

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
Petition of Emerald Polymer)
)
Additives, LLC for an Adjusted) AS 19-002
)
Standard from 35 Ill. Adm. Code) (Adjusted Standard)
)
304.122(b))

NOTICE OF ELECTRONIC FILING

TO: Persons Identified on the Attached Certificate of Service

PLEASE TAKE NOTICE that I have today electronically filed with the Office of the Clerk of the Illinois Pollution Control Board this **Notice of Electronic Filing and Petitioner Emerald Polymer Additives, LLC's Written Answers to Questions of the Illinois Pollution Control Board During the Hearing on January 14, 2020.**

Respectfully submitted,

Emerald Polymer Additives LLC

Date: March 6, 2020

By: /s/ Thomas W. Dimond
One of Its Attorneys

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EMERALD'S WRITTEN ANSWERS TO BOARD QUESTIONS

Petitioner Emerald Polymer Additives, LLC ("Emerald"), by and through its attorneys Ice Miller LLP, hereby submits its written answers to the Illinois Pollution Control Board's questions directed to Emerald's witness Galen Hathcock and expert witness Houston Flippin during the hearing on Emerald's Petition for Adjusted Standard, on January 14, 2020¹, and states as follows:

ANSWERS TO BOARD QUESTIONS

QUESTION NO. 1. Would it be possible for Emerald to provide the Board with numeric data indicating reductions incurred during the last twenty years as a result of implementing source reduction measures (as distinguished from end-of-pipe solutions) at the Henry Plant? (*See* Hearing Transcript ("HT") 1/14/20, 99:15-100:24).

ANSWER: Yes. Emerald and its predecessors have a long history of making process changes to reduce levels of MBT, Total Kjeldahl Nitrogen ("TKN") and potential inhibitors or ammonia precursors in the Henry Plant wastewater. For a description of source reduction efforts from 1990-2003, see Petitioner's Hearing Exhibit 6 to the AS 02-5 proceeding, the Written

¹ Emerald has attempted in good faith to reproduce the Board's questions in writing based on the Hearing Transcript from January 14, 2020. In some cases, this required interpretation as to the meaning of pronouns or other references used in questions. To the extent a question is improperly stated or omitted, such error is inadvertent. Citations to the Hearing Transcript have been provided at the end of each question for clarity and accuracy.

Testimony of David Giffin, at pages 6-12.² The Henry Plant's source reduction efforts after AS 02-5, from 2007-2014, are described in its annual reports to the Illinois Environmental Protection Agency ("Agency"), which are collected in AS 19-2 Petitioner's Hearing Exhibit 4 ("PHX 4"), and in responses to Board questions about information in those reports in AS 13-2. *See* AS 13-2, Response to Hearing Officer Order (April 12, 2013) ("Response"). Following is a summary of that information:

- In 2007, Emerald replaced the BBTS scrubber with a dust collector, thereby reducing losses of BBTS to wastewater. (PHX 4, EP002785-86 (letter report to Agency dated 12/24/07)). During project development, Emerald estimated that this replacement would reduce BBTS in the wastewater stream by 75 to 87 lbs per batch, which would translate to an 8-10 lb per batch reduction in effluent ammonia. (Response, p. 4).
- In 2007, Emerald also investigated a sintered BHS filter media that might reduce loss of BBTS to wastewater, but the trial filters continued to blind and require frequent changes. (Response, pp. 4-5).
- In 2007, Emerald investigated improvements to the acetonitrile column efficiency but the resulting capital project was rejected. (Response, pp. 4-5).
- In 2007, Emerald also evaluated Anammox (an anaerobic ammonia oxidation process) but found that MBT and other inhibitors would render the process unstable. (Response, pp. 4-5).
- In 2008, Emerald conducted training to optimize treatment plant operation, initiated a study of use of carbon dioxide for pH buffering and conducted fed batch reactor testing to quantify bio-inhibitors in the system. (PHX 4, EP002787 (letter report to Agency dated 5/20/10)).
- In 2009, Emerald made improvements to the tertiary butyl amine ("tBA") column that were believed to lower loss of amines, however, no data quantified the anticipated reductions. (Response, p. 5).
- In 2009, Emerald also began using carbon dioxide to reduce slug feeding of caustic to the system at the primary clarifier, improving overall stability throughout the system. However, those changes did not reduce ammonia. (PHX 4, EP002788-89 (letter report to Agency dated 12/22/09); Response, p. 5).
- In 2011 and 2012, Emerald made instrumentation upgrades for the acetonitrile recovery column associated with the 3114 process to better control absolute pressure and improve

² The records of AS 02-5 and AS 13-2 have been incorporated into the record of this proceeding pursuant to the Board's Order dated May 30, 2019.

recovery efficiency. (PHX 4, EP002792 (letter report to Agency dated 12/20/11)). The 3114 process did not run enough during 2012 and 2013 to provide data to measure the effects of these changes. (PHX 4, EP002795-96 (letter report to Agency dated 12/30/13); Response, p. 7).

- In 2013 and 2014, Emerald tried to reduce tBA loss from a product manufactured in Building 725. Through the end of November 2014, the amount of ammonia as N was reduced by 53,000 lbs compared to the same time in 2013. (PHX 4, EP002795-98 (letter reports to Agency dated 12/30/13 and 12/30/14)).

Between September 2018 and February 2019, Emerald made additional process changes that decreased the loss of BBTS into the treatment system by almost 80%. *See AS 19-2 Petitioner's Hearing Exhibit 16, page titled Henry Plant BBTS Effluent Improvement*). Those changes included upgrades to computer hardware and software that facilitated improved process control, increasing the reaction temperature leading to drier and larger particles which enhanced BHS filtration efficiency and improvements to the BHS filter cleaning and process itself.

In the fall of 2019, Emerald focused on the BBTS and OBTS processes and achieved additional reductions in MBT lost from the BBTS process. Additional changes to the BBTS process included installation of a new oxidation-reduction probe to improve the detection of the bleach addition endpoint, addition of an acid wash step to the BHS filtering process reducing the amount of MBT dissolved in wastewater and an increase in the quantity of acid charged to attempt to reduce unreacted MBT. To date, efforts to improve losses from OBTS production have not been successful. Each process must be separately evaluated and tested to achieve source reductions. Because BBTS and OBTS were considered to have greater source reduction potential, changes to the 50% MBT and MBDS processes have not been made yet.

While it is difficult to correlate any single change with a reduction in parameters entering the wastewater treatment system, TKN and ammonia data for the PC tank, which receives Emerald's streams, show cumulative improvements. Average TKN for the PC tank decreased from 494 lbs/day in 2002 to 287 lbs/day in 2011 to 227 lbs/day for March-August 2019.

Average ammonia for the PC tank decreased from 62 lbs/day in 2002 to 8 lbs/day in 2011 to 2 lbs/day for March-August 2019. The above averages for 2002 and 2011 came from AS 13-2, Petition Ex. 13, Table 1 (Brown & Caldwell 8/27/12). The above averages for March-August 2019 came from AS 19-2 Petitioner's Hearing Exhibit 12, p. 4 (Flippin Expert Report 10/11/19).

QUESTION NO. 2. Does Emerald believe that these source reduction efforts come close to complying with the applicable ammonia-nitrogen effluent standards? (HT 1/14/20, 101:1-8).

ANSWER: No. Despite the varied and repeated efforts at pretreatment and source reduction, ammonia in the Henry Plant discharge has remained significantly above the 3 mg/L standard set in Section 304.122(b) until the significant downturn in MBT-related production. Most of the source reduction efforts occurred prior to 2018, but the daily maximum for each month in 2018 ranged from 92 to 120 mg/L. (*See* Petitioner's Hearing Exhibit 14). Also, the chart of MBT data in the PC Tank and primary clarifier in Petitioner's Hearing Exhibit 16 shows levels well above the MBT nitrification inhibition threshold (3 mg/L). To date, Emerald has not been able to correlate source reduction efforts with effluent ammonia concentrations. The extremely low ammonia effluent results in late 2019 cannot be explained by source reduction alone. They likely also reflect the significantly lower MBT-related production. Even with those extremely low results on certain days, the monthly averages for October and November exceeded 3 mg/L. The ammonia effluent results in the last four months of 2019 are not representative of reasonable maximum operations.

QUESTION NO. 3. Provide a project plan and timeline for completion of Emerald's current project to identify and quantify sources of ammonia, TKN and MBT from within various production areas of the plant, including timeframes for each significant step of the project. (HT 1/14/20, 103:13-105:12). If possible, please provide this plan before the Board decides on Emerald's Petition for Adjusted Standard. (*Id.*, 105:1-6).

ANSWER: Please see the Process Improvement Project Plan, attached hereto as Appendix A. The plan suggests an initial report to the Agency in July 2020 followed by a

meeting in August 2020, then annual reports thereafter and a final report to the Agency in January 2024. Emerald does not mean to suggest that source reduction efforts should cease with the final report. We only suggest that, after four years, it will be time to reassess the progress of the plant and consider whether a new plan or some other action is necessary and appropriate.

QUESTION NO. 4. Should this ongoing project be included as a condition of the adjusted standard if the Board decides to grant Emerald's petition? If so, would it be possible for Emerald to submit to the Board language that addresses this project, including a specific timeline? (HT 1/14/20, 105:13-23).

ANSWER: Consistent with Emerald's environmental policies, Emerald will implement the Process Improvement Project Plan regardless of whether the Board makes it a condition of granting adjusted standard relief. Emerald will address the Process Improvement Project Plan, including a proposal for specific language to be used as an adjusted standard condition, in its post-hearing brief.

QUESTION NO. 5. Would it be possible for Emerald to provide production levels of the products contributing to ammonia-nitrogen, TKN and MBT in Emerald's process wastewater over the last five to ten years? (HT 1/14/20, 107:20-108:9).

ANSWER: Under separate cover and in accordance with the Board's rules, Emerald has filed the documents in Appendix B (EP003670 to EP003673) containing production data for the Henry Plant for the last 20 years: 2000-2019. Emerald labeled each page of the document as Public Record Claimed Exempt/NON-DISCLOSABLE INFORMATION in accordance with 2 Ill. Adm. Code 1828.202(a)(1)F) and 35 Ill. Adm. Code 130.404(b). Emerald is not a public company. Its production data is not released to the public and is maintained as confidential information within the company. As such, the information in EP003670 to EP003673 is "commercial or financial information obtained from a person or business" that is protected from disclosure under the Illinois Freedom of Information Act, 5 ILCS 140/7(1)(g) and 2 Ill. Adm. Code 1828.202(a)(1)(F). In addition, these documents constitute Non-Disclosable Information

("NDI") as defined by Section 101.202 of the Illinois Pollution Control Board Rules that is protected from disclosure by 35 Ill. Adm. Code Part 130, Subpart D. The disclosure of the NDI to the competitors of Emerald would give them valuable information about its operations that could be used by those competitors for market analysis and market entry or capacity adjustment decisions. *See* Affidavit of Galen Hathcock, attached.

The data on EP003670 to EP003673 is stated in pounds of finished or intermediate products produced. The production of the following finished products (OBTS, MBDS, MBTS, NaMBT a/k/a 50% MBT, and BBTS) and one intermediate product (34% Crude) contribute MBT to the Henry Plant wastewater treatment system. MBTS has not been manufactured at the Henry Plant since 2002. Those processes, as well as the production of Stalite, Vanlube, X15, 3114 and Cure-Rite 18[®], also contribute TKN and small amounts of ammonia to the wastewater treatment plant.

QUESTION NO. 6. During the Hearing on January 14, 2020 and referring to the statement on page 10 of Petitioner's Hearing Exhibit 1 that ammonia is not a raw material at either Mexichem's facility or the Henry Plant, but instead amines in the wastewater are converted to ammonia, Mr. Rao asked Mr. Hathcock whether Emerald knows how much of the amines in the Henry Plant come from Mexichem and how much come from Emerald. (HT 1/14/20, 114:4-11). Mr. Hathcock responded:

We do have that data. We have been monitoring nitrogen TKN levels from the Mexichem plant site as well as our own.

(*Id.*, 114:12-14). Submit this data into the record if Emerald has not already done so.

ANSWER: Please see the attached documents in Appendix C, Bates-labeled EP003727-EP003735, which summarize total nitrogen, Ammonia-N, Nitrate/Nitrite, and TKN data collected from four locations: the Emerald C-18 (EP003727) and PC (EP003728-EP003731) tanks; and the Mexichem pre-treatment tank (EP003732-EP003734) and PVC Lift Station (EP003735). Mexichem's wastestreams flow from its process in one of two directions: either to the PVC Lift Station then to the PVC Tank or to the Diversion Tank and pretreatment

before the PVC Tank. Sand filter backwash and other side streams mix with Mexichem's wastestreams in the PVC Tank.

QUESTION NO. 7. Has Emerald made any efforts to measure how much ammonia-nitrogen is coming into the PC [sic, likely means PVC] tank from Mexichem, including the sidestreams? If so, please provide this information. (HT 1/14/20, 236:5-237:4).

ANSWER: Emerald refers to and incorporates its Answer to Question No. 6 herein.

QUESTION NO. 8. Regarding changes made to the BBTS process; does Emerald routinely monitor MBT levels in the primary clarifier effluent in order to determine the impact of BBTS changes on MBT levels? If so, please submit this data into the record. (HT 1/14/20, 119:14-120:5).

ANSWER: Please see the attached documents in Appendix D, Bates-labeled EP003674-EP003726, which summarize MBT data from sampling conducted at the Henry Plant's PC tank, primary clarifier and secondary clarifier from 4/16/1999 to 1/14/2020. Emerald began routinely monitoring MBT levels in its secondary clarifier effluent in 2014. Monitoring of MBT at the PC tank and primary clarifier has historically been intermittent but has been more frequent beginning in 2018. Emerald does not specifically monitor the PC tank or primary clarifier to measure the effect of BBTS changes because those points involve too much mixing of waste streams from other processes.

QUESTION NO. 9. On page 3 of Mr. Flippin's pre-filed written testimony, he lists his experience specifically related to biological nitrification and denitrification facilities in the U.S., including one in Roxana, Illinois. Can Mr. Flippin please provide the treatment capacity of each industry facility treatment in terms of flow, millions of gallons per day and ammonia-nitrogen loading for each of the plants? (HT 1/14/20, 226:1-227:5).

ANSWER: Appendix E contains a Technical Memorandum dated March 5, 2020 by Houston Flippin (the "Technical Memorandum"). *See* Section 2.1, Table 1.

QUESTION NO. 10. Also, can Mr. Flippin provide the ammonia nitration permit limits for each of the plants and comment on how they compare with the permit limit generally applicable to the Henry Plant? (HT 1/14/20, 227:6-10).

ANSWER: *See* Technical Memorandum, Section 2.1, Table 1.

QUESTION NO. 11. Can Mr. Flippin provide the capital cost along with the operation and maintenance cost for each of the industry facilities in his list (on page 3 of Mr. Flippin's pre-filed written testimony) and comment on how the cost of ammonia-nitrogen treatment at industrial facilities compares with the cost estimates for the granular activated carbon ("GAC") treatment alternative that Mr. Flippin evaluated for facilitating nitrification at the Henry Plant? (HT 1/14/20, 227:12-20).

ANSWER: Mr. Flippin and Brown & Caldwell received permission from two clients for three projects to disclose certain costs related to their projects. *See* Technical Memorandum, Section 2.1 and Tables 2 and 3.

QUESTION NO. 12. Comment on how these costs for ammonia-nitrogen treatment at industrial facilities compare with the NACWA costs for ammonia-nitrogen treatment. (HT 1/14/20, 228:5-8).

ANSWER: *See* Technical Memorandum, Section 2.1 and Tables 2 and 3. The costs address treatment of more than just ammonia, and so are not directly comparable to the NACWA ammonia surcharge. However, Mr. Flippin compared the costs of those projects to the cost for the Emerald tertiary nitrification alternative based on oxygen equivalents. On a present worth cost basis, the Emerald cost is about 5.7 times higher than the cost incurred on the other projects. *Id.*, p. 2-3 and Table 3.

QUESTION NO. 13. On page 10 of Mr. Flippin's pre-filed written testimony, he states that the GAC treatment alternative would have other negative environmental side effects in terms of greenhouse gas emissions and burden on local roads and residents. Please provide an estimate of the quantity of fresh GAC that would be required to pretreat PC/C-18 wastewater. (HT 1/14/20, 228:10-17).

ANSWER: *See* Technical Memorandum, Section 3.2.

QUESTION NO. 14. If the GAC alternative is chosen as a treatment option for Emerald, from what location will fresh GAC be shipped to Henry plant? Are diesel trucks the only option for shipping fresh GAC, or are other modes of transportation such as rail cars or barges available? Also, regarding the burden on local roads, please provide the truck routes that would be used to transport GAC to the facility. Comment on whether the indicated roadways are currently being used for transport, the number of trucks currently using the indicated roadways, the number of trucks currently using the indicated roadways daily and the incremental increase in truck traffic if GAC is shipped to Henry facility. (HT 1/14/20, 228:19-229:15).

ANSWER: *See* Technical Memorandum, Section 3.2.

QUESTION NO. 15. Please comment on whether spent GAC can be taken to a permitted landfill for disposal instead of an incineration facility. (HT 1/14/20, 229:16-19).

ANSWER: See Technical Memorandum, Section 3.2.

QUESTION NO. 16. Would it be possible to give better cost estimates than the Class 5 estimates that have been submitted into the record for tertiary nitrification and ion exchange? (HT 1/14/20, 248:5-249:23).

ANSWER: See Technical Memorandum, Section 3.1. As noted by Mr. Flippin, the refined 10-year present worth cost estimates only increased by about 8 to 14% over the Class 5 estimates in his October 11, 2019 expert report.

Respectfully submitted,

Emerald Polymer Additives, LLC

By: /s/Thomas W. Dimond
One of Its Attorneys

Date: March 6, 2020

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CERTIFICATE OF SERVICE

I, the undersigned, certify that on March 6, 2020, I have served the foregoing upon the following persons by electronic mail:

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APPENDIX A

Emerald Polymer Additives

Henry, Illinois Plant

February 2020

Process Improvement Project Plan

Project Goals:

1. Quantify sources of ammonia, TKN, MBT and chemical oxygen demand (COD) into the plant's WWT system from the production of different finished and intermediate products from both Emerald and Mexichem operations.
2. Determine which products have the greatest impact on the target parameters and the effectiveness of the WWT system.
3. Identify methods to reduce ammonia, TKN, MBT and COD loss into the WWT system.
4. Attempt to correlate the WWT system influent data with effluent ammonia data.
5. Attempt to identify levels of TKN, MBT and COD that allow for effective nitrification in the existing aerobic digesters to either reduce WWT effluent ammonia load below 100 lbs/day or, if ammonia load > 100 lbs/day, achieve daily maximum ammonia of 6 mg/L and monthly average ammonia of 3 mg/L. These numeric objectives are the ammonia discharge goal.
6. Identify changes to the operation of the WWT system to promote more effective nitrification in the existing WWT system.

Project Steps:

Between February 17 and approximately March 6, 2020, the plant will conduct a trial production of MBT-related products. The intent is to measure the performance of the different production processes and the WWT system at high levels of MBT-related production.

1. During the production of each different product, collect samples of waste streams prior to combination with any other waste stream and before discharge to the PVC, PC or C-18 tank and measure waste stream flow. Also perform extensive sampling and analysis of TKN and MBT at locations throughout the WWT system to support mass balance calculations and development of WWT system model.
2. Test samples for the presence of ammonia, TKN, MBT and COD.
3. Assemble the sample data and combine with the daily effluent sample data for permit compliance.
4. Analyze the data to determine which processes have the greatest effect on target parameter concentrations and loads as an input to the WWT system and to attempt to identify correlations with WWT system effluent data.
5. Discuss the data with the continuous process improvement team and, as needed, Mexichem, to attempt to identify and develop solutions to:
 - a. Prioritize products and processes with the greatest contributions to the WWT system.
 - b. Attempt to identify process improvements to reduce the amounts of ammonia, TKN, MBT and COD in the wastewater streams without compromising product quality or other key objectives.
 - c. Investigate whether improved recovery of target parameters via improved filtration or pretreatment of the wastewater streams would be effective to reduce the concentrations of any of these compounds.

6. Based on the results of Step 5, identify revised production procedures or other changes and evaluate the following for each specific change: whether it can be reliably implemented, the predicted reduction in ammonia effluent concentrations or loads, the possible negative environmental side-effects and the reasonably anticipated cost.
7. When practical given plant scheduling, implement any changes considered technically feasible and economically reasonable in Step 6 and schedule a repeat of Steps 1-4 to test the effectiveness of the changes and consider whether Steps 5 and 6 should be repeated.
8. Create a model of the WWT system in order to:
 - a. Attempt to correlate production of different finished and intermediate products with the concentration of ammonia in WWT system effluent.
 - b. Attempt to identify correlations between TKN, MBT and COD in the primary clarifier or aerobic digesters with effluent ammonia and the concentration of MBT at which the aerobic digesters can meet the ammonia discharge goal.
 - c. Predict the concentrations of ammonia, TKN, nitrate/nitrite, COD and MBT at key locations in the WWT system.
 - d. Identify potential changes to the operation of the WWTP to enhance nitrification and reduce the concentration of ammonia in the effluent.
9. Prepare an initial report to the Illinois Environmental Protection Agency followed by a meeting and annual reports thereafter reporting on the results of the Project Plan for the preceding year and the planned activities for the current year.
10. On January 31, 2024, prepare a final report to the Agency reporting on the results of the Project Plan for the preceding year and whether any additional activities are planned or considered worthy of investigation or further consideration.

Initial Project Schedule

Estimated Completion Date	Project Step
3/31/20	Steps 1 and 2, and if possible, some initial activity of Steps 5 and 6.
5/30/20	Step 3. Some of the results depend on laboratory turn around. In addition, there may be a lag between production data and impacts on the WWT system effluent.
6/30/20	Steps 4, 5 and 6. .
8/31/20	Step 8.
TBD and ongoing	Step 7. The scheduling of change implementation will depend on the complexity of the change, the need for internal or external approvals, plant scheduling and other considerations. Until the change is identified, an implementation schedule cannot be predicted. The ability to repeat Steps 1-6 after change implementation at appropriate production levels may depend on customer demand and other conditions beyond Emerald's control. Steps 5 and 6 are part of a continuous improvement process based on the newest data and technical insights.
7/31/20	Initial Report to Agency
August 2020	Meeting with Agency to Discuss Initial Report
1/31/21	Step 9. First Annual Report to Agency.
1/31/22	Step 9. Second Annual Report to Agency.
1/31/23	Step 9. Third Annual Report to Agency.
1/31/24	Step 10. Final Report to Agency.

APPENDIX B

APPENDIX C

C-18

Date Sampled	Total Nitrogen mg/L	Ammonia-N mg/L	Nitrate/Nitrite-N mg/L	Total Kjeldahl Nitrogen (TKN) mg/L
10/10/2018	460	0.47	3.7	450
10/11/2018	470	0.52	4.2	470
11/28/2018	330	<7.5	4.9	320
11/29/2018	430	<7.5	28	410
12/5/2018	340	<0.30	5.7	330
12/6/2018	420	<0.30	5.5	420
12/25/2018	1100	0.82	8.4	1000
1/2/2019	1400	0.75	7.6	1400
1/3/2019	12	0.72	6.8	5.6
1/22/2019	1400	<0.10	6.7	1400

PC Tank	Flow ~75gpm	5.6		158.79
Date Sampled	Total Nitrogen mg/L	Ammonia-N mg/L	Nitrate/Nitrite-N mg/L	Total Kjeldahl Nitrogen (TKN) mg/L
10/10/2018	230	0.3	7.4	230
10/11/2018	270	1.1	8.1	260
11/28/2018	240	<7.5	6.2	230
11/29/2018	230	<7.5	<20	230
12/4/2018	220	<7.5	7.9	210
12/5/2018	230	0.94	7.1	230
12/6/2018	170	0.8	6.9	160
12/10/2018	120	11	8	110
12/12/2018	120	11	7.9	120
12/13/2018	98	9.3	7	91
12/19/2018	67	4.5	6.8	60
12/25/2018	190	3.6	7.9	190
12/26/2018	240	2.6	7.8	230
12/27/2018	62	1.8	7.4	55
1/1/2019	280	0.68	6.6	270
1/2/2019	240	0.65	7.1	230
1/3/2019	19	0.58	7.3	11
1/8/2019	250	2.3	7.9	240
1/9/2019	320	0.5	8.2	320
1/10/2019	310	0.46	7.8	300
1/14/2019	240	0.46	0.69	240
1/16/2019	260	0.56	0.072	260
1/17/2019	250	1.1	6.8	250
1/22/2019	200	2.3	7.3	200
1/23/2019	180	0.71	7.3	170
1/24/2019	180	0.76	7.2	180
1/29/2019	240	1.5	7.9	230
1/30/2019	210	1.4	6.8	210
2/5/2019	170	8.2	4	160
2/6/2019	180	6.2	3.6	170
2/6/2019	180	5.4	3.4	170
2/12/2019	310	2.4	2.1	310
2/20/2019	230	2	2.3	230
2/21/2019	240	1.1	2.4	230
2/26/2019	230	0.7	<2.0	230
2/26/2019	230	0.7	<2.0	230
2/27/2019	220	0.64	<2.0	220
2/28/2019	250	0.65	3.3	240
3/5/2019	240	<1.5	2.3	240
3/6/2019	200	1	2.6	190
3/7/2019	180	3.7	5.7	180
3/12/2019	170	1.7	2.9	170
3/12/2019	190	0.87	2.6	190
3/14/2019	180	0.72	<2.0	180
3/19/2019	160	5	<2.0	160
3/20/2019	150	2.6	2.1	150
3/21/2019	130	2.4	<2.0	130
3/26/2019	160	2.2	<2.0	160
3/27/2019	200	1.2	<2.0	200
3/28/2019	240	1.4	2.4	240

PC Equalization Tank
PC Tank Effluent

Electronic Filing: Received, Clerk's Office 03/06/2020

PC Tank	Flow ~75gpm	5.6		158.79
Date Sampled	Total Nitrogen mg/L	Ammonia-N mg/L	Nitrate/Nitrite-N mg/L	Total Kjeldahl Nitrogen (TKN) mg/L
4/2/2019	320	0.92	<2.0	320
4/3/2019	230	0.71	<2.0	230
4/9/2019	220	1	<2	220
4/10/2019	250	1.6	2.8	250
4/10/2019	220	0.97	3.3	210
4/16/2019	160	1.5	14	140
4/17/2019	120	1.7	2.9	110
4/18/2019	120	4.6	2.4	120
4/23/2019	240	2.5	<2	240
5/1/2019	130	2.8	3.5	130
5/2/2019	200	2.1	3.3	190
5/7/2019	160	1.8	3.4	160
5/8/2019	180	0.84	5.6	180
5/9/2019	200	0.84	3.8	190
5/14/2019	150	0.94	5.2	150
5/15/2019	130	1	<2.0	130
5/16/2019	120	0.92	<2.0	120
5/21/2019	150	1.1	<2.0	150
5/22/2019	440	550	<2.0	440
5/23/2019	170	1.7	2.2	160
5/28/2019	160	3.5	2.2	150
5/29/2019	120	3.1	2.4	120
5/30/2019	95	16	<2.0	95
6/4/2019	140	1.3	2.7	140
6/5/2019	140	1.8	<2.0	140
6/6/2019	210	0.94	3.7	210
6/10/2019	140	1.1	3.3	140
6/12/2019	110	1.2	3.6	110
6/13/2019	93	2.8	3	90
6/18/2019	190	0.8	3.5	190
6/19/2019	180	0.87	3	180
6/20/2019	170	2.3	4.5	160
6/25/2019	140	1.1	3.3	130
6/26/2019	130	1.1	2.9	130
6/27/2019	160	1.1	2.9	150
7/2/2019	-	-	-	230
7/3/2019	250	1.1	2.6	250
7/4/2019				210
7/9/2019	270	1.2	2.9	270
7/10/2019	270	1.8	2.5	260
7/11/2019	260	2.3	2.4	260
7/16/2019	210	3	3	210
7/17/2019	190	16	4.2	190
7/18/2019	190	13	2.9	190
7/23/2019	170	5.1	3.7	170
7/24/2019	150	4.1	2.2	150
7/25/2019	180	3	2.2	170
7/30/2019	200	2.1	3.4	190
7/31/2019	210	2.4	2.5	210
8/1/2019	190	1.8	2.7	190

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PC Tank	Flow ~75gpm	5.6		158.79
Date Sampled	Total Nitrogen mg/L	Ammonia-N mg/L	Nitrate/Nitrite-N mg/L	Total Kjeldahl Nitrogen (TKN) mg/L
8/6/2019	210	5.9	2.7	200
8/7/2019	180	5.4	4.3	180
8/8/2019	210	3.8	<3.0	210
8/20/2019	140	1.7	5.1	140
8/21/2019	150	1.6	5.4	150
8/22/2019	150	2.2	4.6	150
8/27/2019	140	2.4	5.5	140
8/28/2019	190	2.6	3.8	190
9/3/2019	170	1.1	3.4	170
9/4/2019	170	1.1	3.7	170
9/5/2019	150	1	3.6	140
9/10/2019	70	2.1	3.9	66
9/11/2019	65	2.2	2.3	62
9/12/2019	64	2.6	2.9	61
9/17/2019	39	2.3	3.2	36
9/17/2019	40	2.4	2.3	37
9/19/2019	43	2.2	3.2	40
9/24/2019	50	1.6	3.5	46
9/25/2019	69	1.3	3.5	66
9/26/2019	100	1.5	3.6	100
10/1/2019	130	1.1	3	120
10/2/2019	100	1.1	2.6	100
10/3/2019	140	1.1	3.4	140
10/8/2019	200	0.83	2.8	200
10/9/2019	210	0.89	2.7	200
10/10/2019	220	1.1	2.8	220
10/15/2019	220	6.8	3	220
10/16/2019	200	6.6	2.9	200
10/17/2019	170	5.6	2.9	160
10/22/2019	180	3.4	2.6	180
10/23/2019	170	3	2.7	170
10/24/2019	190	2.6	3	190
10/29/2019	180	1.6	3.1	180
10/30/2019	130	1.3	3	130
10/31/2019	160	1.3	2.8	150
11/5/2019	98	1.7	2.7	96
11/6/2019	53	1.9	4.3	49
11/7/2019	77	1.9	3.3	73
11/12/2019	85	1.6	2.6	83
11/13/2019	90	1.4	4.9	85
11/14/2019	81	1.4	2.6	78
11/20/2019	59	1.2	3.3	55
11/21/2019	50	1.6	3.4	47
11/26/2019	39	1.3	3.3	36
11/27/2019	46	1.4	3.7	43
11/28/2019	62	1.3	4.6	58
12/3/2019	100	0.8	3	99
12/4/2019	90	0.86	2.9	87
12/5/2019	100	0.72	4.8	99
12/10/2019	140	2	11	120

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PC Tank	Flow ~75gpm	5.6	158.79	
Date Sampled	Total Nitrogen mg/L	Ammonia-N mg/L	Nitrate/Nitrite-N mg/L	Total Kjeldahl Nitrogen (TKN) mg/L
12/11/2019	230	0.98	2.9	220
12/12/2019	210	0.9	2.8	200
12/17/2019		0.52		190
12/18/2019		0.57		210
12/19/2019	170	0.71	2.1	170
12/24/2019		0.74		130
12/25/2019	120	0.68	2	120
12/26/2019	110	0.65	<2.0	110
12/31/2019	68	0.48	<2.0	68
1/1/2020	61	0.44	3	58
1/2/2020	62	0.43	2.3	60
1/7/2020		1.7		45
1/8/2020		2.1		41
1/9/2020		2.1		44
1/14/2020		1.7		28
1/15/2020		1.5		25
1/21/2020		1.7		21
1/22/2020		1.6		27
1/23/2020		1.5		24

PRETREATMENT

Date Sampled	Total Nitrogen mg/L	Ammonia-N mg/L	Nitrate/Nitrite-N mg/L	Total Kjeldahl Nitrogen (TKN) mg/L
4/26/2018	700	610	4	690
5/3/2018	290	270	0.64	290
5/10/2018	510	460	0.02	510
5/17/2018	720	620	0.02	720
5/17/2018				
5/24/2018	630	520	1.8	630
5/31/2018	430	400	7	420
6/7/2018	760	660	0.02	760
6/14/2018	580	510	0.02	580
6/21/2018	370	300	1.4	370
6/28/2018	540	480	1.8	540
7/5/2018	420	540	3.7	410
7/12/2018	440	570	5.1	430
7/19/2018	540	530	0.055	540
7/26/2018	270	280	0.96	270
8/2/2018	510	430	0.62	510
8/9/2018	430	470	2	430
8/16/2018	360	360	0.31	360
8/30/2018	440	420	0.23	440
9/5/2018	650	470	0.16	650
9/13/2018	260	270	2.2	250
9/20/2018	480	440	0.16	480
9/27/2018	430	480	3.8	430
10/4/2018	460	530	6.6	460
10/11/2018	460	390	0.027	460
10/19/2018	450	440	0.02	450
10/25/2018	420	430	5.5	420
11/2/2018	460	430	0.063	460
11/8/2018	320	300	0.17	320
11/16/2018	280	200	0.024	280
11/22/2018	340	290	2.2	340
11/29/2018	340	330	1.6	340
11/30/2018	190	150	0.05	190
12/6/2018	500	460	4.7	490
12/13/2018	250	270	3.3	240
12/20/2018	450	400	1.3	450
12/27/2018	50	20	4.5	45
1/4/2019	430	430	1.7	420
1/10/2019	330	380	3.6	330

PRETREATMENT

Date Sampled	Total Nitrogen mg/L	Ammonia-N mg/L	Nitrate/Nitrite-N mg/L	Total Kjeldahl Nitrogen (TKN) mg/L
1/17/2019	230	200	<2.0	230
1/24/2019	400	480	<2.0	400
1/31/2019	470	490	6.2	470
2/6/2019	220	200	<2.0	220
2/21/2019	360	410	3.1	360
2/28/2019	240	270	0.4	240
3/14/2019	290	330	0.97	290
3/28/2019	240	250	0.1	240
4/4/2019	350	360	<2.0	350
4/10/2019	460	480	<2.0	460
4/18/2019	470	520	3.7	460
5/2/2019	230	240	2.6	230
5/17/2019	470	560	<2.0	470
5/23/2019	440	430	12	430
5/31/2019	180	140	<2.0	180
6/14/2019	260	210	0.4	260
6/21/2019	310	250	10	300
6/28/2019	360	410	8.4	350
7/5/2019	440	440	21	420
7/18/2019	420	540	1.2	420
7/25/2019	220	240	3.4	220
7/31/2019	330	350	6	320
8/9/2019	470	580	9.6	460
8/22/2019	110	110	0.16	110
8/29/2019	460	510	2.6	460
9/5/2019	290	340	1.6	290
9/12/2019	500	550	1.9	500
9/19/2019	590	640	0.47	590
9/26/2019	500	620	0.41	500
10/3/2019	500	530	1.1	500
10/17/2019	360	440	4.3	360
10/24/2019	390	450	4.8	380
10/31/2019	210	180	0.1	210
11/7/2019	310	330	3.6	310
11/14/2019	560	560	0.45	550
11/21/2019	480	640	0.46	480
11/26/2019	470	440	0.38	470
11/28/2019	340	440	0.57	340
12/5/2019	310	280	0.18	310

APPENDIX D

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
4/16/1999		641	119	
4/19/1999		836	164	
4/21/1999		1047	215	
4/23/1999		1251	259	
4/26/1999		1236	234	
4/26/1999		1188	220	
4/26/1999		1152	210	
4/26/1999		1141	231	
4/26/1999		1143	228	
4/26/1999		1127	226	
4/28/1999		1165	221	
4/30/1999		1150	229	
5/3/1999		1142	233	
5/5/1999		1153	236	
5/14/1999		1104		
5/17/1999		1067		
5/18/1999		1131		
5/19/1999		1075		
5/20/1999		1082		
5/21/1999		1116	271	
5/24/1999		1192	320	
5/25/1999		1265		
5/26/1999		1336	358	
5/27/1999		1320		
5/28/1999			343	
5/28/1999		1330		
5/29/1999		1154		
5/30/1999		1058		
5/31/1999		965	276	
6/1/1999		1045		
6/2/1999		1055	284	
6/3/1999		1063		
6/4/1999		1143	336	
6/5/1999		1195	361	
6/6/1999		1414	378	17.0
6/7/1999			350	0.0
6/8/1999		1620	405	0.0
6/9/1999		1607	365	0.0
6/10/1999		1509	305	0.0
6/11/1999		1400	310	0.0
6/12/1999		1318	301	0.0
6/13/1999		1198	261	0.0
6/14/1999		1148	226	0.0
6/15/1999		1073	223	0.0
6/16/1999		1077	232	0.0
6/17/1999		1039	228	
6/18/1999		1011	236	

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
6/19/1999		1008	224	
6/20/1999		1206	256	
6/21/1999		1284	274	
6/22/1999		1311	210	17.0
6/23/1999		1314	197	13.0
6/24/1999		1278	185	16.0
6/25/1999		1320	222	
6/26/1999		1272	237	
6/27/1999		1309	254	
6/28/1999		1342	273	
6/29/1999		1359	258	
6/30/1999		1403	261	
7/1/1999		1412	279	
7/2/1999		1423	269	
7/3/1999		1421	260	
7/4/1999		1397	265	
7/5/1999		1355	266	
7/6/1999			238	
7/7/1999		1309	265	
7/8/1999		1231	231	
7/9/1999		1172	233	
7/10/1999		1170	252	
7/11/1999			238	
7/12/1999		1072	228	
7/13/1999		990	225	
7/14/1999		978	217	
7/15/1999		1006	235	
7/16/1999		1004	246	
7/17/1999		949	259	
7/18/1999		856	226	
7/19/1999		871	211	
7/20/1999		861	206	
7/21/1999		809	199	
7/22/1999		800	190	
7/23/1999		801	215	
7/24/1999		795	198	
7/25/1999		852	178	
7/26/1999		647	158	
7/27/1999		242	158	
7/28/1999		717	200	
7/29/1999		799	156	
7/30/1999		793	152	
8/4/1999		0	15	
8/5/1999		0	7	
8/6/1999		0	20	
8/7/1999		11	15	
8/8/1999		0	11	
8/9/1999		0	0	
8/10/1999		108	34	
8/11/1999		204	52	

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
8/12/1999		366	96	
8/13/1999		449	107	
8/14/1999		504	97	
8/15/1999		520	105	
8/16/1999		465	89	
8/17/1999		464	105	
8/18/1999		433	96	
8/19/1999		532	120	
8\20\99		816	166	
8/21/1999		934	177	
8/22/1999		931	170	
8/23/1999		972	193	
8/24/1999		940	191	
8/25/1999		914	181	
8/26/1999		962	179	
8/27/1999		978	201	
8/28/1999		919	155	
8/29/1999		837	146	
8/30/1999		722	128	
8/31/1999		679	119	
9/1/1999		704	104	
9/2/1999		707	101	
9/3/1999		731	112	
9/6/1999		773	118	
9/7/1999		690	109	
9/8/1999		765	177	
9/9/1999		731	111	
9/10/1999		668	78	
9/11/1999		723	89	
9/12/1999		652	110	
9/13/1999		604	112	
9/14/1999		584	54	
9/15/1999		545	56	
9/16/1999		550	64	
9/17/1999		568	86	
9/18/1999		543	115	
9/19/1999		584	103	
9/20/1999		546	123	
9/21/1999		605	86	
9/22/1999		612	115	
9/23/1999		632	120	
9/24/1999		658	114	
9/25/1999		763	123	
9/26/1999		787	98	
9/27/1999		801	94	
9/28/1999		776	57	
9/29/1999		677	74	
9/30/1999		536	73	
10/1/1999		450	65	
10/3/1999		233	28	

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
10/4/1999		355	80	
10/5/1999		475	56	
10/6/1999		655	104	
10/7/1999		657	84	
10/8/1999		641	114	
10/9/1999		649	95	
10/10/1999		644	75	
10/11/1999		543	91	
10/12/1999		612	86	
10/13/1999		622	88	
10/14/1999		718	54	
10/15/1999		732	80	
10/16/1999		677	132	
10/17/1999		789	155	
10/18/1999		334	194	
10/19/1999		629	88	
10/20/1999		777	111	
10/21/1999		763	142	
10/22/1999		766	111	
10/23/1999		791	92	
10/24/1999		775	102	
10/25/1999		654	81	
10/26/1999		654	80	
10/27/1999		689	64	
10/28/1999		653	110	
10/29/1999		809	175	
10/31/1999		663	195	
11/1/1999		616	149	
11/2/1999		605	165	0.0
11/3/1999		716	150	
11/4/1999		968	220	
11/5/1999		1283	267	
11/5/1999		1006	196	
11/6/1999		1012	206	
11/6/1999		1050	268	
11/7/1999		1057	253	
11/7/1999		1048	266	
11/8/1999		1050	282	
11/8/1999		1054	297	
11/9/1999		1055	288	
11/9/1999		1024	247	
11/10/1999		1021	245	
11/11/1999		983	259	
11/12/1999		937	242	
11/13/1999		993	271	
11/14/1999		952	259	
11/15/1999		926	244	
11/16/1999		941	232	
11/17/1999		1134	208	
11/18/1999		783	276	

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
11/19/1999		693	273	
11/20/1999		861	177	
11/21/1999		1121	227	
11/22/1999		879	230	
11/23/1999		866	223	
11/24/1999		918	239	
11/25/1999		895	210	
11/26/1999		900	225	
11/27/1999		878	223	
11/28/1999		926	284	
11/29/1999		1182	227	
11/30/1999		785	237	
12/1/1999		686	222	
12/2/1999		442	200	
12/3/1999		355	171	
12/4/1999		222	217	
12/5/1999		185	166	
12/6/1999		261	133	
12/7/1999		315	122	
12/8/1999		172	57	
12/9/1999		383	107	
12/9/1999		390		
12/10/1999		355	84	
12/11/1999		376	78	
12/12/1999		710	147	
12/13/1999		829	185	
12/14/1999		938	218	
12/15/1999		1113	257	
12/16/1999		1077	251	
12/17/1999		1154	260	
12/18/1999		1155	264	
12/19/1999		1201	275	
12/20/1999		1211	288	
12/21/1999		1266	274	
12/22/1999		1175	276	
12/23/1999		1044	241	
12/24/1999		989	280	
12/25/1999		952	290	
12/26/1999		996	295	
12/27/1999		919	266	
12/28/1999		864	244	
12/29/1999		843	240	
12/30/1999		821	237	
12/31/1999		810	230	
1/1/2000		783	230	
1/2/2000		718	211	
1/3/2000		653	157	
1/4/2000		640	139	
1/5/2000		633	144	
1/6/2000		609	169	

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
1/7/2000		611	150	
1/8/2000		603	149	
1/9/2000		608	147	
1/10/2000		594	138	
1/11/2000		612	129	
1/12/2000		612	133	
1/13/2000		785	177	
1/14/2000		778	181	
1/15/2000		748	178	
1/16/2000		833	176	
1/17/2000		813	185	
1/18/2000		782	253	
1/19/2000		740	177	
1/20/2000		806	189	
1/21/2000		900	226	
1/22/2000		932	230	
1/23/2000		1024	245	
1/24/2000		1069	245	
1/25/2000		962	176	
1/26/2000		944	202	
1/27/2000		949	123	
1/28/2000		1283	145	
1/29/2000		987	245	
1/30/2000		994	260	
1/31/2000		1030	242	
2/2/2000		1121	240	
2/4/2000		1301	333	
2/7/2000		1397	366	
2/9/2000		1266	349	
2/11/2000		1241	345	
2/14/2000		1132	301	
2/16/2000		1089	293	
2/18/2000		1183	309	
2/21/2000		1198	307	
2/23/2000		1178	307	
2/25/2000		1047	276	
2/28/2000		1037	310	
2/29/2000		1075	293	
3/3/2000		1188	285	
3/5/2000		1417	423	
3/8/2000		1410	451	
3/10/2000		1463	451	
3/11/2000		1446	463	
3/13/2000		1404	357	
3/15/2000		1312	336	
3/17/2000		1170	306	
3/19/2000		1053	282	
3/22/2000		920	279	
3/24/2000		814	252	
3/27/2000		1204	301	

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
3/29/2000		1247	304	
3/31/2000		1347	325	
4/3/2000		1228	280	
4/5/2000		1222	327	
4/7/2000		1222	333	
4/10/2000		787	333	
4/12/2000		1080	487	
4/14/2000		1503	456	
4/17/2000		1503	411	
4/19/2000		1230	370	
4/21/2000		1251	329	
4/24/2000		1379	328	
4/26/2000		1357	364	
4/28/2000		1312	324	
5/1/2000		1012	265	
5/3/2000		1365	318	
5/5/2000		1082	261	
5/8/2000		1293	319	
5/10/2000		1724	346	
5/12/2000		1461	448	
5/15/2000		1620	427	
5/17/2000		1582	388	
5/19/2000		1664	342	
5/22/2000		1303	285	
5/23/2000		983	193	
5/25/2000		753	135	
5/29/2000		1025	170	
5/31/2000		1182	232	
6/2/2000		448	94	
6/4/2000		1221	351	
6/7/2000		1651	357	
6/9/2000		1620	324	
6/12/2000		1602	49	
6/14/2000		1624	356	
6/16/2000		1755	351	
6/19/2000		1761	378	
6/21/2000		2036	401	
6/23/2000		2078	424	
6/26/2000		1988	402	
6/28/2000		1800	424	
6/30/2000		1770	483	
7/2/2000		1681	500	
7/5/2000		1651	449	
7/7/2000		1752	422	
7/10/2000		1676	393	
7/12/2000		1402	328	
7/14/2000		1174	281	
7/17/2000		1008	222	
7/19/2000		1042	209	
7/22/2000		908	220	

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
7/24/2000		1127	215	
7/26/2000		1284	312	
7/28/2000		1301	318	
7/31/2000		1418	369	
8/2/2000		1646	379	
8/4/2000		1895	444	
8/7/2000		2071	595	
8/11/2000		1442	401	
8/14/2000		1554	298	
8/16/2000		1619	305	
8/18/2000		1924	410	
8/21/2000		1847	432	
8/23/2000		1774	662	
8/25/2000		1996	536	
8/28/2000		2388	554	
8/30/2000		2536	657	
9/1/2000		2561	463	
9/4/2000		2490	443	
9/6/2000		2332	509	
9/8/2000		2476	563	
9/11/2000		2346	467	
9/13/2000		2220	479	
9/15/2000		2049	527	
9/18/2000		1947	493	
9/20/2000		1865	504	
9/22/2000		1581	447	
9/25/2000		1836	529	
9/26/2000		1191	308	
9/29/2000		1133	310	
10/1/2000		1441	365	
10/4/2000		1472	385	
10/6/2000		1717	452	
10/9/2000		1508	423	
10/11/2000		1528	432	
10/13/2000		1439	469	
10/16/2000		1391	483	
10/18/2000		1303	439	
10/20/2000		1216	439	
10/23/2000		1165	449	
10/25/2000		1353	514	
10/27/2000		1474	531	
10/30/2000		1188	376	
11/1/2000		1162	374	
11/3/2000		1181	412	
11/6/2000		1142	335	
11/8/2000		1181	350	
11/10/2000		971	293	
11/13/2000		870	251	
11/15/2000		920	243	
11/17/2000		998	248	

Electronic Filing: Received, Clerk's Office 03/06/2020

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
11/20/2000		649	120	
11/22/2000		883	211	
11/24/2000		789	190	
11/27/2000		828	192	
11/29/2000		886	202	
12/1/2000		993	239	
12/4/2000		1098	246	
12/6/2000		985	204	
12/8/2000		899	206	
12/11/2000		912	249	
12/13/2000		1171	369	
12/15/2000		887	271	
12/18/2000		815	209	
12/20/2000		783	265	
12/22/2000		786	254	
12/25/2000		773	255	
12/27/2000		664	232	
12/29/2000		694	208	
1/1/2001		848	261	
1/3/2001		967	262	
1/5/2001		891	222	
1/8/2001		742	150	
1/10/2001		466	113	
1/15/2001		327	87	
1/17/2001		408	94	
1/19/2001		624	140	
1/22/2001		753	192	
1/24/2001		974	283	
1/26/2001		961	264	
1/29/2001		946	246	
2/5/2001		1121	301	
2/7/2001		1172	305	
2/9/2001		1113	253	
2/12/2001		1098	344	
2/14/2001		985	258	
2/15/2001		1036	219	
2/19/2001		964	248	
2/21/2001		913	244	
2/23/2001		901	271	
2/26/2001		1086	299	
2/28/2001		995	271	
3/2/2001		929	254	
3/5/2001		904	205	
3/7/2001		1020	312	
3/9/2001		1059	295	
3/12/2001		1284	310	
6/23/2001		1465		
5/8/2008			<20	
5/12/2008		1200		67.0
5/28/2008		1215		0.0

Electronic Filing: Received, Clerk's Office 03/06/2020

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
6/2/2008		431		0.0
6/12/2008		869		
6/13/2008		481		0.0
7/3/2008		519		0.0
8/14/2008		1191		0.0
12/22/2008		289	125	0.0
12/26/2008			49	0.0
12/27/2008		438	105	0.0
12/28/2008		512	98	0.0
3/31/2009		279	100	0.0
3/31/2009		299	63	0.0
4/1/2009		297	57	0.0
4/1/2009		361	59	0.0
4/2/2009		453	53	0.0
4/2/2009		453	63	0.0
4/3/2009		510	71	0.0
4/3/2009		928	70	0.0
4/4/2009		483	90	0.0
4/4/2009		629	91	0.0
4/5/2009		589	88	0.0
4/5/2009		378	96	0.0
4/6/2009		525	85	0.0
4/6/2009		515	67	0.0
4/7/2009		152	69	0.0
8/7/2009		32	0	
1/12/2010				0.0
11/10/2010				0.0
4/16/2011				0.0
6/5/2013		458	109	0.0
6/6/2013		511	112	0.0
6/7/2013		490	114	0.0
6/8/2013		483	108	0.0
6/9/2013		453	88	0.0
6/10/2013		409	89	0.0
6/11/2013		395	77	0.0
6/17/2013		426	69	0.0
6/18/2013		351	60	0.0
9/30/2013	11:10	651		127.0
10/1/2013	10:30		195	124.0
10/2/2013	6:15	634	159	110.0
10/3/2013	6:20	686	135	114.0
10/4/2013	7:00	631	130	115.0
10/5/2013	8:00	503	197	36.0
10/7/2013	6:55	472	0	71.0
10/8/2013	7:00	250	229	60.0
10/9/2013	6:10	0	233	27.0
10/10/2013	6:00	355	176	0.0
10/11/2013	6:00	373	157	0.0
10/12/2013	6:00	407	127	0.0
10/13/2013	6:00	308	115	0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
10/14/2013	6:00	451	119	0.0
10/15/2013	6:00	502	124	0.0
10/16/2013	6:00	349	140	0.0
10/17/2013	6:00			0.0
10/18/2013	10:00			0.0
10/19/2013	6:20			0.0
10/20/2013	6:30			68.0
10/21/2013	6:30			109.0
10/22/2013	6:20			125.0
10/23/2013	6:30			67.0
10/24/2013	6:30			0.0
10/25/2013	6:15			0.0
10/26/2013	6:00			0.0
10/27/2013	6:00			0.0
10/28/2013	6:00			0.0
10/29/2013	6:00			0.0
10/30/2013	6:00			0.0
10/31/2013	6:00			0.0
11/1/2013	6:00			0.0
11/4/2013	6:00			0.0
11/5/2013	6:00			0.0
11/6/2013	6:00			0.0
11/11/2013	6:00			0.0
11/12/2013	6:15			0.0
12/5/2013	6:00			0.0
12/6/2013	6:00			0.0
12/7/2013	6:00			0.0
12/8/2013	6:00			0.0
12/9/2013	6:00			0.0
12/13/2013	6:00			0.0
12/17/2013	6:00			0.0
12/18/2013	6:00			0.0
12/19/2013	6:15			0.0
12/20/2013	6:20			0.0
12/31/2013	6:30			0.0
1/1/2014	6:15			0.0
1/2/2014	6:15			0.0
1/3/2014	6:00			0.0
1/4/2014	6:00			0.0
1/5/2014	6:00			0.0
1/6/2014	6:00			0.0
1/7/2014	6:00			0.0
1/8/2014	6:00			0.0
1/10/2014	6:15			0.0
1/11/2014	6:30			0.0
1/12/2014	6:30			0.0
1/13/2014	6:30			0.0
1/14/2014	6:15			0.0
1/15/2014	6:30			0.0
1/16/2014	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
1/17/2014	6:40			0.0
1/18/2014	6:20			0.0
1/19/2014	6:00			0.0
1/20/2014	6:00			0.0
1/21/2014	6:00			0.0
1/22/2014	6:00			0.0
1/23/2014	6:00			0.0
1/24/2014	6:00			0.0
1/25/2014	6:00			0.0
1/26/2014	6:00			0.0
1/27/2014	6:00			0.0
1/28/2014	6:00			0.0
1/29/2014	6:00			0.0
1/30/2014	6:00			0.0
1/31/2014	6:00			0.0
2/1/2014	5:45			0.0
2/2/2014	5:45			0.0
2/3/2014	6:15			0.0
2/4/2014	6:00			0.0
2/5/2014	6:30			0.0
2/6/2014	6:45			0.0
2/7/2014	6:00			0.0
2/8/2014	6:00			0.0
2/9/2014	6:20			0.0
2/10/2001	6:00			0.0
2/11/2014	6:00			0.0
2/12/2014	6:00			0.0
2/13/2014	6:00			0.0
2/14/2014	6:00			0.0
2/15/2014	6:00			0.0
2/17/2014	6:00			0.0
2/18/2014	6:00			0.0
2/19/2014	6:00			0.0
2/20/2014	6:30			0.0
2/21/2014	6:30			0.0
2/24/2014	6:15			0.0
2/25/2014	6:20			0.0
2/26/2014	6:50			0.0
2/27/2014	6:00			0.0
2/28/2014	6:00			0.0
3/1/2014	6:00			0.0
3/2/2014	6:00			0.0
3/3/2014	6:00			0.0
3/4/2014	6:00			0.0
3/5/2014	6:00			0.0
3/6/2014	6:30			0.0
3/7/2014	6:20			0.0
3/8/2014	6:20			0.0
3/9/2014	6:00			0.0
3/10/2014	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
3/11/2014	6:00			0.0
3/12/2014	6:00			0.0
3/13/2014	6:00			0.0
3/14/2014	6:15			0.0
3/15/2014	7:00			0.0
3/16/2014	5:45			0.0
3/17/2014	6:15			0.0
3/18/2014	6:25			0.0
3/19/2014	6:30			0.0
3/20/2014	6:00			0.0
3/21/2014	6:00			0.0
3/24/2014	6:00			0.0
3/25/2014	6:00			0.0
3/26/2014	6:00			0.0
3/27/2014	6:00			0.0
3/28/2014	6:15			0.0
3/29/2014	6:00			0.0
3/30/2014	6:00			0.0
3/31/2014	6:00			0.0
4/1/2014	6:00			0.0
4/2/2014	6:00			0.0
4/3/2014	6:00			0.0
4/4/2014	6:00			0.0
4/5/2014	6:10			0.0
4/6/2014	6:15			0.0
4/7/2014	9:30			0.0
4/8/2014	6:20			0.0
4/9/2014	6:00			0.0
4/10/2014	6:00			0.0
4/11/2014	6:00			0.0
4/12/2014	6:00			0.0
4/13/2014	6:00			0.0
4/14/2014	6:00			0.0
4/15/2014	6:00			0.0
4/16/2014	6:00			0.0
4/17/2014	6:00			0.0
4/18/2014	6:00			0.0
4/19/2014	6:00			0.0
4/20/2014	6:00			0.0
4/21/2014	6:00			0.0
4/22/2014	6:00			0.0
4/23/2014	6:00			0.0
4/24/2014	6:00			0.0
4/25/2014	6:00			0.0
4/26/2014	6:00			0.0
4/27/2014	6:00			0.0
4/28/2014	7:00			0.0
4/29/2014	6:30			0.0
4/30/2014	6:00			0.0
5/1/2014	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
5/2/2014	6:00			0.0
5/3/2014	6:00			0.0
5/4/2014	6:00			0.0
5/5/2014	6:00			0.0
5/6/2014	6:00			0.0
5/7/2014	6:00			0.0
5/8/2014	6:00			0.0
5/9/2014	6:00			0.0
5/10/2014	6:00			0.0
5/11/2014	6:00			0.0
5/12/2014	6:00			0.0
5/13/2014	6:00			0.0
5/14/2014	6:00			0.0
5/15/2014	6:00			0.0
5/16/2014	6:30			0.0
5/17/2014	6:10			0.0
5/18/2014	6:20			0.0
5/19/2014	6:20			0.0
5/20/2014	6:00			0.0
5/21/2014	6:20			0.0
5/22/2014	6:00			0.0
5/23/2014	6:00			0.0
5/24/2014	6:00			0.0
5/25/2014	6:00			0.0
5/26/2014	6:00			0.0
5/27/2014	6:00			0.0
5/28/2014	6:00			0.0
5/29/2014	6:00			0.0
5/30/2014	6:00			0.0
5/31/2014	6:00			0.0
6/1/2014	6:00			0.0
6/2/2014	6:00			0.0
6/3/2014	1:00	584	223	
6/3/2014	6:00			0.0
6/4/2014	6:00	683	201	0.0
6/5/2014	6:00	723	178	0.0
6/6/2014	7:00	672	170	0.0
7/15/2014	19:00	650	145	0.0
7/16/2014	8:15	589	165	0.0
7/19/2014	6:10			0.0
7/20/2014	6:05			0.0
7/21/2014	6:00			0.0
7/22/2014	6:20			0.0
7/23/2014	6:10			0.0
7/24/2014	6:00			0.0
7/25/2014	6:00			0.0
7/26/2014	6:00			0.0
7/27/2014	6:00			0.0
7/28/2014	6:00			0.0
7/29/2014	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
7/30/2014	6:00			0.0
7/31/2014	6:00			0.0
8/1/2014	6:00			0.0
8/2/2014	6:00			0.0
8/3/2014	6:00			0.0
8/4/2014	6:00			0.0
8/5/2014	6:00			0.0
8/6/2014	6:00			0.0
8/7/2014	6:50			0.0
8/8/2014	6:45			0.0
8/9/2014	6:10			0.0
8/10/2014	6:00			0.0
8/11/2014	6:00			0.0
8/12/2014	6:15			0.0
8/13/2014	6:15			0.0
8/14/2014	6:00			0.0
8/15/2014	6:00			0.0
8/16/2014	6:00			0.0
8/17/2014	6:00			0.0
8/18/2014	6:00			0.0
8/19/2014	6:00			0.0
8/20/2014	6:00			0.0
8/21/2014	6:00			0.0
8/22/2014	6:00			0.0
8/23/2014	6:00			0.0
8/24/2014	6:00			0.0
8/25/2014	6:00			0.0
8/26/2014	6:00			0.0
8/27/2014	6:00			0.0
8/28/2014	6:15			0.0
8/29/2014	6:15			0.0
8/30/2014	6:05			0.0
8/31/2014	6:05			0.0
9/1/2014	6:00			0.0
9/2/2014	6:00			0.0
9/3/2014	6:00			0.0
9/4/2014	6:00			0.0
9/5/2014	6:00			0.0
9/6/2014	6:00			0.0
9/7/2014	6:00			0.0
9/8/2014	6:00			0.0
9/9/2014	6:00			0.0
9/10/2014	6:00			0.0
9/11/2014	6:00			0.0
9/12/2014	6:00			0.0
9/13/2014	6:00			0.0
9/14/2014	6:00			0.0
9/15/2014	6:00			0.0
9/16/2014	6:00			0.0
9/17/2014	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
9/18/2014	6:00			0.0
9/19/2014	6:00			0.0
9/20/2014	6:00			0.0
9/21/2014	6:00			0.0
9/22/2014	6:00			0.0
9/23/2014	6:30			0.0
9/24/2014	6:00			0.0
9/25/2014	6:00			0.0
9/26/2014	6:00			0.0
9/27/2014	6:00			0.0
9/28/2014	6:00			0.0
9/29/2014	6:00			0.0
9/30/2014	6:00			0.0
10/1/2014	6:00			0.0
10/2/2014	6:00			0.0
10/3/2014	6:00			0.0
10/4/2014	6:00			0.0
10/5/2014	6:00			0.0
10/6/2014	6:00			0.0
10/7/2014	6:00			0.0
10/8/2014	6:00			0.0
10/9/2014	6:00			0.0
10/10/2014	6:00			0.0
10/11/2014	6:00			0.0
10/12/2014	6:40			0.0
10/13/2014	6:10			0.0
10/14/2014	6:25			0.0
10/15/2014	6:00			0.0
10/16/2014	6:00			0.0
10/17/2014	6:00			0.0
10/18/2014	6:00			0.0
10/19/2014	6:00			0.0
10/20/2014	6:00			0.0
10/21/2014	6:00			0.0
10/22/2014	6:00			0.0
10/23/2014	6:00			0.0
10/24/2014	6:00			0.0
10/25/2014	6:00			0.0
10/26/2014	6:00			0.0
10/27/2014	6:00			0.0
10/28/2014	6:00			0.0
10/29/2014	6:00			0.0
10/30/2014	6:00			0.0
10/31/2014	6:00			0.0
11/1/2014	6:00			0.0
11/2/2014	6:00			0.0
11/3/2014	6:00			0.0
11/4/2014	6:00			0.0
11/6/2014	6:00			0.0
11/7/2014	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
11/9/2014	6:00			0.0
11/10/2014	6:00			0.0
11/11/2014	6:00			0.0
11/12/2014	6:00			0.0
11/13/2014	6:00			0.0
11/14/2014	6:00			0.0
11/15/2014	6:00			0.0
11/16/2014	6:00			0.0
11/17/2014	6:00			0.0
11/18/2014	6:00			0.0
11/19/2014	6:00			0.0
11/20/2014	6:00			0.0
11/21/2014	6:00			0.0
11/22/2014	6:00			0.0
11/23/2014	6:00			0.0
11/24/2014	6:00			0.0
11/25/2014	6:00			0.0
11/26/2014	6:00			0.0
11/27/2014	6:00			0.0
11/28/2014	6:00			0.0
11/29/2014	6:00			0.0
11/30/2014	6:00			0.0
12/1/2014	6:10			0.0
12/2/2014	6:00			0.0
12/3/2014	6:00			0.0
12/4/2014	6:00			0.0
12/5/2014	6:00			0.0
12/6/2014	6:00			0.0
12/7/2014	6:00			0.0
12/8/2014	6:00			0.0
12/9/2014	6:00			0.0
12/10/2014	6:00			0.0
12/11/2014	6:00			0.0
12/12/2014	6:00			0.0
12/13/2014	6:00			0.0
12/14/2014	6:00			0.0
12/15/2014	6:00			0.0
12/16/2014	6:00			18.0
12/17/2014	11:45			44.0
12/18/2014	6:00			105.0
12/19/2014	6:00			123.0
12/20/2014	6:40			80.0
12/21/2014	6:00			113.0
12/22/2014	6:00			98.0
12/23/2014	6:00			22.0
12/24/2014	6:00			92.0
12/25/2014	6:00			16.0
12/26/2014	6:00			0.0
12/27/2014	6:00			0.0
12/28/2014	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
12/29/2014	6:00			0.0
12/30/2014	6:00			0.0
12/31/2014	6:00			0.0
1/1/2015	6:00			0.0
1/2/2015	6:00			0.0
1/3/2015	6:00			0.0
1/4/2015	6:00			0.0
1/5/2015	6:00			0.0
1/6/2015	6:00			0.0
1/7/2015	6:00			0.0
1/8/2015	6:00			0.0
1/9/2015	6:00			0.0
1/10/2015	6:00			0.0
1/11/2015	6:00			0.0
1/12/2015	6:00			0.0
1/13/2015	6:00			0.0
1/14/2015	6:00			0.0
1/15/2015	6:00			0.0
1/16/2015	6:00			0.0
1/17/2015	6:00			0.0
1/18/2015	6:00			0.0
1/19/2015	6:00			0.0
1/20/2015	6:00			0.0
1/21/2015	6:00			0.0
1/22/2015	6:00			0.0
1/23/2015	10:00			0.0
1/24/2015	6:00			0.0
1/25/2015	6:00			0.0
1/26/2015	6:00			0.0
1/27/2015	6:00	272	113	0.0
1/28/2015	6:00	475	99	0.0
1/29/2015	6:00	540	101	0.0
1/30/2015	6:00	669	103	0.0
2/4/2015	6:00			0.0
2/5/2015	6:00			0.0
2/6/2015	6:00			0.0
2/7/2015	6:00			0.0
2/8/2015	6:00			0.0
2/9/2015	6:00			0.0
2/9/2015	18:00			0.0
2/10/2015	6:00			0.0
2/11/2015	6:00			0.0
2/12/2015	6:00			0.0
2/13/2015	6:00			0.0
2/14/2015	6:00			0.0
2/15/2015	6:00			0.0
2/16/2015	6:00			0.0
2/17/2015	6:00			0.0
2/18/2015	6:00			0.0
2/19/2015	6:00			0.0

Electronic Filing: Received, Clerk's Office 03/06/2020

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
2/20/151	6:00			0.0
2/21/2015	6:00			12.0
2/22/2015	6:00			15.0
2/23/2015	6:00			30.0
2/24/2015	6:00			17.0
2/25/2015	6:00			18.0
2/26/2015	6:00			0.0
2/27/2015	6:00			0.0
2/28/2015	6:00			0.0
3/1/2015	6:00			0.0
3/2/2015	6:00			0.0
3/3/2015	6:00			0.0
3/4/2015	6:00			0.0
3/5/2015	6:00			0.0
3/6/2015	6:00			0.0
3/7/2015	6:00			0.0
3/8/2015	6:00			0.0
3/9/2015	6:00			0.0
3/10/2015	6:00	82	82	0.0
3/11/2015	6:00	440	116	0.0
3/12/2015	6:00	377	137	0.0
3/13/2015	6:00	366	112	0.0
4/15/2015	18:00	991	230	
4/16/2015	18:00	0	220	0.0
4/17/2015	18:00	0	214	0.0
4/18/2015	18:00	0	192	0.0
4/19/2015	18:00	478	41	0.0
4/20/2015	18:00			0.0
4/21/2015	6:00			0.0
4/22/2015	6:00			0.0
4/23/2015	6:00			0.0
4/24/2015	6:00			0.0
4/25/2015	6:00			0.0
4/26/2015	6:00			52.0
4/27/2015	6:00			42.0
4/28/2015	6:00			72.0
4/28/2015	10:20	683		
4/29/2015	6:00	713	206	97.0
4/30/2015	6:00	660	181	162.0
5/1/2015	6:00	627	178	185.0
5/2/2015	6:00	621	160	168.0
5/3/2015	6:00	581	145	171.0
5/4/2015	6:00	554	150	162.0
5/5/2015	6:00	125	51	30.0
5/6/2015	6:00	528	133	144.0
5/7/2015	6:00	494	157	148.0
5/8/2015	6:00	595	181	141.0
5/9/2015	6:00	711	204	135.0
5/10/2015	6:00	717	180	136.0
5/11/2015	6:00	712	205	149.0

Electronic Filing: Received, Clerk's Office 03/06/2020

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
5/11/2015	18:00	612	197	129.0
5/12/2015	6:00	652	160	132.0
5/13/2015	6:00	748	136	153.0
5/13/2015	18:00	630	147	
5/14/2015	6:00			126.0
5/15/2015	HY18MDB07			124.0
5/16/2015	6:00			133.0
5/17/2015	6:00			136.0
5/18/2015	6:00			141.0
5/19/2015	6:00			140.0
5/20/2015	6:00			130.0
5/21/2015	6:00			134.0
5/22/2015	6:00			114.0
5/23/2015	6:00			111.0
5/24/2015	6:00			107.0
5/25/2015	6:00			47.0
5/26/2015	6:00			0.0
5/27/2015	6:00			0.0
5/28/2015	6:00			0.0
5/29/2015	6:00			0.0
5/30/2015	6:00			0.0
5/31/2015	6:00			0.0
6/1/2015	6:00			0.0
6/2/2015	6:00			0.0
6/3/2015	6:00			0.0
6/4/2015	6:00			0.0
6/5/2015	6:00			0.0
6/6/2015	6:00			0.0
6/7/2015	6:00			0.0
6/8/2015	6:00			0.0
6/9/2015	6:00			0.0
6/10/2015	6:00			0.0
6/11/2015	6:00			0.0
6/12/2015	6:00			0.0
6/13/2015	6:00			0.0
6/14/2015	6:00			0.0
6/15/2015	6:00			0.0
6/16/2015	6:00			0.0
6/17/2015	6:00			0.0
6/18/2015	6:00			0.0
6/19/2015	6:00			0.0
6/20/2015	6:00			0.0
6/21/2015	6:00			0.0
6/22/2015	6:00			0.0
6/23/2015	6:00			0.0
6/24/2015	6:00			0.0
6/25/2015	6:00			0.0
6/26/2015	6:00			0.0
6/27/2015	6:00			0.0
6/28/15	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
6/29/2015	6:00			0.0
6/30/2015	6:00			0.0
7/1/2015	6:00			0.0
7/2/2015	6:00			0.0
7/3/2015	6:00			0.0
7/4/2015	6:00			0.0
7/5/2015	6:00			0.0
7/6/2015	6:00			0.0
7/7/2015	6:00			0.0
7/8/2015	6:00			0.0
7/9/2015	6:00			0.0
7/10/2015	6:00			0.0
7/11/2015	6:00			0.0
7/12/2015	6:00			0.0
7/13/2015	6:00			0.0
7/14/2015	6:00			0.0
7/15/2015	6:00			0.0
7/16/2015	6:00			0.0
7/17/2015	6:00			0.0
7/18/2015	6:00			0.0
7/19/2015	6:00			0.0
7/20/2015	6:00			0.0
7/21/2015	6:00			0.0
7/22/2015	6:00			0.0
7/23/2015	6:00			0.0
7/24/2015	6:00			0.0
7/25/2015	6:00			0.0
7/26/2015	6:00			0.0
7/27/2015	6:00			0.0
7/28/2015	6:00			0.0
7/29/2015	6:00			0.0
7/30/2015	6:00			0.0
7/31/2015	6:00			0.0
8/1/2015	6:00			0.0
8/2/2015	6:00			0.0
8/3/2015	6:00			0.0
8/4/2015	6:00			0.0
8/5/2015	6:00			0.0
8/6/2015	6:00			0.0
8/7/15	6:00			0.0
8/8/2015	6:00			0.0
8/9/2015	6:00			0.0
8/10/2015	6:00			0.0
8/11/2015	6:00			0.0
8/12/2015	6:00			0.0
8/13/2015	6:00			0.0
8/14/2015	6:00			0.0
8/15/2015	6:00			0.0
8/16/2015	6:00			0.0
8/17/2015	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
8/18/2015	6:00			0.0
8/19/2015	6:00			0.0
8/20/2015	6:00			0.0
8/21/2015	6:00			0.0
8/22/2015	6:00			0.0
8/23/2015	6:00			0.0
8/24/2015	6:00			0.0
8/25/2015	6:00			0.0
8/26/2015	6:00			0.0
8/27/2015	6:00			0.0
8/28/2015	6:00			0.0
8/29/2015	6:00			0.0
8/30/2015	6:00			0.0
8/31/2015	6:00			0.0
9/1/2015	6:00			0.0
9/2/2015	6:00			0.0
9/3/2015	6:00			0.0
9/4/2015	6:00			0.0
9/5/2015	6:00			0.0
9/6/2015	6:00			0.0
9/7/2015	6:00			0.0
9/8/2015	6:00			0.0
9/9/2015	6:00			0.0
9/10/2015	6:00			0.0
9/11/2015	6:00			0.0
9/12/2015	6:00			0.0
9/13/2015	6:00			0.0
9/14/2015	6:00			0.0
9/15/2015	6:00			0.0
9/16/2015	6:00			0.0
9/17/2015	6:00			0.0
9/18/2015	6:00			0.0
9/19/2015	6:00			0.0
9/20/2015	6:00			0.0
9/21/2015	6:00			0.0
9/22/2015	6:00			0.0
9/23/2015	6:00			0.0
9/24/2015	6:00			0.0
9/25/2015	6:00			0.0
9/26/2015	6:00			0.0
9/27/2015	6:00			0.0
9/28/2015	6:00			0.0
9/29/2015	6:00			0.0
9/30/2015	6:00			0.0
10/1/2015	6:00			0.0
10/2/2015	6:00			0.0
10/3/2015	6:00			0.0
10/4/2015	6:00			0.0
10/5/2015	6:00			0.0
10/6/2015	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
10/7/2015	6:00			0.0
10/8/2015	6:00			0.0
10/9/2015	6:00			0.0
10/10/2015	6:00			0.0
10/11/2015	6:00			0.0
10/12/2015	6:00			0.0
10/13/2015	6:00			0.0
10/14/2015	6:00			0.0
10/15/2015	6:00			0.0
10/16/2015	6:00			0.0
10/17/2015	6:00			0.0
10/18/2015	6:00			0.0
10/22/2015	6:00			0.0
10/23/2015	6:00			0.0
10/24/2015	6:00			0.0
10/25/2015	6:00			0.0
10/26/2015	6:00			0.0
10/27/2015	6:00			0.0
10/28/2015	6:00			0.0
10/29/2015	6:00			0.0
10/30/2015	6:00	707		0.0
10/31/2015	6:00			0.0
11/1/2015	6:00			0.0
11/2/2015	6:00			0.0
11/3/2015	6:00			0.0
11/4/2015	6:00			0.0
11/5/2015	6:00			0.0
11/6/2015	6:00			0.0
11/7/2015	6:00			0.0
11/8/2015	6:00			0.0
11/9/2015	6:00			0.0
11/10/2015	6:00			0.0
11/11/2015	6:00			0.0
11/12/2015	6:00			0.0
11/13/2015	6:00			0.0
11/14/2015	6:00			0.0
11/15/2015	6:00			0.0
11/16/2015	6:00			0.0
11/17/2015	6:00			0.0
11/18/2015	6:00			0.0
11/19/2015	6:00			0.0
11/20/2015	6:00			0.0
11/21/2015	6:00			0.0
11/22/2015	6:00			0.0
11/23/2015	6:00			0.0
11/24/2015	6:00			0.0
11/25/2015	6:00			0.0
11/26/2015	6:00			0.0
11/27/2015	6:00			0.0
11/28/2015	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
11/29/2015	6:00			0.0
11/30/2015	6:00			0.0
12/1/2015	6:00			0.0
12/2/2015	6:00			0.0
12/3/2015	6:00			0.0
12/4/2015	6:00			0.0
12/6/2015	6:00			0.0
12/7/2015	6:00			0.0
12/8/2015	6:00	833		0.0
12/9/2015	6:00	435		0.0
12/10/2015	6:00	106		0.0
12/11/2015	6:00			0.0
12/12/2015	6:00			0.0
12/13/2015	6:00			0.0
12/14/2015	6:00			0.0
12/15/2015	6:00			0.0
12/16/2015	6:00			0.0
12/17/2015	6:00			0.0
12/18/2015	6:00			0.0
12/19/2015	6:00			0.0
12/20/2015	6:00			0.0
12/21/2015	6:00			0.0
12/22/2015	6:00			0.0
12/23/2015	6:00			0.0
12/24/2015	6:00			0.0
12/25/2015	6:00			0.0
12/26/2015	6:00			0.0
12/27/2015	6:00			0.0
12/28/2015	6:00			0.0
12/29/2015	6:00			0.0
12/30/2015	6:00			0.0
12/31/2015	6:00			2.0
1/1/2016	6:00			0.0
1/2/2016	6:00			0.0
1/3/2016	6:00			0.0
1/4/2016	6:00			0.0
1/5/2016	6:00			0.0
1/6/2016	6:00			0.0
1/7/2016	6:00			0.0
1/8/2016	6:00			0.0
1/9/2016	6:00			0.0
1/10/2016	6:00			0.0
1/11/2016	6:00			0.0
1/12/2016	6:00			0.0
1/13/2016	6:00			0.0
1/14/2016	6:00			0.0
1/15/2016	6:00			0.0
1/16/2016	6:00			0.0
1/17/2016	6:00			0.0
1/18/2016	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
1/19/2016	6:00			0.0
1/20/2016	6:00			0.0
1/21/2016	6:00			0.0
1/22/2016	6:00			0.0
1/23/2016	6:00			0.0
1/24/2016	6:00			0.0
1/25/2016	6:00			0.0
1/25/2016	18:00			0.0
1/26/2016	6:00			0.0
1/27/2016	6:00			0.0
1/28/2016	6:00			0.0
1/29/2016	6:00			0.0
1/30/2016	6:00			0.0
1/31/2016	6:00			0.0
2/1/2016	6:00			0.0
2/2/2016	6:00			0.0
2/3/2016	6:00			0.0
2/4/2016	6:00			0.0
2/5/2016	6:00			0.0
2/6/2016	6:00			0.0
2/7/2016	6:00			0.0
2/8/2016	6:00			0.0
2/9/2016	6:00			0.0
2/10/2016	6:00			0.0
2/11/2016	6:00			0.0
2/12/2016	6:00			0.0
2/13/2016	6:00			0.0
2/14/2016	6:00			0.0
2/15/2016	6:00			0.0
2/16/2016	6:00			0.0
2/17/2016	6:00			0.0
2/18/2016	6:00			0.0
2/19/2016	6:00			0.0
2/20/2016	6:00			0.0
2/21/2016	6:00			0.0
2/22/2016	6:00			0.0
2/23/2016	6:00			0.0
2/24/2016	6:00			0.0
2/25/2016	6:00			0.0
2/26/2016	6:00			0.0
2/27/2016	6:00			0.0
2/28/2016	6:00			0.0
2/29/2016	6:00			0.0
3/1/2016	6:00			0.0
3/2/2016	6:00			0.0
3/3/2016	6:00			0.0
3/3/2016	8:50	530	141	0.0
3/4/2016	6:00	507	203	0.0
3/5/2016	6:00	569	101	0.0
3/6/2016	6:00	345	112	0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
3/7/2016	6:00	249		0.0
3/8/2016	6:00			0.0
3/9/2016	6:00			0.0
3/10/2016	6:00			0.0
3/11/2016	6:00			0.0
3/12/2016	6:00			0.0
3/13/2016	6:00			0.0
3/14/2016	6:00			0.0
3/15/2016	6:00			0.0
3/16/2016	6:00			0.0
3/17/2016	6:00			0.0
3/18/2016	6:00			0.0
3/19/2016	6:00			0.0
3/20/2016	6:00			0.0
3/21/2016	6:00			0.0
3/22/2016	6:00			0.0
3/23/2016	6:00			0.0
3/24/2016	6:00			0.0
3/25/2016	6:00			0.0
3/26/2016	6:00			0.0
3/27/2016	6:00			0.0
3/28/2016	6:00			0.2
3/29/2016	6:00			0.2
3/30/2016	6:00			0.0
3/30/2016	6:30	148		
3/31/2016	6:00			0.0
4/1/2016	6:00			0.0
4/2/2016	6:00			0.0
4/3/2016	6:00			0.0
4/4/2016	6:00			0.0
4/5/2016	6:00			0.0
4/6/2016	6:00			0.0
4/7/2016	6:00			0.0
4/8/2016	6:00			0.0
4/9/2016	6:00			0.0
4/10/2016	6:00			0.0
4/11/2016	6:00			0.0
4/12/2016	6:00			0.0
4/13/2016	6:00			0.0
4/14/2016	6:00			0.0
4/15/2016	6:00			0.0
4/16/2016	6:00			0.0
4/17/2016	6:00			2.0
4/18/2016	6:00			0.0
4/19/2016	6:00			0.0
4/20/2016	6:00			0.2
4/21/2016	6:00			0.0
4/22/2016	6:00			0.0
4/23/2016	6:00			0.0
4/24/2016	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
4/25/2016	6:00			0.0
4/26/2016	6:00			0.4
4/27/2016	8:30			0.0
4/28/2016	6:00			0.0
4/29/2016	6:00			0.0
4/30/2016	6:00			0.4
5/1/2016	6:00			0.0
5/2/2016	6:00			0.3
5/3/2016	6:00			0.3
5/4/2016	6:00			0.0
5/5/2016	6:00			0.0
5/6/2016	6:00			0.0
5/7/2016	6:00			0.0
5/8/2016	6:00			0.0
5/9/2016	6:00			0.0
5/10/2016	6:00			0.0
5/11/2016	6:00			0.0
5/12/2016	6:00			0.3
5/13/2016	6:00			0.0
5/14/2016	6:00			0.0
5/15/2016	6:00			0.0
5/16/2016	6:00			0.0
5/17/2016	6:00			0.0
5/18/2016	6:00			0.0
5/19/2016	6:00			0.0
5/20/2016	6:00			0.0
5/21/2016	6:00			0.0
5/22/2016	6:00			0.0
5/23/2016	6:00			0.0
5/24/2016	6:00			0.0
5/25/2016	6:00			0.0
5/26/2016	6:00			0.0
5/27/2016	6:00			0.0
5/28/2016	11:10			0.0
5/29/2016	6:00			0.2
5/30/2016	6:00			0.5
5/31/2016	6:00			0.0
6/1/2016	6:00			0.0
6/2/2016	6:00			0.0
6/3/2016	6:00			0.0
6/4/2016	6:00			0.0
6/5/2016	6:00			0.0
6/6/2016	6:00			0.0
6/7/2016	6:00			0.0
6/8/2016	6:00			0.0
6/9/2016	6:00			0.0
6/10/2016	6:00			1.0
6/11/2016	6:00			0.0
6/12/2016	6:00			0.0
6/13/2016	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
6/14/2016	6:00			0.0
6/15/2016	6:00			0.0
6/16/2016	6:00			0.0
6/17/2016	6:00			0.0
6/18/2016	6:00			0.0
6/19/2016	6:00			0.3
6/20/2016	6:00			0.0
6/21/2016	6:00			0.2
6/22/2016	6:00			0.0
6/23/2016	6:00			0.0
6/24/2016	6:00			0.0
6/25/2016	6:00			0.0
6/26/2016	6:00			0.0
6/27/2016	6:00			0.0
6/28/2016	6:00			0.0
6/29/2016	6:00			0.0
6/30/2016	6:00			0.0
7/1/2016	6:00			0.0
7/2/2016	6:00			0.0
7/3/2016	6:00			0.0
7/4/2016	6:00			0.0
7/5/2016	6:00			0.0
7/6/2016	6:00			0.0
7/7/2016	7:00			0.0
7/8/2016	6:00			0.0
7/9/2016	6:00			0.0
7/10/2016	6:00			0.0
7/11/2016	6:00			0.0
7/12/2016	6:00			0.0
7/13/2016	6:00			0.0
7/14/2016	6:00			0.0
7/15/2016	6:00			0.0
7/16/2016	6:00			0.0
7/17/2016	6:00			0.0
7/18/2016	6:00			0.0
7/19/2016	6:00			0.0
7/20/2016	6:00			0.0
7/21/2016	6:00			0.0
7/22/2016	6:00			0.0
7/23/2016	6:00			0.4
7/24/2016	6:00			0.0
7/25/2016	6:00			0.0
7/26/2016	6:00			0.0
7/27/2016	6:00			0.0
7/28/2016	6:00			0.3
7/29/2016	6:00			0.0
7/30/2016	6:00			0.0
7/31/2016	6:00			0.0
8/1/2016	6:00			0.0
8/2/2016	6:00			0.4

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
8/3/2016	6:00			0.0
8/4/2016	6:00			0.0
8/5/2016	6:00			0.5
8/6/2016	6:00			0.6
8/7/2016	6:00			0.4
8/8/2016	6:00			0.9
8/9/2016	6:00			0.3
8/10/2016	6:00			0.6
8/11/2016	6:00			0.0
8/11/2016	9:00	369		
8/12/2016	6:00			0.4
8/12/2016	6:00	306		
8/13/2016	6:00			0.6
8/13/2016	6:00	298		
8/14/2016	6:00			1.7
8/14/2016	6:00	363		
8/15/2016	6:00	290		0.0
8/16/2016	6:00			0.0
8/17/2016	6:00			0.0
8/17/2016	10:40	185		
8/18/2016	6:00	352		0.0
8/19/2016	6:00			0.0
8/20/2016	6:00			0.0
8/21/2016	6:00			0.0
8/22/2016	6:00			0.0
8/26/2016	6:00			0.0
8/27/2016	6:00			0.9
8/28/2016	6:00			0.0
8/29/2016	6:00			0.0
8/30/2016	6:00			0.3
8/31/2016	6:00			0.0
9/1/2016	6:00			0.0
9/2/2016	6:00			0.1
9/3/2016	6:00			0.1
9/4/2016	6:00			0.6
9/5/2016	6:00			0.3
9/6/2016	6:00			0.1
9/7/2016	6:00			0.0
9/8/2016	6:00			0.0
9/9/2016	6:00			0.0
9/10/2016	6:00			0.2
9/11/2016	6:00			0.1
9/12/2016	6:00			0.4
9/13/2016	6:00			0.0
9/14/2016	6:00			0.0
9/15/2016	6:00			0.3
9/16/2016	6:00			0.3
9/17/2016	6:00			0.0
9/18/2016	6:00			0.0
9/19/2016	6:00			0.1

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
9/20/2016	6:00			0.7
9/21/2016	6:00			0.0
9/22/2016	6:10			0.3
9/23/2016	6:00			0.3
9/24/2016	6:00			0.2
9/25/2016	6:00			0.2
9/26/2016	6:00	51	30	0.1
9/27/2016	6:00			0.3
9/28/2016	6:00			0.4
9/29/2016	6:00			0.0
9/30/2016	6:00			0.1
10/1/2016	6:00			0.0
10/2/2016	6:00			0.0
10/3/2016	6:00			0.1
10/4/2016	6:00	104	161	0.0
10/5/2016	6:00			0.0
10/6/2016	6:00			0.0
10/7/2016	6:00			0.1
10/8/2016	5:55			0.2
10/9/2016	6:00			0.0
10/10/2016	6:00	111	0	0.0
10/11/2016	6:00			0.0
10/12/2016	6:00			0.2
10/13/2016	6:00			0.0
10/14/2016	6:00			0.0
10/15/2016	6:00			0.0
10/16/2016	6:00			0.0
10/17/2016	6:00	285	0	0.0
10/18/2016	6:00			0.0
10/19/2016	6:05			0.4
10/20/2016	6:20			0.0
10/21/2016	6:00			0.0
10/22/2016	6:00			0.0
10/23/2016	5:40			0.0
10/24/2016	6:00	62	11	0.0
10/25/2016	6:00			0.0
10/26/2016	6:00			0.0
10/27/2016	6:00			0.0
10/28/2016	6:00			0.0
10/29/2016	6:00			0.0
10/30/2016	6:00			0.0
10/31/2016	6:00	97	67	0.0
11/1/2016	6:00			0.0
11/2/2016	6:00			0.0
11/3/2016	6:00			0.0
11/4/2016	14:30			0.0
11/5/2016	6:00			0.3
11/6/2016	6:00			0.0
11/7/2016	6:00	57	50	0.0
11/8/2016	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
11/9/2016	6:00			0.0
11/10/2016	6:00			0.0
11/11/2016	6:30			0.0
11/12/2016	6:00			0.0
11/13/2016	6:00			0.0
11/14/2016	6:00	69	40	0.0
11/14/2016	18:00			0.0
11/15/2016	6:00			0.0
11/16/2016	6:00			0.0
11/17/2016	6:00			0.0
11/18/2016	6:00			0.0
11/21/2016	6:00	442	137	0.0
11/22/2016	6:00			0.0
11/23/2016	6:00			0.0
11/24/2016	5:45			0.0
11/25/2016	6:00			0.0
11/26/2016	6:30			0.0
11/27/2016	6:00			0.0
11/28/2016	6:00	149	49	0.0
11/29/2016	6:00			0.0
11/30/2016	6:00			0.0
12/1/2016	6:15			0.4
12/2/2016	6:15			0.0
12/3/2016	5:55			0.0
12/4/2016	6:00			0.4
12/5/2016	6:00	109	53	1.7
12/6/2016	6:00			0.1
12/7/2016	6:00			0.3
12/9/2016	6:00			0.0
12/10/2016	6:00			0.0
12/11/2016	6:00			1.1
12/12/2016	6:00	91	35	0.4
12/13/2016	6:00			0.0
12/14/2016	6:15			2.0
12/15/2016	5:50			0.0
12/16/2016	6:00			0.1
12/17/2016	6:20			0.0
12/18/2016	6:00			0.0
12/19/2016	6:00	39	22	0.0
12/20/2016	6:00			0.0
12/21/2016	6:00			0.0
12/22/2016	6:00			0.0
12/23/2016	6:00			0.0
12/24/2016	6:00			0.0
12/25/2016	6:10			0.0
12/26/2016	6:00	83	14	0.0
12/27/2016	6:00			0.0
12/28/2016	6:00			0.0
12/29/2016	6:30			0.0
12/30/2016	6:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
12/31/2016	6:00			0.0
1/1/2017	6:00			0.0
1/2/2017	6:00	111	39	0.0
1/3/2017	6:00			0.0
1/4/2017	6:00			1.0
1/5/2017	6:15			0.0
1/6/2017	6:00			0.0
1/7/2017	6:00			0.1
1/8/2017	6:00			0.0
1/9/2017	6:00	316	80	0.1
1/10/2017	6:00			0.0
1/11/2017	6:00			0.0
1/12/2017	6:00			0.0
1/13/2017	6:00			0.0
1/14/2017	6:00			0.0
1/15/2017	6:00			0.0
1/16/2017	6:00	246	77	0.0
1/17/2017	6:00			0.0
1/18/2017	6:00			0.0
1/19/2017	6:00			0.9
1/23/2017	6:00	384	45	0.4
1/27/2017	6:00			0.8
1/28/2017	6:00			1.1
1/29/2017	6:00			0.6
1/30/2017	6:00	444	139	0.4
1/31/2017	6:00			0.5
2/3/2017	6:00			0.4
2/4/2017	5:50			0.5
2/5/2016	6:00			0.0
2/6/2017	5:45	622	177	1.8
2/7/2017	6:45			0.5
2/8/2017	6:15			0.5
2/9/2017	6:00			0.5
2/10/2017	6:00			2.8
2/11/2017	6:00			0.4
2/12/2017	6:00			0.8
2/13/2017	6:00	429	100	0.9
2/14/2017	6:00			0.4
2/15/2017	6:00			0.5
2/16/2017	6:00			0.6
2/17/2017	6:00			0.5
2/18/2017	6:00			3.3
2/19/2017	6:00			0.0
2/20/2017	6:00	240	70	0.4
2/21/2017	6:00			0.0
2/22/2017	5:45			0.0
2/23/2017	5:50			0.3
2/24/2017	6:00			0.0
2/25/2017	5:55			0.0
2/26/2017	6:10			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
2/27/2017	5:55	355	0	0.0
2/28/2017	5:45			0.0
3/1/2017	5:45			0.0
3/2/2017	5:45			0.0
3/3/2017	6:00			0.0
3/4/2017	6:00			0.4
3/5/2017	6:00			1.2
3/6/2017	6:00	605	45	0.0
3/7/2017	6:00			0.0
3/8/2017	6:00			0.0
3/9/2017	6:00			0.0
3/10/2017	6:00			0.0
3/11/2017	6:00			0.0
3/12/2017	6:00			1.0
3/13/2017	6:00	781	144	0.0
3/14/2017	5:30			1.1
3/15/2017	6:00			0.0
3/16/2017	6:00			0.0
3/17/2017	6:00			0.5
3/18/2017	5:50			1.6
3/19/2017	5:50			0.0
3/20/2017	6:00	572	40	0.5
3/21/2017	6:00			0.6
3/22/2017	6:00			0.4
3/23/2017	6:00			0.0
3/24/2017	5:50			0.9
3/25/2017	5:50			0.3
3/26/2017	6:00			0.3
3/27/2017	6:00	496	105	0.3
3/28/2017	5:45			0.0
3/30/2017	6:00			0.4
3/31/2017	6:00			0.5
4/1/2017	18:00			0.5
4/2/2017	6:00			0.4
4/3/2017	6:00	433	99	0.6
4/4/2017	6:00			1.5
4/5/2017	5:45			0.9
4/6/2017	6:00			0.3
4/7/2017	6:00			0.8
4/8/2017	6:00			0.0
4/9/2017	6:00			1.2
4/10/2017	6:00	560	150	0.0
4/11/2017	6:00			0.0
4/12/2017	6:00			0.0
4/13/2017	6:00			0.0
4/14/2017	6:00			0.0
4/15/2017	6:00			0.4
4/16/2017	6:00			0.0
4/17/2017	5:40	419	88	1.0
4/18/2017	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
4/19/2017	6:55			0.0
4/20/2017	6:00			0.0
4/21/2017	6:00			0.0
4/22/2017	6:00			0.0
4/23/2017	6:00			3.4
4/24/2017	6:00	304	35	0.4
4/25/2017	6:00			0.0
4/26/2017	6:00			0.0
4/27/2017	6:00			0.0
4/28/2017	6:00			0.0
4/29/2017	6:00			0.0
4/30/2017	6:00			0.0
5/1/2017	6:00	327	48	0.0
5/2/2017	6:00			0.0
5/3/2017	6:00			0.0
5/4/2017	6:00			0.0
5/5/2017	6:00			0.0
5/6/2017	6:00			0.0
5/7/2017	6:00			0.1
5/8/2017	6:00	329	96	0.1
5/9/2017	6:00			0.3
5/10/2017	6:00			0.0
5/11/2017	6:00			0.0
5/12/2017	6:00			0.6
5/15/2017	6:00	43	151	0.2
5/16/2017	6:00			1.0
5/17/2017	6:00			0.3
5/18/2017	6:00			0.0
5/19/2017	6:00			0.0
5/20/2017	6:00			0.0
5/22/2017	6:00	523	116	0.0
5/23/2017	6:00			0.3
5/24/2017	6:00			0.0
5/25/2017	6:00			0.0
5/26/2017	6:00			0.2
5/27/2017	6:00			0.9
5/28/2017	6:00			0.7
5/29/2017	6:00	573	23	0.0
5/30/2017	6:00			0.0
5/31/2017	6:00			0.0
6/1/2017	6:00			0.0
6/2/2017	6:00			0.5
6/3/2017	6:00			0.4
6/4/2017	6:00			0.6
6/5/2017	6:00	505	76	1.5
6/6/2017	6:00			0.5
6/7/2017	6:00			0.0
6/8/2017	6:00			0.5
6/9/2017	6:00			0.0
6/10/2017	5:50			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
6/11/2017	5:45			0.0
6/12/2017	6:00	437	66	0.4
6/13/2017	5:45			0.2
6/14/2017	5:45			0.0
6/15/2017	5:40			0.0
6/16/2017	6:40			0.3
6/17/2017	6:00			0.3
6/18/2017	6:00			6.2
6/19/2017	6:00	488	81	0.4
6/20/2017	6:00			0.0
6/21/2017	6:00			0.4
6/22/2017	6:00			0.1
6/23/2017	6:15			0.0
6/24/2017	6:00			0.0
6/25/2017	5:45			0.0
6/26/2017	5:40	498	75	0.0
6/27/2017	5:35			0.3
6/28/2017	6:30			0.0
6/29/2017	6:00			0.4
6/30/2017	6:00			0.4
7/1/2017	6:00			0.7
7/2/2017	6:00			0.4
7/3/2017	6:00	638	96	0.3
7/4/2017	6:00			0.4
7/5/2017	6:00			0.5
7/6/2017	6:00			0.0
7/7/2017	6:00			0.0
7/8/2017	6:00			0.0
7/9/2017	6:00			0.0
7/10/2017	6:00	219	140	1.0
7/11/2017	6:00			0.0
7/12/2017	6:00			0.0
7/13/2017	6:00			0.0
7/14/2017	6:00			0.0
7/15/2017	6:00			0.0
7/16/2017	6:40			0.0
7/17/2017	6:00	695	112	0.0
7/18/2017	6:00			0.0
7/19/2017	6:00			0.0
7/20/2017	6:00			0.0
7/21/2017	5:45			0.0
7/22/2017	6:15			0.0
7/23/2017	6:30			0.0
7/24/2017	6:10	393	70	0.0
7/25/2017	6:00			0.0
7/26/2017	6:00			0.0
7/27/2017	6:00			0.0
7/28/2017	6:00			0.0
7/29/2017	6:00			0.0
7/30/2017	6:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
7/31/2017	6:00	627	142	0.0
8/1/2017	6:00			0.0
8/2/2017	6:00			0.0
8/3/2017	6:00			0.0
8/4/2017	6:30			0.0
8/5/2017	5:55			0.0
8/6/2017	5:55			0.0
8/7/2017	6:00	766	240	0.0
8/8/2017	6:00			0.0
8/9/2017	6:00			0.0
8/10/2017	6:00			0.0
8/11/2017	5:45			0.0
8/12/2017	6:30			0.0
8/13/2017	5:45			0.0
8/14/2017	6:05	1047	185	0.0
8/15/2017	6:00			0.0
8/16/2017	6:00			0.0
8/17/2017	5:55			0.0
8/18/2017	6:00			0.0
8/19/2017	6:00			0.0
8/20/2017	6:00			0.0
8/21/2017	5:45	448	122	0.0
8/22/2017	5:45			0.0
8/23/2017	5:45			0.0
8/24/2017	5:45			0.0
8/25/2017	6:00			0.0
8/26/2017	6:00			0.0
8/27/2017	6:00			0.0
8/28/2017	6:00	678	87	0.0
8/29/2017	6:00			0.0
8/30/2017	6:00			0.0
8/31/2017	6:00			1.5
9/1/2017	6:00			0.0
9/2/2017	6:00			0.0
9/3/2017	6:00			0.0
9/4/2017	6:00	641	51	0.0
9/5/2017	6:00			0.0
9/6/2017	6:00			0.0
9/7/2017	6:00			0.0
9/8/2017	6:15			0.0
9/9/2017	5:45			0.0
9/10/2017	5:45			0.0
9/11/2017	6:00	643	105	0.0
9/12/2017	6:00			0.0
9/13/2017	6:00			0.0
9/14/2017	6:00			0.0
9/15/2017	6:00			0.0
9/16/2017	6:00			0.0
9/17/2017	6:00			0.0
9/18/2017	6:20	931	193	0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
9/19/2017	6:15			0.0
9/20/2017	6:00			0.0
9/21/2017	6:00			0.0
9/22/2017	6:00			0.0
9/23/2017	6:00			0.0
9/24/2017	6:00			0.0
9/25/2017	6:00	805	171	0.0
9/26/2017	6:00			0.0
9/27/2017	6:00			0.0
9/28/2017	6:00			0.0
9/29/2017	6:00			0.0
9/30/2017	6:00			0.0
10/1/2017	6:00			0.0
10/2/2017	6:00	1148	203	0.0
10/3/2017	6:00			0.0
10/4/2017	6:00			0.0
10/5/2017	6:00			0.0
10/6/2017	6:15			0.0
10/7/2017	6:00			0.0
10/9/2017	6:00	757	158	0.0
10/10/2017	6:00			0.0
10/11/2017	6:00			0.0
10/12/2017	6:45			0.0
10/13/2017	6:00			0.0
10/14/2017	6:00			0.0
10/15/2017	6:00			0.0
10/16/2017	6:00	749	123	0.0
10/17/2017	6:00			0.0
10/18/2017	6:00			0.0
10/19/2017	6:00			0.0
10/20/2017	6:00			0.0
10/22/2017	6:00			0.0
10/23/2017	6:00	1060	215	0.0
10/24/2017	6:00			0.0
10/25/2017	6:00			0.0
10/26/2017	6:00			0.0
10/27/2017	6:00			0.0
10/29/2017	6:00			0.0
10/30/2017	6:00	751	182	0.0
10/31/2017	6:00			0.0
11/1/2017	6:00			0.0
11/2/2017	6:00			0.0
11/3/2017	6:20			0.0
11/4/2017	6:45			0.0
11/5/2017	6:30			0.0
11/7/2017	6:15	772	144	0.0
11/8/2017	6:00			0.0
11/9/2017	6:00			0.0
11/10/2017	6:00			0.0
11/11/2017	6:00			0.0

Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
11/12/2017	6:00			0.0
11/13/2017	6:00	737	146	0.0
11/14/2017	6:00			0.0
11/15/2017	6:30			0.0
11/16/2017	6:15			0.0
11/17/2017	6:00			0.0
11/18/2017	6:00			0.0
11/19/2017	6:00			0.0
11/20/2017	6:00	226	41	0.0
11/21/2017	6:00			0.0
11/22/2017	6:00			0.0
11/23/2017	6:00			0.0
11/24/2017	6:00			0.0
11/25/2017	6:00			0.0
11/26/2017	6:00			0.0
11/26/2017	21:00	314		
11/27/2017	7:00	316	91	0.0
11/28/2017	6:00			0.0
11/29/2017	6:00			0.0
11/30/2017	6:00			0.0
12/1/2017	6:00			0.0
12/2/2017	6:00			0.0
12/3/2017	6:00			0.0
12/4/2017	6:00	429	92	0.0
12/5/2017	6:00			0.0
12/6/2017	6:00			0.0
12/7/2017	6:00			0.0
12/8/2017	6:00			0.0
12/9/2017	8:25			0.0
12/10/2017	6:00			0.0
12/11/2017	6:00	808	196	0.0
12/12/2017	6:00			0.0
12/13/2017	6:00			0.0
12/14/2017	6:00			0.0
12/15/2017	6:00			0.0
12/16/2017	6:00			0.0
12/17/2017	6:00			0.0
12/18/2017	6:00	625	0	0.0
12/19/2017	6:00			0.0
12/20/2017	6:00			0.0
12/21/2017	6:00			0.0
12/22/2017	6:00			0.0
12/23/2017	6:00			0.0
12/24/2017	6:00			0.0
12/25/2017	6:00	393	122	0.0
12/26/2017	6:00			0.0
12/27/2017	6:00			0.0
12/28/2017	6:00			0.0
12/29/2017	6:00			0.0
12/30/2017	6:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
12/31/2017	6:00			0.0
1/1/2018	7:30			0.0
1/2/2018	6:00	288	120	0.0
1/3/2018	6:00			0.0
1/4/2018	6:00			0.0
1/5/2018	6:00			0.0
1/6/2018	6:00			0.0
1/7/2018	6:00			0.0
1/8/2018	6:00	416	124	0.0
1/9/2018	6:00			0.0
1/10/2018	6:25			0.0
1/11/2018	6:30			0.0
1/12/2018	6:00			0.0
1/13/2018	6:00			0.0
1/14/2018	6:00			0.0
1/15/2018	6:00	454	105	0.0
1/16/2018	6:00			0.0
1/17/2018	6:00			0.0
1/18/2018	6:00			0.0
1/19/2018	6:00			0.0
1/20/2018	6:00			0.0
1/21/2018	6:00			0.0
1/22/2018	6:00	134	391	0.0
1/23/2018	6:00	922	237	0.0
1/24/2018	6:00			0.0
1/25/2018	6:00			0.0
1/26/2018	6:00			0.0
1/27/2018	6:00			0.0
1/27/2018	18:00			0.0
1/28/2018	6:00			0.0
1/29/2018	6:00	995	281	0.0
1/30/2018	6:00			0.0
1/31/2018	6:00			0.0
2/1/2018	6:00			0.0
2/1/2018	19:30	582		
2/2/2018	6:00	102		0.0
2/3/2018	6:00			0.0
2/4/2018	6:00			0.0
2/5/2018	6:00	659	131	0.0
2/6/2018	6:00			0.0
2/7/2018	6:45			0.0
2/8/2018	6:15			0.0
2/9/2018	6:00			0.0
2/10/2018	6:00			0.0
2/11/2018	6:00			0.0
2/12/2018	6:00	492	139	0.0
2/13/2018	6:00			0.0
2/14/2018	6:00			0.0
2/15/2018	6:00			0.0
2/16/2018	6:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
2/17/2018	6:00			0.0
2/18/2018	6:00			0.0
2/19/2018	6:00	133	137	0.0
2/20/2018	6:00			0.0
2/21/2018	6:00			0.0
2/22/2018	6:00			0.0
2/23/2018	6:00			0.0
2/24/2018	6:00			0.0
2/25/2018	6:30			0.0
2/26/2018	6:15	555	161	0.0
2/27/2018	6:25			0.0
2/28/2018	6:00			0.0
3/1/2018	6:00			0.0
3/2/2018	6:00			0.0
3/3/2018	6:00			0.0
3/4/2018	6:00			0.0
3/5/2018	6:00	677	210	0.0
3/6/2018	6:00			0.0
3/7/2018	6:45			0.0
3/8/2018	6:30			0.0
3/9/2018	6:00			0.0
3/10/2018	6:00			0.0
3/11/2018	6:00			0.0
3/12/2018	6:00	550	156	0.0
3/13/2018	6:00			0.0
3/14/2018	6:00			0.0
3/15/2018	6:00			0.0
3/16/2018	6:00			0.0
3/17/2018	6:00			0.0
3/19/2018	6:00	377	130	0.0
3/20/2018	6:00			0.0
3/21/2018	6:00			0.0
3/22/2018	6:00			0.0
3/23/2018	6:00			0.0
3/24/2018	6:30			0.0
3/25/2018	6:30			0.0
3/26/2018	6:10	594	186	0.0
3/27/2018	6:00			0.0
3/28/2018	6:00			0.0
3/29/2018	6:00			0.0
3/30/2018	6:00			0.0
3/31/2018	6:00			0.0
4/1/2018	6:00			17.0
4/2/2018	6:00	750	240	48.0
4/3/2018	6:00			81.0
4/4/2018	6:00			112.5
4/5/2018	6:00			129.5
4/6/2018	6:00			23.7
4/8/2018	6:00			17.3
4/8/2018	10:00		175	78.3

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
4/9/2018	6:00	600	155	91.1
4/10/2018	6:00			104.0
4/11/2018	6:00	593	107	62.0
4/12/2018	6:00	623	124	111.4
4/13/2018	6:00	579	128	107.8
4/14/2018	6:00	527	119	84.1
4/15/2018	7:05	696	141	79.1
4/16/2018	6:00	472	165	36.6
4/17/2018	6:00	573	115	6.1
4/18/2018	6:00			0.0
4/19/2018	6:00			2.0
4/20/2018	6:00			0.0
4/21/2018	6:30			0.0
4/22/2018	6:30			0.0
4/23/2018	6:15	558	182	0.0
4/24/2018	6:00			0.0
4/25/2018	6:00			0.0
4/26/2018	6:00			9.9
4/27/2018	6:00			12.7
4/28/2018	6:00	894	236	10.6
4/29/2018	6:00	949	211	0.0
4/30/2018	6:00	1038	223	0.0
5/1/2018	6:00	1104	197	0.0
5/2/2018	6:45	956	203	0.0
5/3/2018	6:45	930	192	5.8
5/4/2018	6:00	958	175	6.6
5/5/2018	6:00	924	148	0.0
5/6/2018	6:00	566	131	0.0
5/7/2018	6:00	749	132	0.0
5/8/2018	6:00			0.0
5/9/2018	6:00			0.0
5/10/2018	6:00			0.0
5/11/2018	6:00			0.0
5/13/2018	6:00			0.0
5/14/2018	6:00	764	146	0.0
5/15/2018	6:00			0.0
5/16/2018	6:00			0.0
5/17/2018	6:00			0.0
5/18/2018	6:00			0.0
5/19/2018	6:00			0.0
5/20/2018	6:00			0.4
5/21/2018	6:00	787	172	0.0
5/22/2018	6:00			0.0
5/23/2018	6:00			0.0
5/24/2018	6:00			0.0
5/25/2018	6:00			0.0
5/26/2018	6:00			0.0
5/27/2018	6:00			0.0
5/28/2018	6:00	858	185	0.0
5/29/2018	6:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
5/30/2018	6:00			0.0
5/31/2018	6:00			0.0
6/1/2018	6:00			0.0
6/2/2018	6:00			0.0
6/3/2018	6:00			0.0
6/4/2018	6:00	919	133	0.0
6/5/2018	6:00			0.0
6/6/2018	6:00			0.0
6/7/2018	6:00			0.0
6/8/2018	6:00			0.0
6/9/2018	6:00			0.0
6/10/2018	6:00			0.0
6/11/2018	6:00	863	216	0.0
6/12/2018	5:45			0.0
6/13/2018	6:00			0.0
6/14/2018	5:45			0.0
6/15/2018	6:00			0.0
6/16/2018	5:45			17.2
6/17/2018	5:45			53.5
6/18/2018	6:00	1179	289	75.4
6/19/2018	6:00	515		90.9
6/20/2018	6:00	702	176	51.9
6/21/2018	6:00			48.7
6/22/2018	6:00			0.0
6/23/2018	6:00			0.0
6/24/2018	6:00			0.0
6/25/2018	6:00	777	160	0.0
6/26/2018	6:00			0.0
6/27/2018	6:00			0.0
6/28/2018	6:00			0.0
6/29/2018	6:00			0.0
6/30/2018	6:00			0.0
7/1/2018	6:00			0.0
7/2/2018	6:00	854	156	0.0
7/3/2018	6:00			0.0
7/4/2018	6:00			0.0
7/5/2018	6:00			0.0
7/6/2018	6:00			0.0
7/7/2018	6:00			0.0
7/8/2018	6:00			0.0
7/9/2018	6:00	787	159	0.0
7/10/2018	6:00			0.0
7/11/2018	6:00			0.0
7/12/2018	6:00			0.0
7/13/2018	6:00			0.0
7/14/2018	6:00			0.0
7/15/2018	6:00			0.0
7/16/2018	6:00	59	99	0.0
7/17/2018	6:00			0.0
7/18/2018	6:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
7/19/2018	6:00			0.0
7/20/2018	6:00			0.0
7/21/2018	6:00			0.0
7/22/2018	6:30			0.0
7/23/2018	6:00	930	186	25.4
7/24/2018	6:00			5.2
7/25/2018	6:00			0.0
7/26/2018	6:00			0.0
7/27/2018	6:00			0.0
7/28/2018	6:00			0.0
7/29/2018	6:00			0.0
7/30/2018	6:00	1039	232	0.0
7/30/2018	15:00	1209		
7/31/2018	6:00			7.0
8/1/2018	18:00	1144	228	7.6
8/2/2018	18:00			0.0
8/3/2018	18:00	1109	216	0.0
8/4/2018	18:00			8.5
8/5/2018	18:00			7.3
8/6/2018	18:00	1240	256	0.0
8/7/2018	6:00			0.0
8/7/2018	18:00			0.0
8/8/2018	18:00	1043	182	0.0
8/9/2018	18:00			0.0
8/10/2018	18:00	925	106	0.0
8/11/2018	18:00			0.0
8/12/2018	18:00			0.0
8/13/2018	18:00	759	131	0.0
8/14/2018	18:00			0.0
8/15/2018	18:00	365	197	0.0
8/16/2018	18:00			6.0
8/17/2018	18:00	958	210	0.0
8/18/2018	18:00			0.0
8/19/2018	18:00			0.0
8/20/2018	11:00	855	164	0.0
8/24/2018	18:00	411	82	0.0
8/25/2018	18:00			0.0
8/26/2018	18:15			0.0
8/27/2018	18:00	347	79	0.0
8/28/2018	18:00			0.0
8/29/2018	18:00	389	88	0.0
8/30/2018	18:00			0.0
8/31/2018	18:00	444	95	0.0
9/1/2018	7:00	484		
9/1/2018	18:00			0.0
9/2/2018	6:00	498		
9/2/2018	18:00			0.0
9/3/2018	6:00			0.0
9/3/2018	18:00	708	147	0.0
9/4/2018	18:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
9/5/2018	18:00	862	188	0.0
9/6/2018	18:00			0.0
9/7/2018	18:00	832	202	0.0
9/8/2018	18:00			0.0
9/9/2018	18:00			0.0
9/10/2018	18:00	952	297	0.0
9/11/2018	18:00			0.0
9/12/2018	18:00	1125	301	0.0
9/13/2018	18:00			0.0
9/14/2018	18:00	1207	194	0.0
9/15/2018	18:00			0.0
9/16/2018	18:00			0.0
9/17/2018	18:00	1110	255	0.0
9/18/2018	18:00			0.0
9/18/2018	21:30	1116	276	
9/19/2018	18:00	1094	249	0.0
9/20/2018	18:00	1103	259	0.0
9/21/2018	18:00	995	245	0.0
9/22/2018	18:00	983	231	0.0
9/23/2018	18:00	926	260	0.0
9/24/2018	18:00	907	245	0.0
9/25/2018	18:00			0.0
9/26/2018	18:00	983	252	0.0
9/27/2018	18:00			0.0
9/28/2018	18:00	1029	183	0.0
9/29/2018	18:00			0.0
9/30/2018	18:00			0.0
10/1/2018	18:00	910	204	0.0
10/2/2018	18:00			0.0
10/3/2018	18:00	978	201	0.0
10/4/2018	18:00			0.0
10/5/2018	18:00	890	145	0.0
10/6/2018	18:00	884	176	0.0
10/7/2018	18:00	841	155	7.7
10/8/2018	18:00	820	190	0.0
10/9/2018	18:00			0.0
10/10/2018	18:00	757	152	0.0
10/11/2018	18:00			0.0
10/12/2018	18:00	661	100	0.0
10/13/2018	18:00			0.0
10/14/2018	18:00			0.0
10/15/2018	18:00	632	149	0.0
10/16/2018	18:00	671	156	0.0
10/17/2018	18:00	693	157	0.0
10/18/2018	18:00	696	144	0.0
10/19/2018	18:00	672	139	0.0
10/20/2018	18:00			0.0
10/21/2018	18:00			0.0
10/22/2018	18:00	781	131	0.0
10/23/2018	18:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
10/23/2018	18:00	810	180	0.0
10/25/2018	18:00			0.0
10/26/2018	18:00	755	182	0.0
10/27/2018	18:00			0.0
10/28/2018	18:00			0.0
10/29/2018	18:00	818	188	0.0
10/30/2018	18:00			0.0
10/31/2018	18:00	863	185	0.0
11/1/2018	18:00			0.0
11/2/2018	18:00	775	169	0.0
11/3/2018	18:00			0.0
11/4/2018	18:00			0.0
11/5/2018	18:00	639	162	0.0
11/6/2018	18:00			0.0
11/7/2018	18:00	661	151	0.0
11/8/2018	18:00			0.0
11/9/2018	18:00	664	163	0.0
11/10/2018	18:00			5.6
11/11/2018	18:00			0.0
11/12/2018	18:00	836	203	0.0
11/13/2018	18:00			1.7
11/14/2018	18:00	720	268	14.9
11/15/2018	18:00			66.5
11/16/2018	18:00	825	277	68.5
11/17/2018	18:00			49.7
11/17/2018	22:45	930		
11/18/2018	7:15	757		
11/18/2018	18:00			32.7
11/18/2018	20:10	828		
11/19/2018	18:00	805	119	3.5
11/20/2018	18:00			0.0
11/21/2018	18:10	1248	257	0.0
11/22/2018	18:00			0.0
11/23/2018	18:00	554	155	0.0
11/24/2018	18:00			0.0
11/25/2018	18:00			0.0
11/26/2018	18:00	563	154	0.0
11/27/2018	18:00			0.0
11/28/2018	18:00	577	134	0.0
11/29/2018	18:00			0.0
11/30/2018	18:00	601	157	0.0
12/1/2018	18:00			0.0
12/2/2018	18:00			0.0
12/3/2018	18:00	406	123	0.0
12/4/2018	18:00			0.0
12/5/2018	18:00	420	119	0.0
12/6/2018	18:00			0.0
12/7/2018	18:00	337	108	0.0
12/8/2018	18:00			0.0
12/9/2018	18:00			0.0

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Sample Date	Time	PC Tank	Prim. Clarifier	Secondary
12/10/2018	18:00	370	83	0.0
12/12/2018	18:00	279	46	0.0
12/13/2018	18:00			0.0
12/14/2018	18:00	177	23	0.0
12/15/2018	18:00			0.0
12/16/2018	18:00			0.0
12/17/2018	18:00	76	15	0.0
12/18/2018	18:00			0.0
12/19/2018	18:00	58	9	0.0
12/20/2018	18:00			0.0
12/21/2018	18:00	35	8	0.0
12/22/2018	18:00			0.0
12/23/2018	18:00			0.0
12/24/2018	18:00	149	45	0.0
12/25/2018	18:00			0.0
12/26/2018	6:00			0.0
12/26/2018	18:00	23	33	0.0
12/28/2018	18:00	151	128	0.0
12/29/2018	18:00			0.0
12/30/2018	18:00			0.0
12/31/2018	18:00	624	168	0.0
1/1/2019	18:00			0.0
1/2/2019	18:00	644	285	0.0
1/4/2019	18:00	607	2	0.0
1/5/2019	18:00			0.0
1/6/2019	18:00			2.1
1/7/2019	18:00	694	148	0.0
1/8/2019	18:00			0.0
1/9/2019	18:00	633	131	0.0
1/10/2019	18:00			0.0
1/11/2019	18:00	590	139	0.0
1/12/2019	18:00			0.0
1/13/2019	18:00			0.0
1/14/2019	18:00	670	235	0.0
1/15/2019	18:00			0.0
1/16/2019	18:00	597	257	0.0
1/17/2019	18:00			0.0
1/18/2019	18:00	525	228	0.0
1/19/2019	18:00			0.0
1/20/2019	18:00			1.7
1/21/2019	18:00	594	187	0.0
1/22/2019	18:00			0.0
1/23/2019	18:00	536	126	0.0
1/24/2019	18:00			0.0
1/25/2019	18:00	589	127	0.0
1/26/2019	18:00			0.0
1/27/2019	18:00			0.0
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Electronic Filing: Received, Clerk's Office 03/06/2020

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Electronic Filing: Received, Clerk's Office 03/06/2020

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Electronic Filing: Received, Clerk's Office 03/06/2020

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Electronic Filing: Received, Clerk's Office 03/06/2020

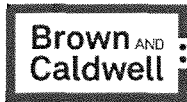
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12/11/2019	18:00	107	21	0.0
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APPENDIX E



220 Athens Way, Suite 500
Nashville, TN 37228

T: 615.255.2288

Technical Memorandum

Prepared for: Emerald Polymer Additives

Project Title: Emerald Polymer Additives

Project No.: 154025

Technical Memorandum

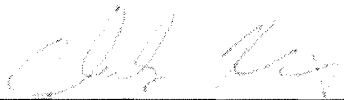
Subject: Response to Illinois Pollution Control Board Requests of Emerald Polymer Additives

Date: March 5, 2020

To: Thomas Dimond

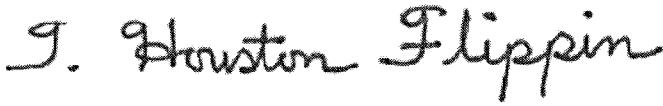
From: Houston Flippin, P.E., BCEE

Prepared by:



Charlie Gregory, Associate

Reviewed by:



Houston Flippin, PE, BCEE, Chief Engineer
(Illinois PE 062 053488, Expiration 11/30/2021)

Limitations:

This document was prepared solely for Emerald Polymer Additives in accordance with professional standards at the time the services were performed and in accordance with the contract between Emerald and Brown and Caldwell. This document is governed by the specific scope of work authorized by Emerald; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by Emerald and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

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Section 1: Introduction

The Illinois Pollution Control Board requested that Emerald Polymer Additives – Henry Plant (Emerald) provide additional information during the hearings for the Adjusted Standard in Lacon, Illinois on January 15 and 16, 2020 and in Springfield, Illinois on February 4 and 5, 2020. The portion of this additional information developed by Brown and Caldwell (BC) is categorized below and delineated in the following pages.

- Class 4 cost estimates for two most cost-effective end-of-pipe treatment alternatives (tertiary nitrification and alkaline stripping).
- Capital and operating and maintenance (O&M) costs from projects BC has designed with ammonia-nitrogen removal requirements.
- Additional information for granular activated carbon (GAC) alternative at Emerald.

Section 2: Cost Upgrades at Industrial Facilities

Costs associated with industrial wastewater treatment plants that BC has designed, are operational, and have historically been in compliance with their permits are described below. The bulk of the costs for these facilities is related to biochemical oxygen demand (BOD) removal rather than ammonia-nitrogen (NH₃-N) removal. In order to achieve a reasonable cost comparison between these facilities and Emerald, the costs were expressed in dollars per pound of oxygen equivalents removed. Oxygen equivalents were calculated as follows:

- 1.2 pounds oxygen consumed per 1-pound BOD removed
- 4.6 pounds oxygen consumed per 1-pound of Total Kjeldahl Nitrogen (TKN) nitrified
- TKN nitrified equal to TKN loading minus BOD loading times 0.04 pounds TKN as nutrient removed per pound of BOD removed

2.1 Cost of Upgrades

Of the 15 industrial treatment facilities that Mr. Flippin referenced for process design and current compliance with ammonia-nitrogen limits, only two of these were provided by Brown and Caldwell as design-build projects. For these two projects, BC was well acquainted with the capital costs. In all cases, BC had to rely on its Client's willingness to report their capital costs and their operating costs for industrial wastewater treatment. BC has reported the costs below in a confidential manner for the three facilities willing to share these costs.

- **Food Production:** New wastewater treatment plant built in 2017. The new treatment facility was built to treat wastewater associated with vegetable processing to meet future land application and water reuse requirements (<3 mg/L NH₃-N and <5 mg/L BOD). Parameters considered for design of the plant consisted of TKN, total nitrogen, BOD, total suspended solids (TSS), pH, and total phosphorous. Major equipment for the treatment plant included equalization tanks, anaerobic complete-mix tanks, dissolved air flotation units (DAFs), activated sludge treatment with anaerobic zone followed by anoxic zone followed by aerobic zone with ultrafiltration membrane solids separation, screw press for sludge dewatering, biogas handling equipment, chemical storage tanks, and chemical addition systems. The approximate installed cost of the wastewater plant was \$55,000,000.

- **Dairy Facility No.1:** New wastewater treatment plant built in 2017. The new treatment plant was built to treat wastewater associated with condensed milk manufacturing for direct discharge and water reuse (<3 mg/L NH₃-N and <5 mg/L BOD). Parameters considered for design of the plant consisted of TKN, BOD, TSS, pH, and total phosphorous. Major equipment for the treatment plant included a high-strength waste diversion tank, activated sludge treatment with anaerobic zone followed by aerobic zone with ultrafiltration membrane solids separation, belt filter press for sludge dewatering, chemical storage tanks, and chemical addition systems. The approximate installed cost of the wastewater plant was \$15,000,000.
- **Dairy Facility No.2:** New wastewater treatment plant built in 2015. The new treatment plant was built to treat wastewater associated with condensed milk manufacturing for direct discharge and water reuse (<2 mg/L NH₃-N and <5 mg/L BOD). Parameters considered for design of the plant consisted of TKN, BOD, TSS, pH, and total phosphorous. Major equipment for the treatment plant included a high-strength waste diversion tank, activated sludge treatment with anaerobic zone followed by aerobic zone with ultrafiltration membrane solids separation, belt filter press for sludge dewatering, chemical storage tanks, and chemical addition systems. The approximate installed cost of the wastewater plant was \$10,000,000.

BC developed conceptual level designs for selected treatment alternatives for the Emerald Plant. These designs included equipment sizing, general layout, material and chemical usage, and utility requirements. These conceptual level designs were then used to develop Class 4 capital cost estimates described below and operating and maintenance cost estimates. These estimates were compared with actual installed capital costs and annual operations/maintenance (O/M) costs for three industrial wastewater treatment facilities that BC has designed over the last five years requiring significant ammonia-nitrogen removal. A summary of the design wasteload characteristics and effluent ammonia-nitrogen limits for the partial list of plants that BC has designed are described in Table 1. Costs of the projected Emerald treatment process (tertiary nitrification) and the three operating treatment facilities are shown in Tables 2 and 3. All capital costs are based on the year the capital was spent and have not been adjusted to account for inflation. The TKN and BOD removals represent design annual average values. The following observations are drawn from this comparison.

1. Historically, the Emerald Plant has been unable to achieve single-stage nitrification. Current efforts are underway to determine if single-stage nitrification can reliably be sustained throughout the year-round production campaigns. At present, tertiary nitrification has been assumed as the most economically viable treatment process for compliance with the effluent ammonia-nitrogen standard of 3 mg/L monthly average and 6 mg/L daily maximum. The costs presented for the Emerald Plant are for tertiary nitrification as provided by a newly installed rotating biological contactor system positioned between the existing secondary clarifier and tertiary filtration process (\$13.5 million capital and \$0.72 million per year for O/M costs).
2. The three other operating treatment facilities provide the most common and economically viable means of achieving ammonia-nitrogen removal (single-stage nitrification). It is this ammonia-nitrogen removal process that the Standard (35 Illinois Administrative Code 304.122(b)) contemplated would be required of wastewater treatment facilities to comply with the Standard.
3. Present worth costs were developed over a 10-year period and 20-year period assuming a rate of return of 4 percent and no salvage value at the end of the period. Ten years is a period frequently used by industry, and 20 to 30 years is frequently used by municipalities for project life in present worth calculations.
4. A comparison of unit costs (Table 3) between Emerald and the other three industries for oxygen equivalents removal indicate that Emerald's annual O/M unit cost is at least 4.3-fold greater. Emerald's present worth unit costs are approximately 5.7-fold greater whether viewed on a 10-year

or 20-year basis. This large difference in unit costs is due to two factors. The cost of single-stage nitrification is shared by BOD removal and ammonia-nitrogen removal. The cost of tertiary nitrification is borne almost exclusively by ammonia-nitrogen removal.

Table 1. Partial List of Nitrification Facilities Designed by BC

Facility	Influent Characteristics			Effluent NH ₃ -N Limits	
	Flow (MGD)	BOD (lbs/day)	TKN (lbs/day)	Monthly Average	Daily Maximum
American Cyanamid	0.35	315	53	1.5	Not Regulated
Ashland Chemical	1.2	7,400	1,750	2 ^a	4 ^a
Bush Brothers	1.5	57,000	3,300	2 ^a	4 ^a
Dairy Farmers of America	0.95	13,000	1,470	2 ^a	4 ^a
Dairy Farmers of America	0.33	4,900	540	0.5	2
Great Lakes Cheese	0.40	5,100	290	1.2	Not Regulated
GCWDA	17	100,000	6,000	2 ^a	4 ^a
Lily Del Caribe	0.17	9,600	2,010	30 ^b	60 ^b
Phillip 66	11	17,000	1,600	3 ^c	6 ^c
Valero	2.0	2,500	500	2 ^a	4 ^a
Waste Management	0.030	330	160	Not Regulated	100 ^d
Waste Management	0.46	8,300	3,100	3	6

^a No regulatory limit. Design effluent values were selected to comply with future anticipated limits, water reuse requirements, and/or current effluent aquatic toxicity limits.

^b Design values to reflect discharge limits to publicly owned treatment works (POTW).

^c Design value anticipated future ammonia-nitrogen limits.

^d Pretreatment limit.

Table 2. Comparison of Biological Nitrification Facilities

Facility	Oxygen Equivalents (lbs./day)	Annual O/M Costs (\$ Million)	Approximate Capital Cost (\$ Million)
Emerald	1,570 ^a	0.72	13.5
Food Production	73,100	0.95	55
Dairy No.1	20,000	2.1 ^b	15
Dairy No.2	7,460	0.70	10

^a BOD Removal (47 lbs/day times 1.2) + TKN Removal (331 lbs/day minus BOD removal (47 lbs/day * 0.04) * 4.6.

^b Scaled value based on known yearly O/M costs of Dairy No. 2

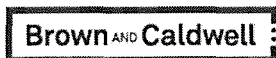


Table 3. Unit Costs of Facilities			
Facility	O/M Costs (\$/pound Oxygen Equivalent)	Present Worth Costs-10 Year (\$/pound Oxygen Equivalent)	Present Worth Costs-20 Year (\$/pound Oxygen Equivalent)
Emerald	1.26	3.37	2.04
Food Production	0.035	0.24	0.13
Dairy No. 1	0.29	0.44	0.30
Dairy No. 2	0.26	0.58	0.36

Note: Based on 10 and 20 years at 4 percent rate of return and no salvage value.

Section 3: Treatment Alternatives

Treatment alternatives detailed in BC's previous report¹ detailed five (5) alternatives believed to be technically feasible and land application. The treatment alternatives were evaluated to identify costs associated with ammonia-nitrogen removal.

The Illinois Pollution Control Board requested that the two most viable end-of-pipe treatments be further developed into Class 4 cost estimates. Initially, BC believed that tertiary nitrification and ion exchange would be the two most economically viable. Further discussions with the resin provider for ion exchange indicated that spent regenerant volumes had been significantly underestimated. This made alkaline stripping the second-most economically viable option. These alternatives are described in detail in BC's previous report. Production of Class 4 estimates required site layout drawings and resolution of the type of foundations required to be developed. These drawings are provided in Attachment A.

3.1 Treatment Alternatives Performance and Associated Costs

Conceptual level designs were developed using the design waste load presented in the prior BC report¹ and conventional design methods. Conceptual level cost estimates presented herein were developed using an approach recommended by the Association of the Advancement of Cost Estimating (AACE). The estimates are Class 4 estimates with typical accuracy ranges of -15 to -30 percent on the low side, and +20 to +50 percent on the high side. These estimates were developed by generating equipment costs for each alternative and then applying multiplication factors to the equipment costs to generate direct and indirect costs. Direct costs include freight, tax, purchased equipment installation, installed piping, installed electrical systems, buildings, other structural components, yard improvements, and installed service utilities. Indirect costs include engineering and supervision, construction expenses, legal expenses, and contractors fee. A contingency multiplication factor is applied to the sum of the direct and indirect costs to account for unknown scope. The sum of the direct, indirect and contingency cost items results in the project total fixed capital cost (FCC). The detailed Class 4 cost estimates are included as Attachment B. These Class 4 cost estimates resulted in an 8 to 14 percent increase in the 10-year present worth costs described in the prior report¹ using Class 5 estimates.

¹ Expert Report and Response to Recommendations of Illinois Environmental Protection Agency of July 19, 2019 submitted to Ice Miller LLP by BC on October 11, 2019.



A summary of costs and performance associated with each alternative is shown in Table 4. Unit costs are presented in Table 5. The present value costs are the sum of money required today to fund capital costs and ongoing 10- and 20-year annual costs assuming a rate of return of 4 percent.

Even when expressed as a 20-year present worth (requested by IEPA), the unit costs are at least \$9.6 per pound ammonia-nitrogen while the annual O/M costs are at least \$6.0 per pound ammonia-nitrogen removed compared to the 2017 median ammonia-nitrogen surcharge reported by the National Association of Clean Water Agencies (NACWA) of \$1.53 per pound of ammonia-nitrogen removed. Again, this difference is largely related to economy of single-stage nitrification provided at the facilities surveyed by NACWA versus the tertiary nitrification required at Emerald.

Table 4. Present Worth Comparison

Alternative	Achieve Regulatory Limits?	Average NH ₃ -N Removal, (lbs/day)	Capital Costs (\$ millions)	Estimated Annual O/M Costs ^b (\$ millions)	Present Worth-10 Year ^c (\$ millions)	Present Worth-20 Year ^c (\$ millions)
Alkaline Stripping	No ^a	324	8.9	1.4	20.5	28.3
Tertiary Nitrification	Uncertain	≤ 331	13.5	0.72	19.4	23.3

^a Ninety-five percent removal.

^b Annual operations and maintenance costs.

^c Based on 4 percent rate of return and term stated with no salvage value.

Table 5. Unit Costs of Alternatives Evaluated

Facility	O/M Costs (\$/pound of NH ₃ -N removed)	Present Worth Costs-10 Year (\$/pound NH ₃ -N removed)	Present Worth Costs-20 Year (\$/pound NH ₃ -N removed)
Alkaline Stripping	12	17	12
Tertiary Nitrification	>6.0	>16	>9.6

3.2 Granular Activated Carbon (GAC)

Granular activated carbon (GAC) treatment was previously evaluated through bench-scale treatability testing by BC in 2017 as a means of removing MBT and other constituents from the PC and C-18 Tank discharges. This treatment did allow single-stage nitrification to occur when treating the combined Emerald and MexiChem wastewaters during bench-scale testing. The Class 5 cost estimate for employing this GAC treatment system was \$5.3 million in capital costs and \$3.1 million in annual O/M costs. This would yield present worth costs of \$30 million² over 10 years and \$47 million over 20 years (at a 4 percent rate of return) which were more costly than either of the two end-of-pipe solutions described above. Consequently, this alternative was not recommended for further development.

The GACs considered in the 2017 analysis were provided by Calgon Carbon. These were Calgon's DSR-A carbon and OLC 12X40 carbon. The DSR-A carbon is a regenerated carbon while OLC 12X40 carbon is a virgin carbon. Findings from this study indicated that the more cost-effective GAC was the DSR-A requiring

² Previously reported as \$27 million at higher rate of return.

7,500 lbs/day. If delivered by bulk tanker truck, a 40,000-pound truck load would be delivered approximately 70 times per year from the nearest source (Catlettsburg, Kentucky). This would result in a truck traffic increase of 140-truck count on State Route 29 yielding a 0.06 percent increase in truck traffic ($140/237,250$) as illustrated in Figure 1. This would also represent a truck traffic increase into the Emerald/Mexichem site of 1 percent (70 divided by 7,300 reported average). Figure 1 illustrates the most recent (2014) annual average daily traffic (AADT) count in which State Route 29 has an estimated average of 3,425 vehicles per day of which 650 (19 percent) are trucks.

Calgon Carbon does not ship GAC via railcar or barge (only by trucks). The cost of the least expensive GAC option (regenerated GAC) assumes return of the GAC to the Catlettsburg facility for thermal regeneration. The cost would be more expensive if the GAC were not returned. Calgon Carbon is unaware of any facilities that landfill the spent GAC.

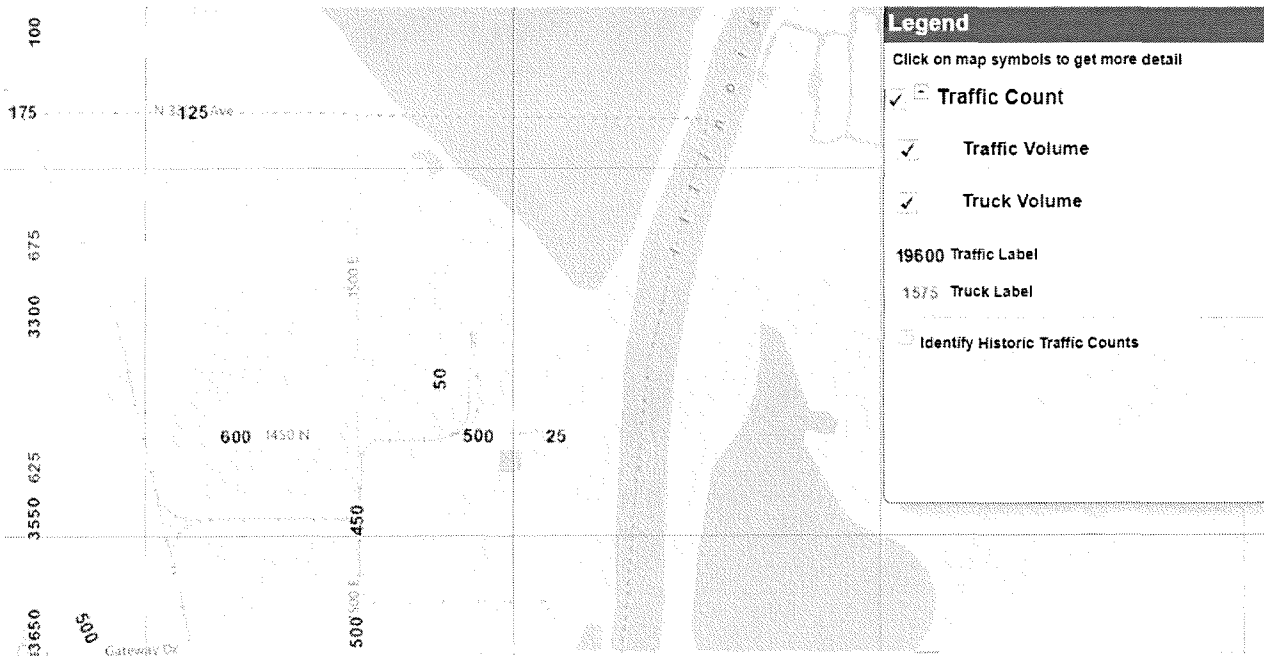
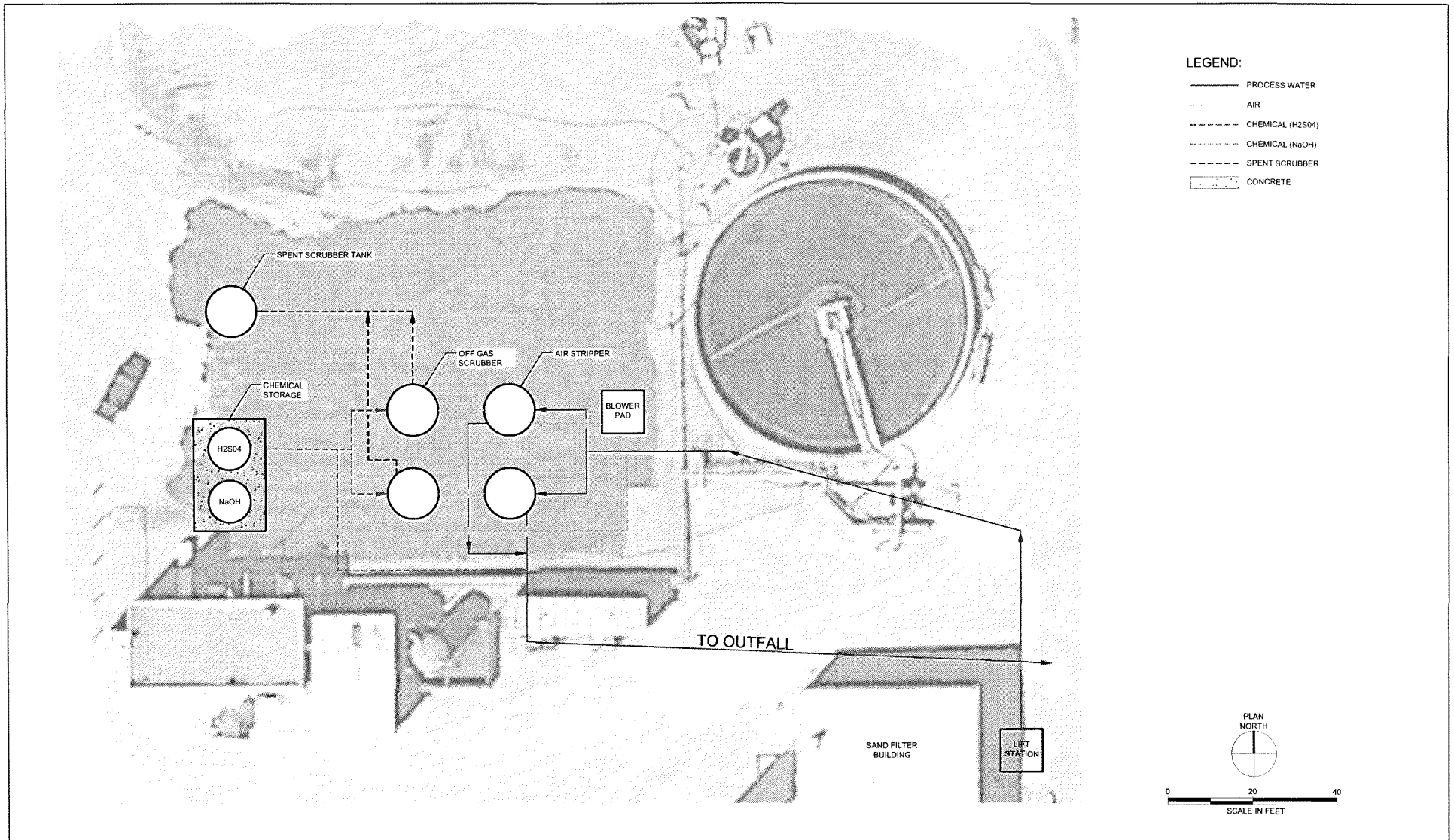


Figure 1. 2014 Illinois Department of Transportation Annual Average Daily Traffic Count

Attachment A: Conceptual Equipment Placement Drawings

Brown AND Caldwell

A-1

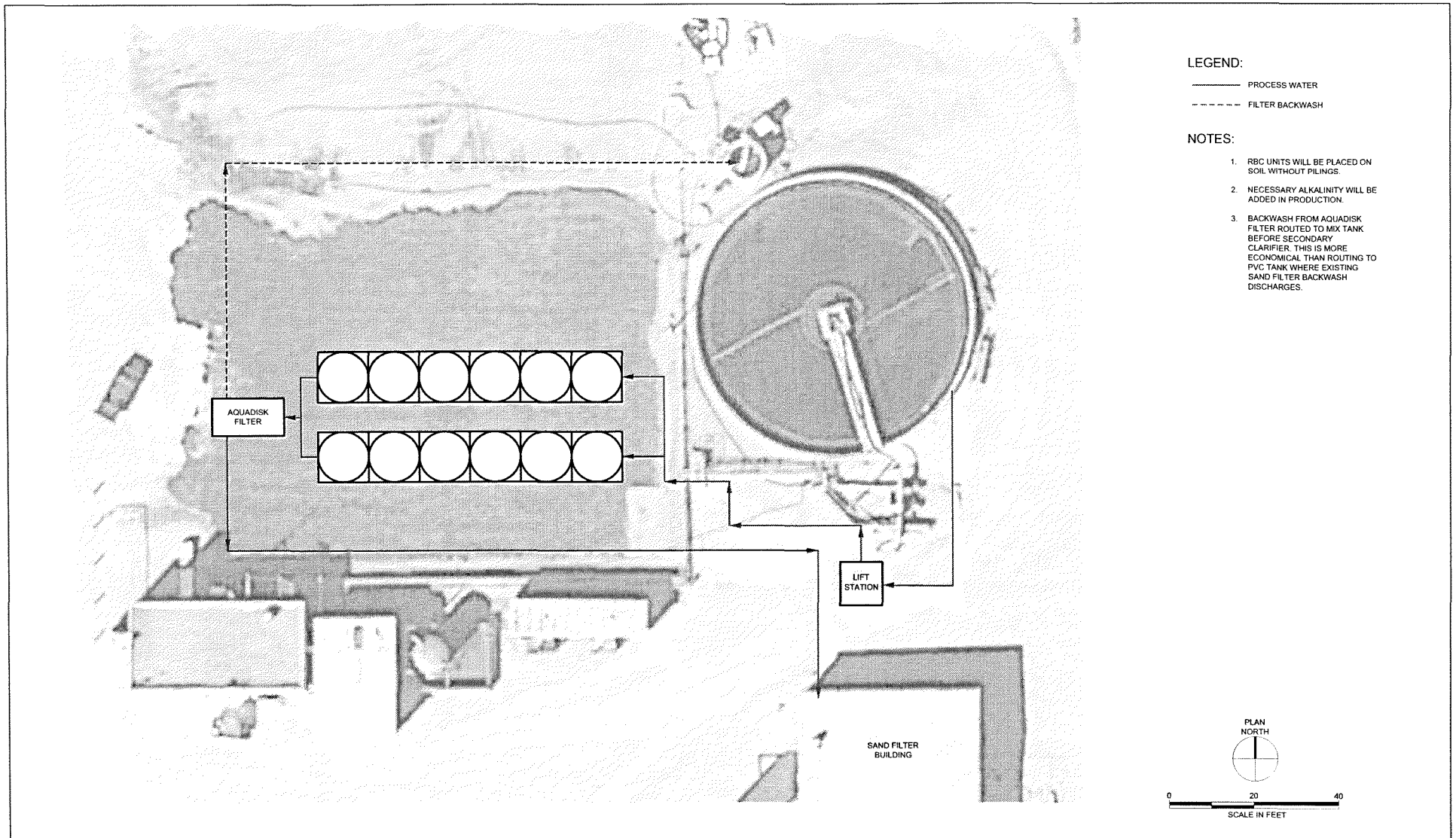


SCALE: AS SHOWN

DATE: 14-FEB-20

EMERALD ALKALINE STRIPPING

SITE LAYOUT

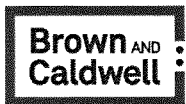


LEGEND:

- PROCESS WATER
- - - - FILTER BACKWASH

NOTES:

1. RBC UNITS WILL BE PLACED ON SOIL WITHOUT PILINGS.
2. NECESSARY ALKALINITY WILL BE ADDED IN PRODUCTION.
3. BACKWASH FROM AQUADISK FILTER ROUTED TO MIX TANK BEFORE SECONDARY CLARIFIER. THIS IS MORE ECONOMICAL THAN ROUTING TO PVC TANK WHERE EXISTING SAND FILTER BACKWASH DISCHARGES.



SCALE: AS SHOWN

DATE: 14-FEB-20

EMERALD ROTATING BIOLOGICAL CONTACTOR

SITE LAYOUT

Attachment B: Class 4 Cost Estimates

Brown AND Caldwell

B-1

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	Tertiary Nitrification		Alkaline Stripping	
	Selected Percentage	Cost	Selected Percentage	Cost
Direct Costs				
Purchased Equipment Delivered		\$ 2,802,206		\$ 1,854,460
Freight	3%	\$ 84,000	3%	\$ 56,000
Tax	6%	\$ 175,000	6%	\$ 116,000
Purchased Equipment Installation	6%	\$ 168,000	6%	\$ 111,000
Instrumentation and Controls (Installed)	18%	\$ 504,000	18%	\$ 334,000
Piping (Installed)	16%	\$ 448,000	16%	\$ 297,000
Electrical Systems (Installed)	10%	\$ 280,000	10%	\$ 185,000
Buildings		\$ -		\$ -
Structural	18%	\$ 504,000	18%	\$ 334,000
Yard Improvements	10%	\$ 280,000	10%	\$ 185,000
Service Utilities (Installed)	30%	\$ 1,121,000	30%	\$ 742,000
Direct Cost Subtotal		\$ 6,366,206		\$ 4,214,460
Indirect Costs				
Engineering and Supervision	10%	\$ 637,000	10%	\$ 421,000
Construction Expenses	34%	\$ 2,165,000	34%	\$ 1,433,000
Legal Expenses	4%	\$ 255,000	4%	\$ 169,000
Contractor's Fee	15%	\$ 955,000	15%	\$ 632,000
Indirect Cost Subtotal		\$ 4,012,000		\$ 2,655,000
Contingency	30%	\$ 3,113,000	30%	\$ 2,061,000
Capital Cost		\$ 13,500,000		\$ 8,900,000
Annual O&M Costs				
Energy/Power		\$ 4,458		\$ 68,480
Power Cost (\$/kwh)		\$ 0.0657		\$ 0.0657
Chemical		\$ 193,489		\$ 593,339
Equipment Maintenance		\$ 208,488		\$ 169,742
Labor (\$/year)		\$ 312,000		\$ 312,000
Labor Rate (\$/hr)		\$ 50		\$ 50
Number of Operators		3		3
Hours per Operator		8		8
Days		5		5
Weeks per year		52		52
Hauling Disposal		\$ -		\$ 282,072
Contingency (%)		\$ -		\$ -
Total Annual O&M Cost, \$		\$ 718,000		\$ 1,426,000