboro wastewater collection system, the City worked throughout the year with Metalor as follows:

- Developed a City local limit related to TKN. This was reviewed with Metalor throughout the year and was approved by EPA on November 6, 2012 (see attached letter). This results in a allowable concentration discharge of 691 mg/L of TKN, which corresponds to a Allowable Industrial Loading (AIL) of 346 lb/d. It should be noted that Metalor Technologies is to receive 100% of the AIL for TKN through the City's IPP.

- With the approval of the local limit, Metalor Technologies is implementing a facility upgrade to provide effluent treatment to allow compliance with the local limits. The City has required that the upgrades be in place and operational by May 1, 2013 and that the City receive monthly progress reports related to the upgrade efforts. Correspondences with Metalor and EPA are attached to this memorandum.

- Prior to finalization of the local limitation, the City coordinated operational changes with Metalor in an effort to assess pilot plant performance. These efforts were coordinated to both review impacts of Metalor discharges to the overall Attleboro WWTF performance and look at performance of MicroC on nitrogen removal as part of the pilot plant effort. The first involved coordinating their discharge to be over a 24 hour period, to minimize "slug" discharges and increased nitrogen load to the plant during daytime business hours. The second was a shutdown of discharges from the facility for four days in July 2012 that

coincided with the trial testing of MicroC. The third involved a limitation of discharge from the previously approved 15 gpm to 4 gpm for a two week trial period in October 2012 to further review performance with MicroC addition (more information regarding these trials below). The selection of 4 gpm resulted in a TKN loading to the Attleboro WWTF representative of future loadings once Metalor Technologies implements their treatment improvements to comply with the approved local limits.

MicroC Modifications

Based on the initial pilot plant performance and the lower than anticipated influent BOD concentrations, it was recommended that supplemental carbon addition be evaluated to improve performance. CDM Smith and the City of Attleboro reached out to Environmental Operating Solutions (EOS) with regard to using their MicroC supplemental carbon product to improve nitrogen removal. Initial bench testing and review of available information showed the potential for MicroC to provide the necessary additional carbon for improved denitrification at the Attleboro WWTF. The following steps were taken to test and implement the use of MicroC at the Attleboro WWTF:

- A four day trial volume of MicroC 2000 was purchased from EOS in May of 2012. Because of the Metalor Technologies interferences described above and another issue with an IPP discharger, the pilot testing was conducted in July of 2012. While just a "snapshot" of performance, it was observed that effluent total nitrogen from the Attleboro WWTF was below 8 mg/L during this trial.

- The City of Attleboro executed a change order with the contractor (Waterline Industries) that installed the submersible mixers and other improvements associated with the pilot plant, to install a chemical storage tank (procured through the City of West Haven, CT), feed pumps and necessary piping to allow for a more permanent MicroC 2000 addition set-up. This work occurred during the month of August 2012.

- Once the new MicroC chemical feed system was installed and operational, a two week trial was conducted between October 14 and October 28, 2012 in coordination with limited discharge from Metalor Technologies. During this time, the effluent total nitrogen again was observed below the permit limit of 8 mg/L.

Plan for 2013 Pilot Plant Operation

The City of Attleboro will continue to monitor effluent total phosphorus, total aluminum and total nitrogen throughout the permitted time periods (May thru October for nitrogen, April thru October for phosphorus and annually for Aluminum) of 2013. With regard to effluent total phosphorus, the City will continue to add a combination of ferric chloride and polyaluminum chloride to optimize removal. This, in conjunction with continued operation of the effluent sand filters, should result in meeting the effluent monthly average concentration of 0.1 mg/L total phosphorus. Effluent total

aluminum will be monitored and appropriate operational changes will be implemented if needed for compliance with the 122 ug/L effluent limit.

The City of Attleboro is optimistic that the WWTF will be able to meet the 8 mg/L effluent limit required by their NPDES permit during the months of May thru October of 2013. Through the monitoring of discharge and the installation of an ammonia recovery system, the impacts associated with discharges from Metalor Technologies should be reduced. The use, monitoring and optimization of MicroC 2000 addition during 2013 will provide data necessary in determining the future performance of the Attleboro WWTF to meet an effluent total nitrogen limit of 8 mg/L. It is recommended for 2013 to maintain the currently enforced effluent total nitrogen interim limit of 33 mg/L

cc: David Polcari, CDM Smith

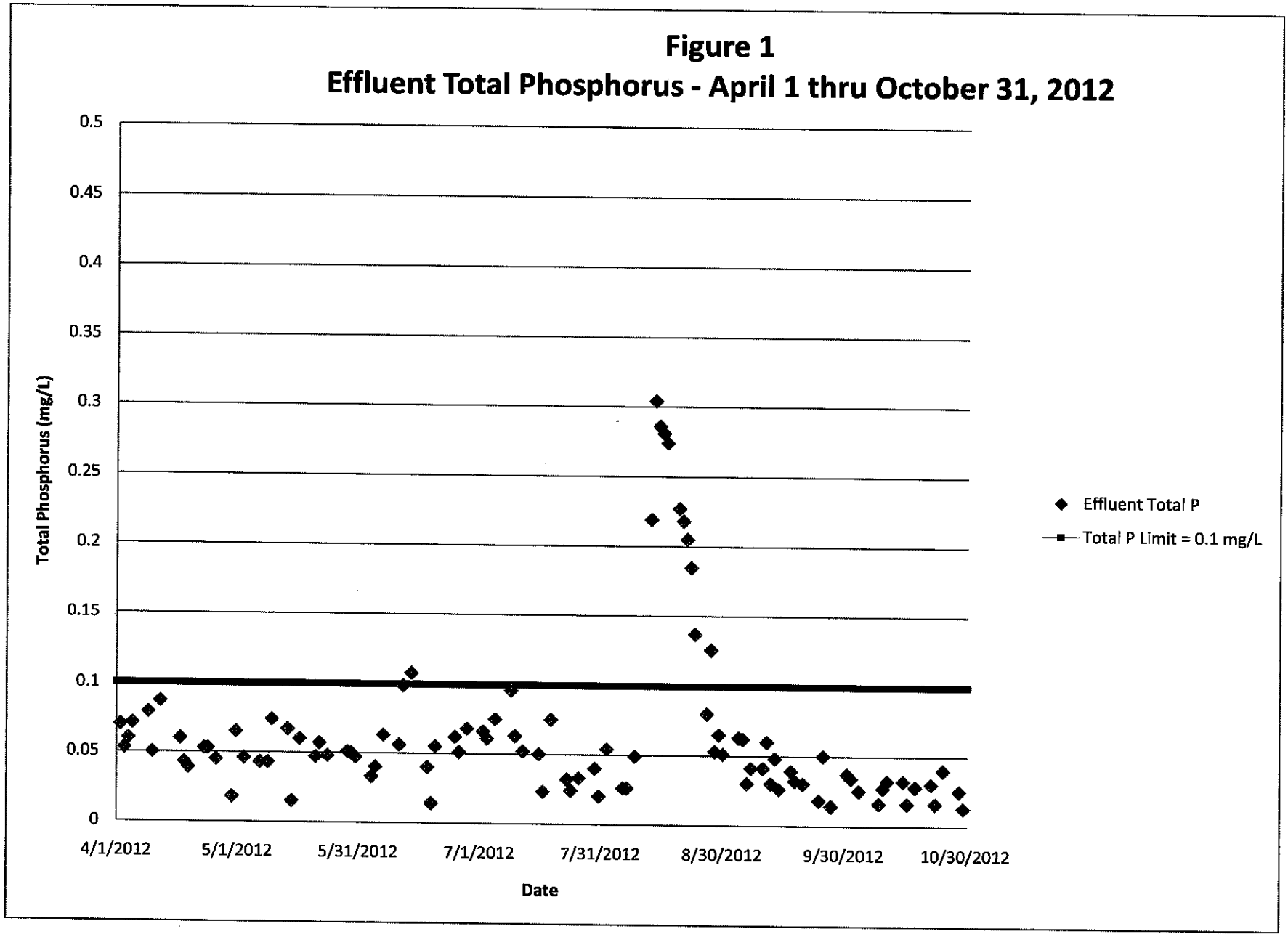
Figure 1
Effluent Total Phosphorus - April 1 thru October 31, 2012
Total Phosphorus (mg/L)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
4/1/2012
5/1/2012
5/31/2012
7/1/2012
7/31/2012
8/30/2012
9/30/2012
10/30/2012
Date
Effluent Total P
Total P Limit = 0.1 mg/L

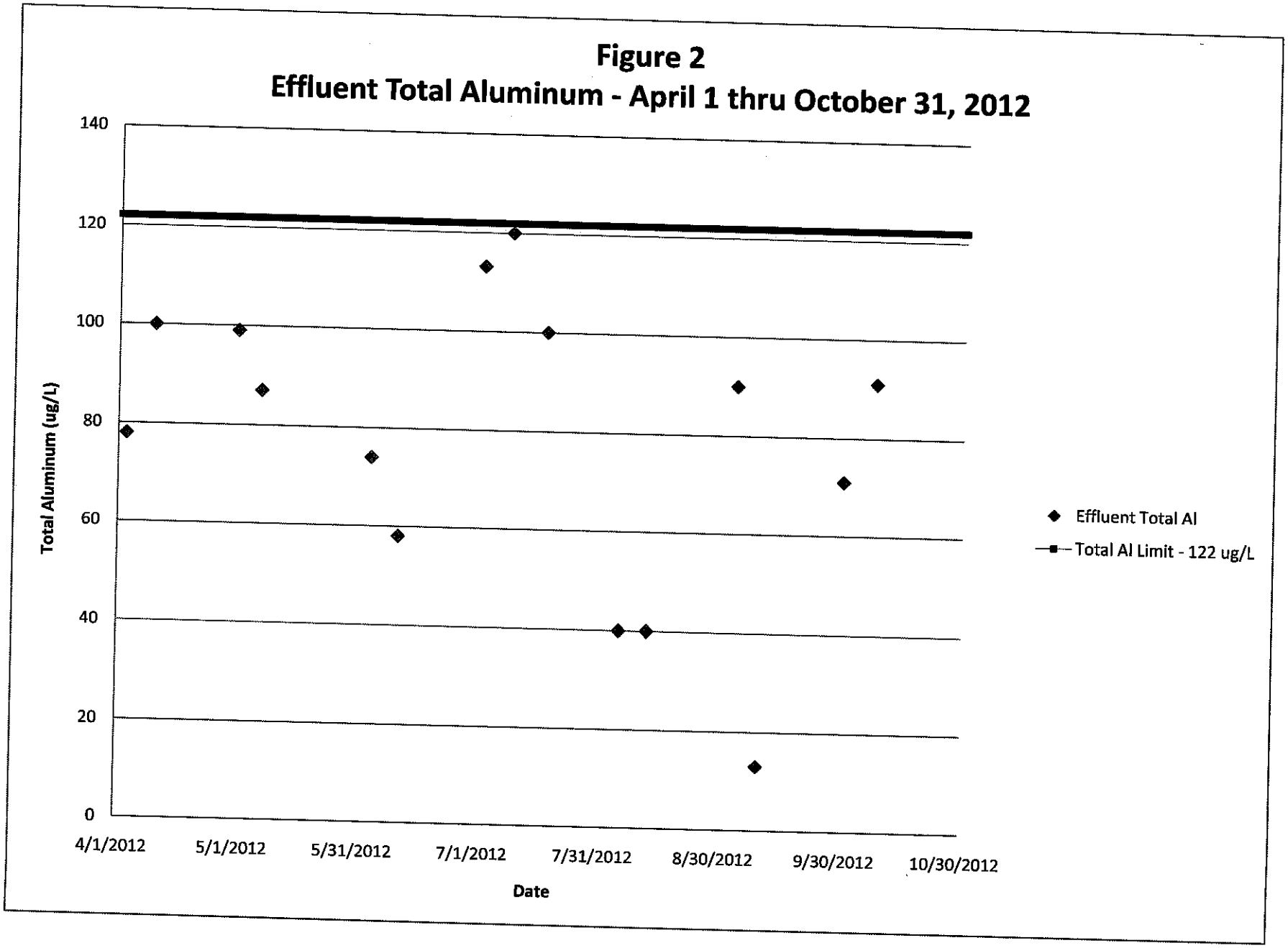
Figure 2
Effluent Total Aluminum - April 1 thru October 31, 2012
Total Aluminum (ug/L)
140
120
100
80
60
40
20
0
4/1/2012
5/1/2012
5/31/2012
7/1/2012
7/31/2012
8/30/2012
9/30/2012
10/30/2012
Date
Effluent Total Al
Total Al Limit - 122 ug/L

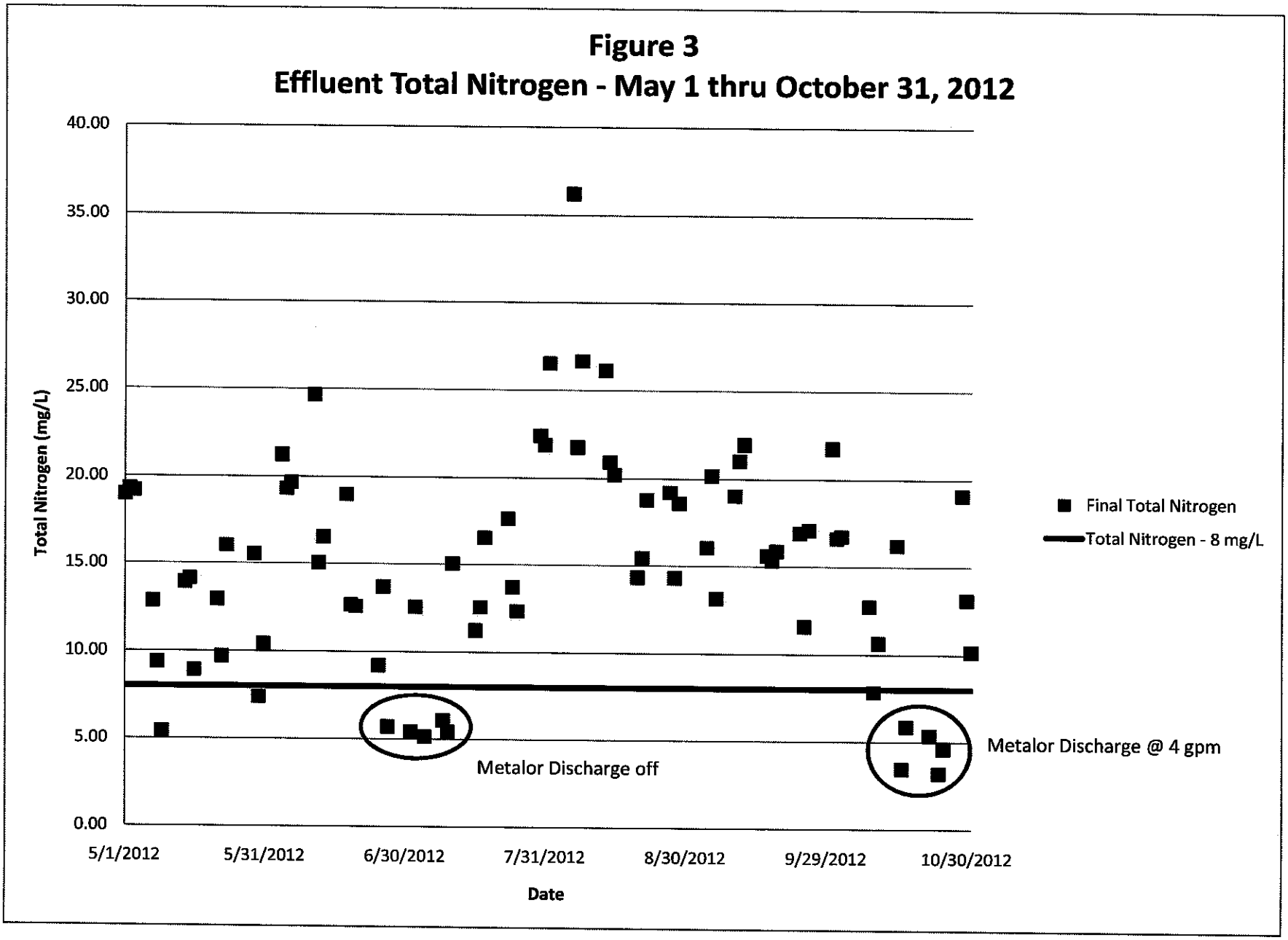
Figure 3
Effluent Total Nitrogen - May 1 thru October 31, 2012
Total Nitrogen (mg/L)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
5/1/2012
5/31/2012
6/30/2012
7/31/2012
8/30/2012
9/29/2012
10/30/2012
Date
Final Total Nitrogen
Total Nitrogen - 8 mg/L
Metalor Discharge off
Metalor Discharge @ 4 gpm

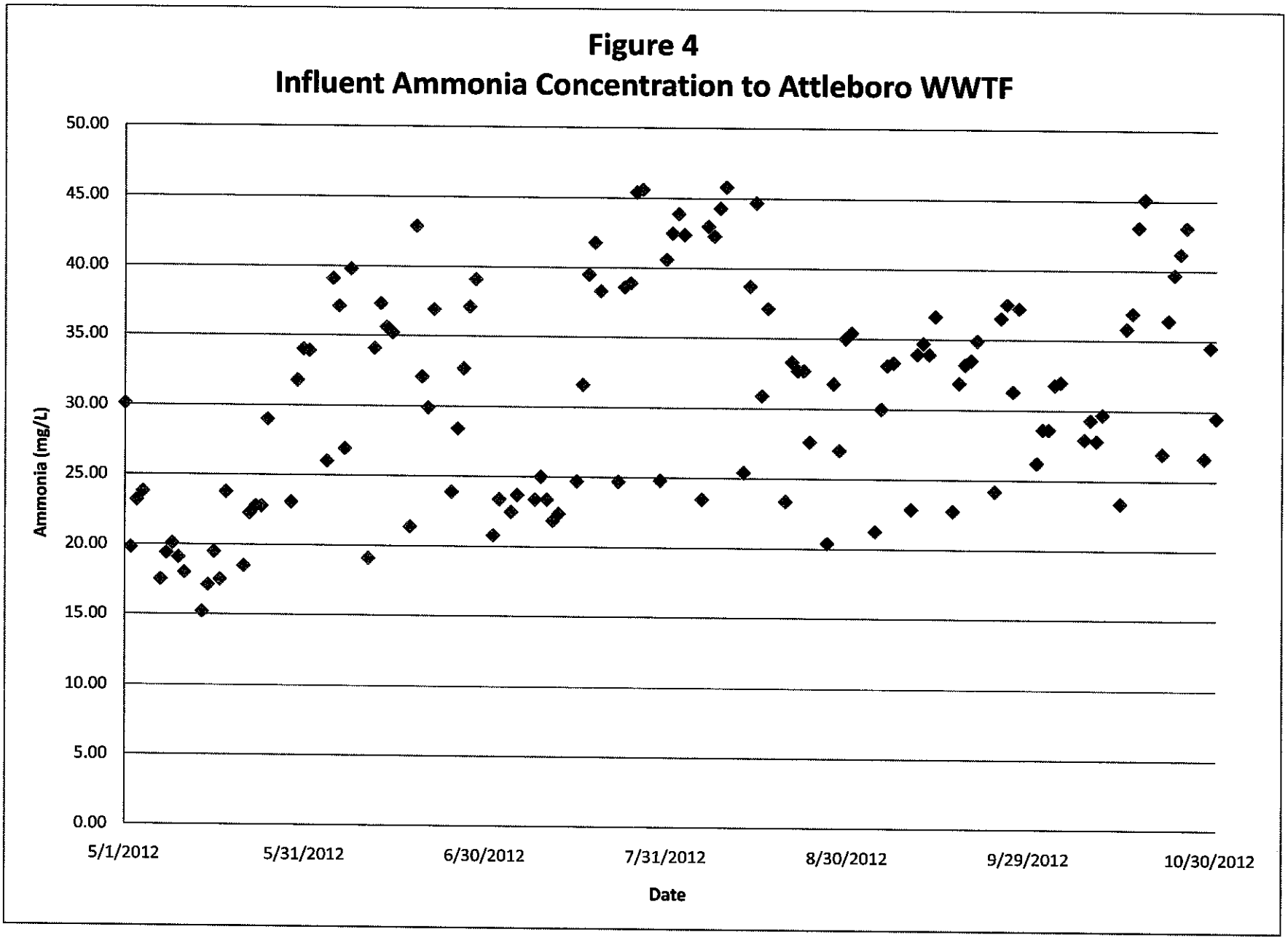
Figure 4
Influent Ammonia Concentration to Attleboro WWTF
Ammonia (mg/L)
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
5/1/2012
5/31/2012
6/30/2012
7/31/2012
8/30/2012
9/29/2012
10/30/2012
Date

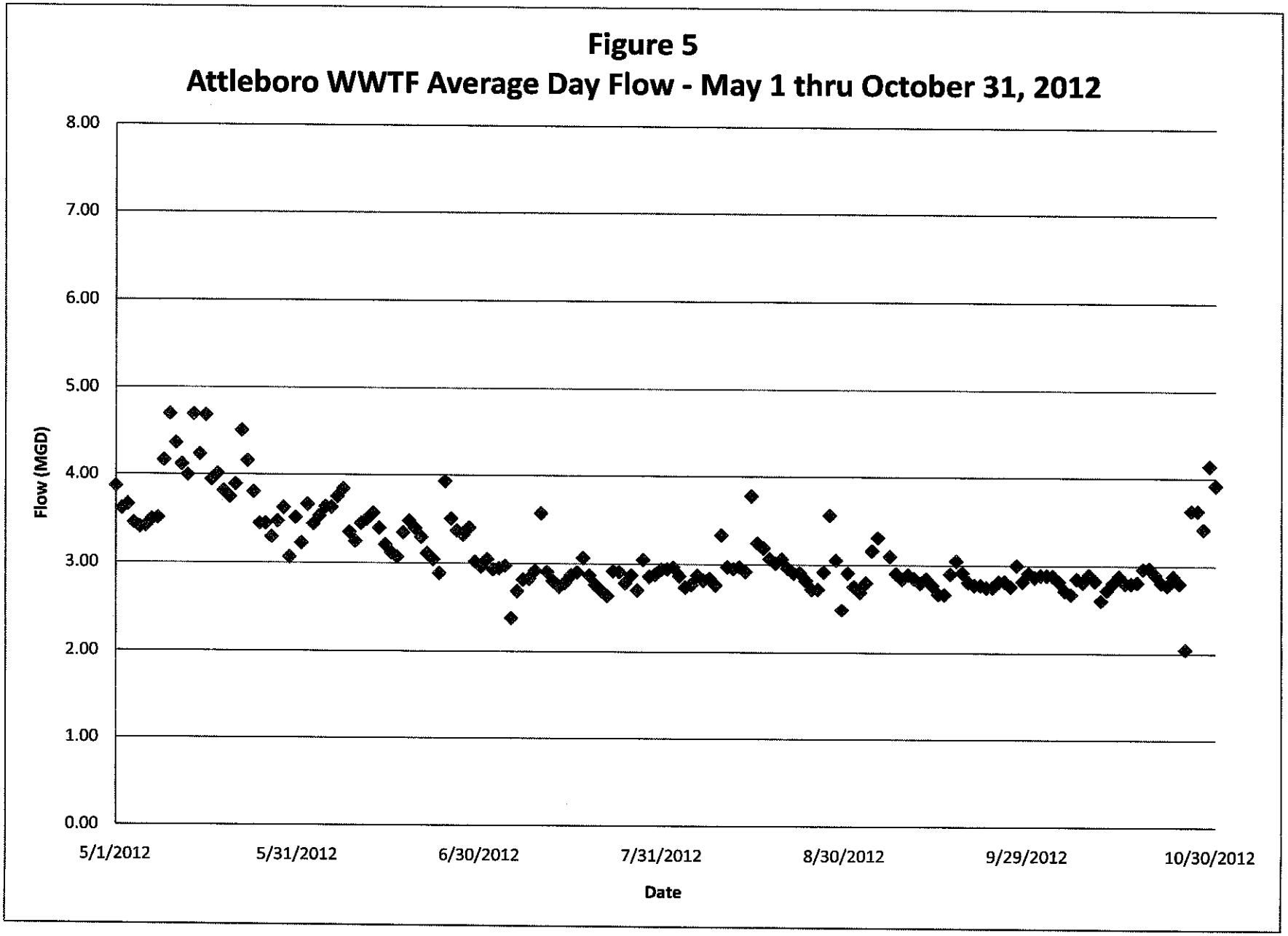
Figure 5
Attleboro WWTF Average Day Flow - May 1 thru October 31, 2012
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Flow (MGD)
5/1/2012
5/31/2012
6/30/2012
7/31/2012
8/30/2012
9/29/2012
10/30/2012
Date

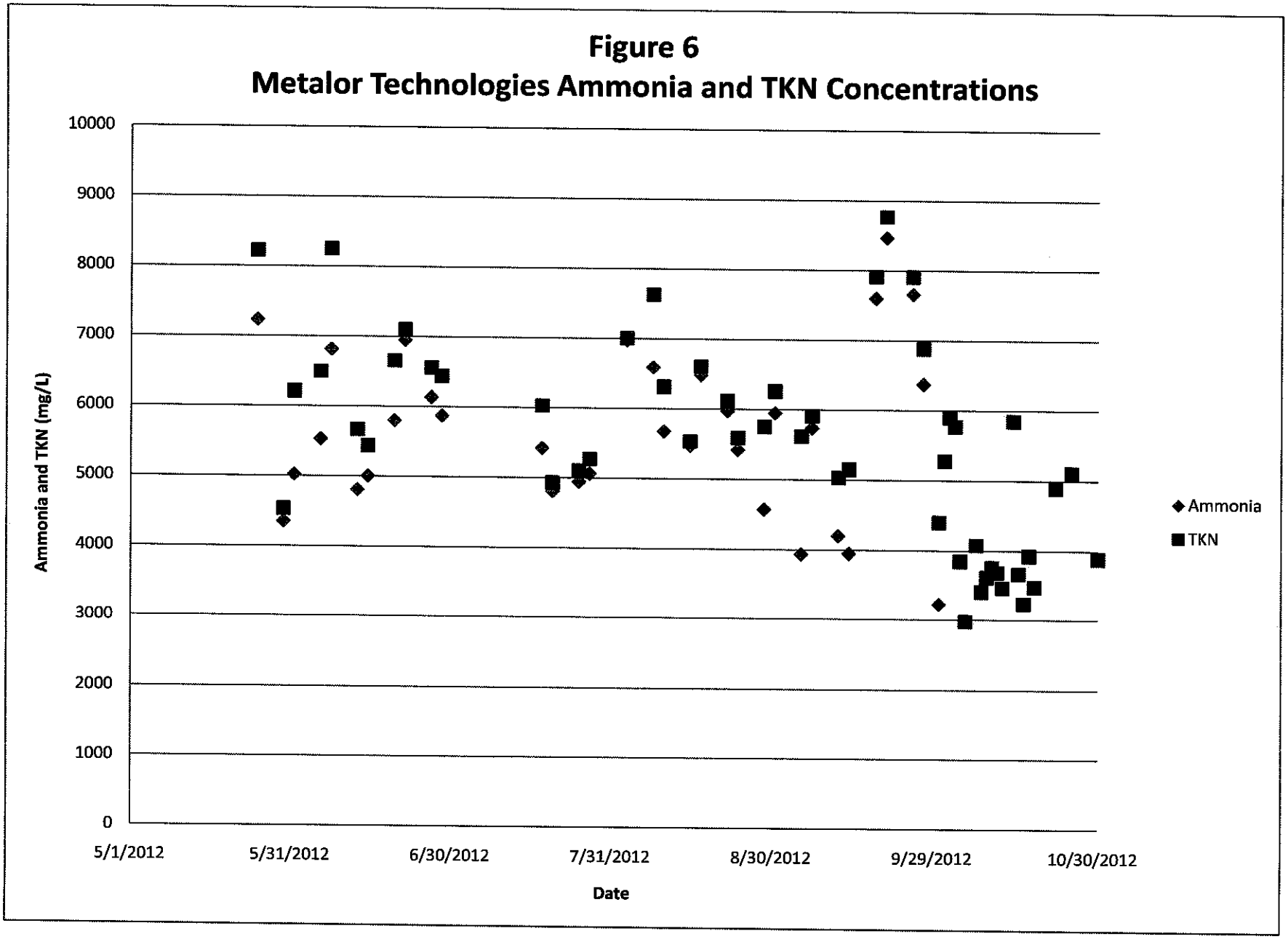
Figure 6
Metalor Technologies Ammonia and TKN Concentrations
Ammonia and TKN (mg/L)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
5/1/2012
5/31/2012
6/30/2012
7/31/2012
8/30/2012
9/29/2012
10/30/2012
Date
Ammonia
TKN

City of Attleboro, Massachusetts

DEPARTMENT OF WASTEWATER
Government Center, 77 Park Street
Attleboro, Massachusetts 02703
Phone 774-203-1820♦Fax 508-761-9837

Paul A. Kennedy
Superintendent
Department of Wastewater

July, 18, 2012

Metalor Technologies
52 Gardner Street
Attleboro, MA 02703

Subject: Treatment Options Status for Ammonia (TKN)

Attention: Ms. Diane George

As a result of your company's partial shutdown in July the following occurrences were observed at the City's wastewater treatment plant.

Before your company's shutdown, Attleboro's typical daily ammonia concentration entering our wastewater treatment plant ranged from the mid to high thirties (mg/l), however during Metalor's shutdown Attleboro's ammonia concentration entering the plant dropped to the low twenties, confirming our claim that Metalor's discharge is responsible for at least one third of the City's ammonia concentration that enters Attleboro's treatment plant. Once your company was in shutdown, savings at the treatment plant immediately became obvious in regard to power consumption and chemical usage. In essence, when your company is discharging to the sewer the City of Attleboro is spending more money to operate its wastewater treatment plant in order to treat your company's wastewater. In addition, there was a marked improvement with our treatment plant's ability to denitrify and comply with our NPDES limit for total nitrogen without the use of any additional carbon source chemicals. This was very encouraging and will have an enormous impact on our cost for chemicals, which should represent a substantial savings in our annual chemical budget.

In reference to your letter dated June 28, 2012, you mentioned that your company has met with four vendors to select the best treatment option to meet your company's needs. Also mentioned, one of those vendors has a rental unit that will hopefully become available in the near future.

In considering the adverse effects that your company's ammonia loading has on the City's wastewater treatment plant it would be very prudent for your company to expedite your selection process to get a treatment system in place as soon as possible, even if a rental unit is used on a temporary basis until a permanent system is installed. Within the next month Attleboro will once again be modifying its process to incorporate a very costly carbon source chemical to our process in order to meet our NPDES limit for total nitrogen. Your company's discharge will have a definite impact in regard to the amount of chemicals the City will have to use in their process along with the additional electrical costs associated.

Once the new chemical is introduced into our process your company's excessive discharge of Ammonia (TKN), will certainly have a costly impact on the way we operate our treatment plant, which will warrant the need for a substantial reduction in Metalor's discharge rate. Recent data collected at the Attleboro plant has shown Metalor's nitrite and nitrate discharge concentrations are virtually undetectable at our plant influent, however your TKN is a huge problem and your company's attention should be focused on lowering its TKN concentration. Please note that the City of Attleboro has already established a scientifically based local limit for TKN of 173 mg/l and is awaiting approval from the EPA. I must stress the fact that once the new limit goes into effect your company will be out of

compliance for that parameter and subject to enforcement. Please notify us as soon as possible to discuss your future treatment plans and a timeline for implementation.

If you have any questions, please contact me.

Sincerely,

Paul A. Kennedy
Superintendent of Wastewater

cc: Mayor Kevin J. Dumas, City of Attleboro
Mr. Barry LaCasse, City of Attleboro
Ms. Lisa Nelson, District Representative
Ms. Daneen Ferreira, MA House
Mr. Jeremy Denlea, Councilman, City of Attleboro
Mr. Thomas, City of Attleboro
Mr. Aaron Dumont, City of Attleboro
Mr. John Reed, City of Attleboro
Mr. Justin Pimpare, EPA
Mr. David Burns, DEP
Mr. Andrew Costa, Metalor
Mr. Marc Marcoccio, Metalor
Mr. Nathan Pawlowski, Metalor
Mr. John Bullock, Metalor
Mr. Howard Imhof, Metalor
Mr. Benjamin Levesque, CDM Smith

City of Attleboro, Massachusetts

DEPARTMENT OF WASTEWATER
Government Center, 77 Park Street
Attleboro, Massachusetts 02703
Phone 774-203-1820♦Fax 508-761-9837

Paul A. Kennedy
Superintendent
Department of Wastewater

April 4, 2012

Purchasing Department
Carol Brown, Asst. Purchasing Agent
City of Attleboro
77 Park Street
Attleboro, MA 02703

Subject: Requested Proprietary Chemical Purchase
Nitrogen Pilot Plant

Dear Carol:

My explanation for requesting to purchase a proprietary chemical is as follows. First of all it should be understood that pilot plants are experimental projects that are allowed and then evaluated over a period of time to assess whether they can operate successfully. During the design phases of our Nitrogen Pilot Plant it was discussed that once it went into operation, if it didn't perform as expected we may be required to take additional steps to comply with our Order of Compliance issued by the Environmental Protection Agency. Our pilot plant has been in service for the past five months and after much trial and error it has been determined that our incoming wastewater has a carbon deficiency, which biologically inhibits the process from performing what it was designed to accomplish. This was determined by performing a laboratory bench test using an actual Attleboro wastewater sample which identified the deficiency, however it was suggested that the pilot plant can be successful with the use of an additional carbon source chemical called Micro-C. This chemical is a proprietary product having one manufacturer. There are other chemicals on the market that may be used, although not as affectively as Micro-C. In addition, the other alternative carbon sources would require costly investments requiring new buildings and feed equipment, and in some cases costly explosion proof equipment and containment areas. The capital cost for these alternatives could be in excess of one million dollars ($1,000,000). Therefore, I request that the proprietary chemical, Micro-C be our chemical of choice going forward.

If you need any further information, please don't hesitate to contact me.

Sincerely,

Paul A. Kennedy
Superintendent of Wastewater

Cc: Mayor Kevin J. Dumas
Barry LaCasse, Director of Budget & Administration
Deborah Gould, City Auditor
Benjamin Levesque, CDM Smith ✓

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
BOSTON, MA 02109-3912

November 6, 2012

Paul Kennedy
Superintendent
City of Attleboro Department of Wastewater
77 Park Street
Attleboro, MA 02703

Re: Approval of Proposed Modifications for the City of Attleboro's Industrial Pretreatment Program

Dear Mr. Kennedy:

On October 5, 2012, the Environmental Protection Agency (EPA) placed on public notice its intent to approve the City of Attleboro's Proposed Modifications as part of its approved industrial pretreatment program. The purpose of the public notice was to provide interested parties an opportunity to comment on the Proposed Modifications as required by 40 C.F.R. § 403.18. As indicated in our letter dated October 2, 2012 to the City, the Proposed Modifications would be approved without further notice if no comments were received by our Agency.

The purpose of this letter is to notify the City that our office did not receive any comments on the original public notice. Given that, EPA is hereby approving the following Proposed Modifications:

Pollutant	Local Limitation (mg/l)	Allowable Industrial Loading (AIL) (lb/day)
BOD	600	------
COD	900	------
TKN	691*	346

*Metalor will receive 100% of the AIL for TKN

Ren Till

Please note that the Proposed Modifications are effective immediately and should be incorporated into the City's pretreatment program via the Rules and Regulations as soon as possible.

If you have any questions regarding this letter, please contact Justin Pimpare at (617) 918-1531.

Sincerely,

Mark Spinale, Manager
Municipal Assistance Unit

cc: Gregory Roy, CDM
Joesph Canzano, EPA
Aaron Dumont, City of Attleboro

City of Attleboro, Massachusetts

DEPARTMENT OF WASTEWATER
Government Center, 77 Park Street
Attleboro, Massachusetts 02703
Phone 774-203-1820♦Fax 508-761-9837

Paul A. Kennedy
Superintendent
Department of Wastewater

November 7, 2012

Mr. Justin Pimpare
Regional Pretreatment Coordinator
EPA New England
5 Post Office Square
Suite 100 OEP 06-03
Boston, MA 02109

Subject: Metalor Technologies USA

Dear Mr. Pimpare:

Enclosed is a cover letter, along with a Compliance Order and the modified Industrial User Permit No. 026 issued to Metalor Technologies USA, which became effective November 6, 2012.

If you have any questions, please contact me.

Sincerely,

Paul A. Kennedy
Superintendent of Wastewater

Cc: Joseph Canzarno, EPA
David Turin, EPA
David Burns, DEP
Robert Greene, DEP
Kevin J. Dumas, Mayor City of Attleboro
Barry LaCasse, City of Attleboro
Aaron Dumont, City of Attleboro
John Reed, City of Attleboro
Thomas Hayes, City of Attleboro

City of Attleboro, Massachusetts

DEPARTMENT OF WASTEWATER
Government Center, 77 Park Street
Attleboro, Massachusetts 02703
Phone 774-203-1821 ♦ Fax 508-761-9837

Paul A. Kennedy
Superintendent of Wastewater
Department of Wastewater

November 7, 2012

Metalor Technologies USA
52 Gardner Street
Attleboro, MA 02703

Subject: Industrial Permit No.026

Attention: Mr. Andrew Costa

Enclosed is your company's modified Industrial User Discharge Permit No. 026. For some time now the Attleboro treatment plant has been dealing with very high concentrations of TKN (total kjeldahl nitrogen) from your facility. These concentrated discharges not only have increased our operating cost but most importantly do interfere with our nitrification/denitrification processes causing us to go out of compliance with our NPDES permit limit for total nitrogen.

Due to the fact that your company's concentrated discharge of TKN interferes with our treatment plant process causing us to go out of compliance the City must take the following actions to minimize this type of discharge to insure the continued compliance of the Attleboro Wastewater Treatment Plant.

The City of Attleboro's newly revised Local Limit for TKN is now 691 mg/l. In addition, your company's permitted Maximum Daily Discharge Flow Rate has been reduced from 60,000 gallons per day to 30,000 gallons per day. The enclosed limits for TKN and Maximum Daily Discharge Flow Rate are enforceable upon your receipt of this letter.

As in the past the City of Attleboro is willing to work with your company over the next several months with your endeavors to achieve compliance.

Sincerely,

Paul A. Kennedy
Superintendent of Wastewater

Cc: Justin Pimpare, EPA
Joseph Canzano, EPA
David Turin, EPA
David Burns, DEP
Robert Greene, DEP
Kevin J. Dumas, Mayor
Barry K. LaCasse, City of Attleboro
Aaron Dumont, City of Attleboro
John Reed, City of Attleboro
Thomas Hayes, City of Attleboro

Permit O26

A EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number 001 Pretreatment room final tank. (November 6-2011--December 31-2015) Equalized Flow.

Such discharges shall be limited and monitored by permittee as specified below:

Effluent Characteristic		Discharge Limitations specify units				Monitoring Requirement Frequency	Type
		Monthly Average	Weekly Average	Maximum Daily			
Flow				30,000	Gallons	Continuous	Metered 1.
PH	LL			5.5-9.5	s.u.	Continuous	Metered
Temperature	LL			104	o F	Continuous	Metered
Petroleum Oil & Grease	LL			15	Mg/L	4/Year Quarterly	Representative Grab 3.
TKN	LL			691	Mg/L	4/Year Quarterly	Representative Composite 3.
Aluminum	LL			1.3	Mg/L	4/ Year Quarterly	Representative Composite. 3.
Cadmium	LL			0.031	Mg/L	4/ Year Quarterly	Representative Composite. 3.
Chromium total	LL			1.71	Mg/L	4/ Year Quarterly	Representative Composite. 3.
Copper	LL			0.77	Mg/L	4/ Year Quarterly	Representative Composite. 3.
Iron		Report	Results		Mg/L	4/ Year Quarterly	Representative Composite. 3.
Lead	LL			0.052	Mg/L	4/ Year Quarterly	Representative Composite. 3.
Nickel	LL			1.8	Mg/L	4/ Year Quarterly	Representative Composite. 3.
Silver	LL			0.15	Mg/L	4/ Year Quarterly	Representative Composite. 3.
Zinc	LL			1.48	Mg/L	4/ Year Quarterly	Representative Composite. 3.
Cyanide	CS-AL			0.05	Mg/L	4/ Year Quarterly	Representative Grab 3.
TTO 624 & 625				2.13	Mg/L	1/ Year	Representative Grab 2.
Ammonia		Report	Results		Mg/L	4/ Year Quarterly	Representative Composite.
Suspended Solids (TSS)		Report	Results		Mg/L	4/ Year Quarterly	Representative Composite.

2. Samples to be taken by POTW personnel or in the presence of POTW personnel.
3. Unannounced sampling also conducted by the city twice per year.

CS: CATEGORICAL STANDARD
LL: LOCAL LIMIT
AL: ALTERNATIVE LIMIT COMBINED WASTE STREAM FORMULA

City of Attleboro, Massachusetts

DEPARTMENT OF WASTEWATER
Government Center, 77 Park Street
Attleboro, Massachusetts 02703
Phone 774-203-1820♦Fax 508-761-9837

COMPLIANCE ORDER
No. *12 - 1*

November 7, 2012

I. STATUTORY AUTHORITY

The following Findings are made and this ORDER is herein issued pursuant to the City of Attleboro Ordinance Section 16-21.1(4) Administrative Enforcement Remedies – Compliance Orders which grants the Superintendent of Wastewater the authority to issue orders directing that the user come into compliance with any provisions of Section 16–15 of said ordinance.

II. FINDINGS

This Order herein is based on the findings of violation of Section 16-15.8 Specific Prohibitions Sections a, c, j, n, t, u1, u2, u3, and u4, of the City of Attleboro Ordinances and the conditions of the modified Industrial User Permit No. 026. The order provides a compliance date of April 30, 2013, which the Superintendent has determined to be reasonable.

III. ORDER

This Compliance Order is issued by the City of Attleboro to Metalor Technologies USA located at 52 Gardner Street Attleboro, Massachusetts 02703 Industrial User Permit No. 026.

Accordingly, it is hereby ordered that:

1. By December 1, 2012, Metalor Technologies USA shall submit to the City of Attleboro an engineering report, which includes the following:

   a. A detailed summary of measures that will be implemented by Metalor Technologies USA to reduce the Concentration of TKN, being discharged from your facility.

   b. A detailed evaluation and explanation of the causes of the excessive TKN being discharged.

   c. Specific recommendations for interim and long-term corrective measures proposed to eliminate these violations of your modified industrial user permit, including a schedule for their implementation.

IV. NOTIFICATION PROCEDURES

1. Where this Order requires a specific action to be performed within a certain time frame, the Permittee shall submit a written notice of compliance or noncompliance by the last day of each month during the specified compliance time frame of April 30, 2013. The timely submission of a required report shall satisfy the requirement that a notice of compliance was received.

2. If noncompliance is reported, notification should include the following information:

   a. A description of the noncompliance;

b. A description of any actions taken or proposed by the Permittee to comply with the requirements;

c. A description of any factors that explain or mitigate the noncompliance; and

d. An approximate date by which the Permittee will perform the required action.

3. After a notification of noncompliance has been filed, compliance with the past requirement shall be reported by submitting any required documents or providing the Superintendent with a written report indicating that the required action has been achieved. Submissions required by this Order shall be in writing and should be mailed to the following address.

City of Attleboro
Wastewater Treatment Plant
77 Park Street
Attleboro, MA 02703

V. GENERAL PROVISIONS

1. This Order does not constitute a waiver or a modification of the terms and conditions of the Permit. The Permit remains in full force and effect. The City of Attleboro reserves the right to seek any and all remedies available under the City of Attleboro Ordinances Section 16-15.8. as amended, for any violation cited in this Order.

2. This Order shall become effective upon receipt by the Permittee.

11/7/2012
Date

Paul A. Kennedy
City of Attleboro
Superintendent of Wastewater

Cc: Justin Pimpare, EPA
Joseph Canzano, EPA
David Turin, EPA
Robert Greene, DEP
David Burns, DEP
Kevin J. Dumas, Mayor City of Attleboro
Barry LaCasse, City of Attleboro
Aaron Dumont, City of Attleboro
John Reed, City of Attleboro
Thomas Hayes, City of Attleboro

PARAMETER	CONCENTRATION	UNITS
TKN	691	mg/l