EAST LYME WATER AND SEWER COMMISSION
AGENDA
Amended

Jun 25, 2024

Regular Meeting
East Lyme Town Hall
(Upstairs Main Meeting Room)

7 PM

1. **Call to Order / Pledge of Allegiance**

2. **Approval of Minutes**
   a. **Regular Meeting Minutes – May 28, 2024**

3. **Delegations**

4. **Correspondence Log**

5. **Billing Adjustments/Disputes**
   a. **267 Flanders Rd (Starbucks)**

6. **Approval of Bills – Attachment A**

7. **Finance Director Report**

8. **Discussion on Preliminary Engineering Report for Well 4A and Well 1A/6 PFAS Removal Project**

9. **Project Updates**
   a. **Well 5A WTP Lagoon Improvement Project**
   b. **Well 2A/3A/3B WTP Upgrade Project**

10. **Chairman's Report**

11. **Staff Updates**
    a. **Water Department Monthly Report**
    b. **Sewer Department Monthly Report**

12. **Future Agenda Items**
    a. **Capital Projects Subcommittee**

13. **Adjournment**

EAST LYME WATER & SEWER COMMISSION
REGULAR MEETING
TUESDAY, MAY 28, 2024
MINUTES

The East Lyme Water & Sewer Commission held a Regular Meeting on May 28, 2024. Chaiman Dan Cunningham called the Regular Meeting at 7:00 PM.

PRESENT: Dan Cunningham Chairman, Dave Murphy, Dave Bond, Dave Zoller, Carol Russell, Michelle Williams

ALSO PRESENT: Attorney Mark Zamarka, Town Counsel
Joe Bragaw, Public Works Director
Ben North, Chief Operating Officer
Matt Garneau, Utility Engineer
Kevin Gervais, Director of Finance

ABSENT: Ken Roberts
Roger Spencer

1. Call to Order/Pledge of Allegiance
Chairman Dan Cunnigham called the Regular Meeting for the Town of East Lyme Water and Sewer Commission to order at 7:00 PM. The Pledge was observed.

Adding an item to the agenda
****MOTION (1)**
Mr. Cunningham moved to add item "3A. Executive Session – Pending Litigation Re Addabbo Sewer Assessment" to the agenda.
Mr. Murphy seconded the motion.
Vote: 6 – 0 – 2
Motion passed.

2. Approval of Minutes
Mr. Cunningham called for a motion to approve or any discussion on the Meeting Minutes of April 23, 2024. Mr. Murphy requested corrections on Vote line of Motion (1) from 6-2-0 to 6-0-2 and, Motion (5) removal of "Version 2 of".
****MOTION (2)**
Mr. Cunningham moved to approve the Regular Meeting Minutes of May 28, 2024, with noted corrections.
Mr. Murphy seconded the motion.
Vote: 6 – 0 – 2
Motion passed.

3. Delegations
Mr. Cunningham called for delegations. There were none.

3A. Executive Session – Review DEEP Memorandum

AGENDA# 2a

Mr. Cunningham called for a motion to enter Executive **Session – Pending Litigation Re Addabbo Sewer Assessment** and **invited Mr. Bragaw, Mr. North, Mr. Garneau and Attorney Zamarka to attend.**

****MOTION (3)**
Mr. Murphy moved to enter Executive Session at 7:06 PM
Mr. Bond seconded
Vote: 6 – 0 – 2
The motion passed.

****MOTION (4)**
Mr. Murphy moved to exit Executive Session at 7:13 PM and return to the Regular Meeting with no action in the Executive Session
Mr. Bond seconded
Vote: 6 – 0 – 2
The motion passed.

4. Correspondence Log
Mr. Cunninham went over the correspondence log.

5. Billing Adjustments
Mr. Cunningham called for billing adjustments.

a. **75 Pennsylvania Ave**
Mr. North mentioned that this is a commercial building and that the commission needs to decide on the 1 in 10 Request. This location had a leak after the meeting and under the concrete floor. He also noted that there were a lot of complications and a lot of effort in getting this leak fixed. The calculations were based on the last two comparable seasons and water usage only since this location does not have a sewer connection. Mr. Bond asked if this leak was picked up by the new meter. Mr. North confirmed that it was.

****MOTION (5)**
Mr. Murphy moved to accept the 1 in 10 policy reduction of bill for 75 Pennsylvania Ave to $784.51.
Mr. Zoller seconded
Vote: 6 – 0 – 2
The motion passed.

b. **22 Islanda Ct.**
Mr. North went over the request for this multifunction property. There were pictures and receipts pertaining to the leak fix. Mrs. Williams asked if the submeter impacted the high bill and Mr. North answered that the submeter is not part of this request/decision. Mr. North pointed out that the calculations were done based on the data collected on the town's meter reading.

****MOTION (6)**
Mr. Zoller moved to accept the 1 in 10 policy reduction of bill for 22 Islanda Ct. to $2,114.45
Mr. Murphy seconded
Vote: 6 – 0 – 2
The motion passed.

6. Approval of Bills

Mr. Cunningham called for the approval of bills. Mr. North added Invoice TB1000403 for Tighe and Bond for PFAS Preliminary Engineering Report (PER). He said that Tighe and Bond is almost finished with the PER and it seems that they will be able to stay within their budget. Mr. North explained that this is the first step in the process of securing funding for PFAS removal. The PER will analyze sites, alternatives, treatment options, water quality and getting OPCC assessment on cost. The PER will be used to solicit engineering firms to select an engineer through a Qualitative Bid Selection (QBS) process. Mr. North went on to explain that an eligibility application was already submitted to the state for Drinking Water State Revolving Fund (DWSRF) funding – federal funding earmarked for PFAS removal.

****MOTION (7)**
Mr. Murphy moved to approve the Tighe and Bond Invoice No. TB-1000403 for $20,815.00
Mr. Zoller seconded the motion.
Vote: 6- 0- 2.
The motion passed.

7. Finance Director Report

Mr. Gervais reviewed his reports. No accounts are over budget. Both water and sewer expenditure are in the 90% range. Mr. Gervais noted that when the new system, MUNIS, goes live it will fix the refund account which now shows as a negative expenditure instead of coming out of the overall revenue account.

8. Project Updates

a. Well 5A WTP Lagoon Improvement Project

Mr. Garneau went over a visual presentation that contained photos of different phases of the project. The first photo showed Well 5 Lagoon in its previous configuration. The Lagoon appeared at full capacity at 8 feet of water. The next picture was taken three weeks ago during ongoing construction – Mr. Garneau mentioned that the lagoon size is being tripled – a sand base and clay barrier were being installed at time of photo. This barrier will make the water flow into the ground and not horizontally. The next picture was taken on the same day as the meeting: the finishing touches were being added to the lagoon – they were installing "riprap" stone on the outside to prevent erosion. The remaining items left to finish are the addition of lawn seed and a permanent fence for security. The deadline given by the contractors was June 1st and Mr. Garneau anticipated that the majority of the project will be complete by that date.

Mr. Cunningham asked what the capacity is for the lagoon and Mr. Garneau responded that it is forty-five thousand gallons now. The prior capacity was ten thousand gallons. Mr. North mentioned that after the drilling of the new well that production had increased and therefore the amount iron also increased so the filters need backwashing twice a day – first thing in the morning and then, in the afternoon.

Mrs. Williams asked if the department had considered the well project cost to go up because of PFAS removal. Mr. Garneau answered that this well does not contain traces of PFAS. He also mentioned that both wells with lagoons do not have PFAS.

b. Niantic Pump Station Rehabilitation Project

Mr. Garneau went over the picture presentation of the Niantic Pump Station – He reminded the committee that the pump station pumps had vibration issues. After a full vibration study was performed, it was determined that the pump bases and piping needed to be replaced as they were the cause of the vibration issues. In addition, the station had two original pumps that needed replacement as part of this project. The project finished earlier modifications performed almost 10 years ago and now all pumps are powered byy variable frequency drive pumps on sturdy concrete bases to solve the vibration issues. The pump station has been online for a couple of weeks operating successfully and with greatly-reduced vibration. Mr. Garneau reported that restoration of the parking lot still needs to be performed.

c. Well 2A/3A/3B WTP Upgrade Project

Mr. Garneau went over the "before" picture that showed all the issues that needed addressing in the water treatment plant (currently serving well 3A and 3B and 2A in the future). Building maintenance items included corrosion on piping and filters, inefficient lighting, some corrosion on the structure itself and deteriorating insulation. Two weeks ago, the filters were sandblasted and painted green (raw water), blue (treated water) and tan (backwash water). All old insulation was ripped out and replaced with high efficiency spray foam as well as fireproofing barrier over the insulation and steel. Currently, water treatment operators and mechanics are working on chemical feed and containment installations. Previous chemical containers were concrete with expensive painted liners that were completely deteriorated. Instead of replacing the paint, polypropylene custom-fitted containers were installed that will prove to be much more resilient. Also, Fiberglass-Reinforced Panel (FRP) walls will be installed behind the chemical feed systems to protect the insulation and anything else from chemical damage.

Mr. Zoller asked about the atmosphere control in the building. Mr. Garneau answered that they will be installing two dehumidifiers to bring the humidity to below fifty percent and won't allow condensation on the pipes to enhance longevity of the building and equipment systems. He also mentioned if funding allows, the current electrical-resistance heaters will be replaced by a heatpump system to reduce electrical costs.

d. Annual Leak Detection Report

Mr. Garneau talked about the results of this report that was received in April. The leak detection company kept staff abreast throughout the process, which in turn allowed the department crew to investigate the leaks quickly. All leaks on the reported list have been fixed. The leak detection and fixes have been much more precise now resulting in less production of unmetered water.

Mr. North reported that because of the yearly leak detection efforts, the production of water in May this year was at fifty million gallons compared to 70 million gallons during the same period last year.

Mr. Bond asked about the cost effectiveness of a leak detection service. Mr. North responded that it costs $13,000 to do the report for the whole town. Mrs. Williams mentioned that it is worth since we saved about 20 million gallons since last year.

9. Discussion and Possible Action to Allocate Funding for the Niantic Pump Station Rehabilitation Project

Mr. Noth explained that the project is now complete. As part of the project, there were some unforeseen extra costs incurred: all the breakers for the MCC panels had to be replaced, an old VFD that had failed during initial operation, an extra week under the pump station bypass, and fuel and OT costs to fuel and routinely inspect bypass operations.

****MOTION (8)**
Mr. Murphy made a motion to approve and transfer $39,095.05 from funds available in the Sewer Assessment Funds to the "Niantic Pump Station Rehabilitation Project Account" No. 85-70-007-700-710 to cover additional costs incurred in the completion of the Niantic Pump Station Rehabilitation Project.
Mr. Zoller seconded the motion.
Vote: 6- 0- 2.
The motion passed.

****MOTION (9)**
Mr. Murphy made a motion to approve and transfer $7,6967.79 from funds in the Sewer Assessment to the Sewer Operations Account 06-01-300-100-102 to replenish overtime incurred during the Niantic Pump Station Rehabilitation Project.
Mr. Zoller seconded the motion.
Vote: 6- 0- 2.
The motion passed.

10. Chairman's Report

Mr. Cunningham reported the Water and Sewer and Town 2025 Budgets were approved.

Mr. Cunningham commented on the New London increase in the billing rates in comparison with the East Lyme increases. They will be increasing their water rates by 45% and sewer rates by 60% in the next three years after a consultant was brought in to do a rate study. He noted that the industry is seeing cost pressures from several external sources, including much-needed improvements on water quality and infrastructure improvements on both water and sewer utilities. East Lyme has been steadily raising its rates due to these headwinds as well.

11. Staff Updates

a. Water Department Monthly Report

Mr. North elaborated on item "4" of the report – the department's goal is to flush all hydrants in the system each year, and so far, 210 have been flushed (or about a quarter of the system). The main line valves are being exercised during the flushing (156 valves have been exercised). The EL water system has 1529-line valves – the goal is to have them exercised once every five years so that the water department will be effectively able to isolate the system during water main breaks.

Mr. Bragaw mentioned that one of the reasons the department can accelerate the hydrants flushing is because of the new process of meter reading. This is the first year that the process of meter reading went from manual meter reading to mostly automated. Mr. Murphy asked how many are still left to be replaced and the reasons. Mr. North responded that he would have more detailed information at the next meeting.

b. Sewer Department Monthly Report

Mr. North mentioned that the numbers on report were estimates based on working with Waterford's numbers because the system was on bypass for most of the month.

12. Future Agenda Items

a. Well 4 and Well 1A/6 PFAS Removal Project

Mr. North mentioned that this item was discussed under "Item 6" and that more information on this once the PER is complete.

b. Capital Projects Subcommittee

Mr. North said that a meeting will be scheduled soon for this subcommittee.

13. Executive Session Bridebrook Diversion Permit Mediation Strategy

Mr. Cunningham clarified the executive session on recommendations from council to more specifically enter executive session to "Review a Memorandum of Understanding proposed by the State of Connecticut Department of Energy and Environmental Protection (DEEP) pursuant to the Water Diversion Permit for the Bridebrook Water Treatment Facility and related DEEP mediation proceedings and assertions in in which DEEP staff are demanding potential changes to the operation and maintenance of the Bridebrook Water Treatment Facility" and **invited Mr. Bragaw, Mr. North, Mr. Garneau to attend.**

****MOTION (10)**
Mr. Murphy moved to enter Executive Session at 8:30 PM
Mr. Bond seconded
Vote: 6 – 0 – 2
The motion passed.

****MOTION (11)**
Mr. Murphy moved to exit Executive Session at 8:51 PM and return to the Regular Meeting with no action taken in the Executive Session
Mr. Zoller seconded
Vote: 6 – 0 – 2
The motion passed.

14. Discussion and Possible Action on a Motion to Authorize the Water and Sewer Chairman to Enter and Agreement with the CTDEEP RE Bridebrook Diversion Permit

Mr. Bragaw and Mr. North noted the on-going discussions with DEEP regarding the Bridebrook Diversion Permit MOU and recommended that the commission authorize the Water and Sewer Chairman to sign the mediation agreement and MOU with the DEEP to continue negotiating activities.

Mr. Murphy moved to authorize the Water and Sewer Chairman to enter into agreement with the DEEP to continue discussions regarding the Bridebrook Diversion.

Mr. Zoller seconded

Vote: 6 – 0 – 2

The motion passed.

15. Adjournment

Mr. Cunningham called for a motion to adjourn.

****MOTION (12)**
Mr. Murphy moved to adjourn this Regular Meeting of the East Lyme Water and Sewer Commission at 9:05 PM.
Mr. Zoller seconded the motion.
Vote 6 – 0- 2
The motion passed.

Respectfully submitted,

Tania Ranelli
Recording Secretary

CORRESPONDENCE
LOG - JUNE 2024

DATE	TO	FROM	SUBJECT
6/20/2024	EAST LYME WATER & SEWER COMMISSION	NEW LONDON W&WPCA	AGENDA FOR 6/27 REGULAR MEETING
6/11/2024	EAST LYME WATER & SEWER COMMISSION	WATERFORD UTILITY COMMISSION	AGENDA FOR 6/11 REGULAR MEETING
5/24/2024	EAST LYME WATER & SEWER COMMISSION	NEW LONDON W&WPCA	MINUTES FOR 4/25 REGULAR MEETING

EAST LYME
WATER & SEWER COMMISSION
JUN 25 2024
AGENDA# 4

EAST LYME WATER DEPARTMENT

1 IN 10 WATER LEAK ADJUSTMENT APPLICATION

Date of Request 05/21/2024

Property Owner Nauta Robert

Daytime Phone # 206-207-1674

Property Address 267 Flanders Road

Email Address Ross.Beard@engie.com

Type of Property Commercial

RESIDENTIAL (over 3 units/meter)/ MIXED USE/NON-RESIDENTIAL

Mixed Use/Apartments/Commercial/Industrial/ Governmental/ Other

REASON THE CUSTOMER IS REQUESTING AN ADJUSTMENT *

Found the back flow preventer leaks water from drain vent to floor drain removed back flow. Repairs were made.

RECEIVED
MAY 21 2024
ELWS

* Be as detailed as possible as to the reason of the request

Have you provided written proof that the excessive water use has been corrected?	Yes	(yes/no)
Have you been given an leak adjustment to your water bill over the last 10 years?	Not sure	(yes/no)
Has there been a change of use of the property during the disputed bill period?	No	(yes/no)
Has there been an increase in occupants at the disputed bill address?	No	(yes/no)

ANY ADDITIONAL INFORMATION (attach additional documenation as needed)

By signing this application below, I am certifying that all of the information that I have provided is true, that I am the owner of the property and that I have read the East Lyme Water Department's Bill Dispute Resolution policy.

Ross Beard — 05/21/2024

Signature **Date**

If you have any questions on how to fill out this application, please contact the Water Department at (860) 691-4104.

STAFF COMMENTS

EAST LYME
WATER & SEWER COMMISSION
JUN 25 2024
AGENDA# 6a

WATER & SEWER COMMISSION DECISION

Decision (Approve/Approve w/Modifications/Deny) **Chairman Signature** **Date**

Reason

Thru Way Plumbing & Heating, Inc.
717 Union Valley Rd.
Mahopac, NY 10541

(914) 241-0968 - (914) 241-6209 (fax)

License Numbers: Westchester Cty #424, #1365 - Poughkeepsie #204, #277, #52
Putnam Cty #13746 - CT PLM.0204562-P1 - Rockland Lic #P-856 P

Invoice - 117056

Date: 3/25/2024
Account ID: 1227
PO Number: 28220884

Bill to: Starbucks Coffee Company
FCC Retail Inv. Processing MS:S-CL1
PO Box 94310
Seattle, WA 98124

Service at: Starbucks #9292
267 Flanders Road
East Lyme, CT 06333

Reference: Work Order - 96768

Terms: Net 30 Days

Invoice Due: 04/24/2024

Description	Quantity	Unit Sale	Amount
02/19/2024 Checked for water usage. Checked water meter electric reading is moving fast but hardly any water being used and them sometimes the meter wll not spin them water is in use seems water meter is bad water. Found the back flow preventer leaks water from drain vent to floor drain removed back flow. Will order new one and return. Town came and changed out meter.			
Labor & Travel	6.00	$90.00	$540.00

Payment/Credit
04/24/2024 EFT - 1004688444 $574.29

Subtotal:	$540.00
Sales Tax:	$34.29
Total Invoice Amount:	**574.29**
Payment/Credit Applied:	$574.29
Total Due:	**0.00**

Range: 215800-0 to 215800-0 | Order By: Date
Year: First to Last | Account Type: First to Last | Report Type: Detail
Period: 1 to 12 | Include Prior Year/Prd in Bal: Y | Print Block/Lot/Qual: N
Date: First to 06/30/24 | Include Zero Bal: Y | Name to Print: Bill To
Cycle: First to Last | Exclude Non-NSF Reversed Payments: N | Location to Print: Property
Section: First to Last | Status: Active/Inactive
Print Service Debit/Credit Only:
Include Service Type: Water: Y Sewer: Y

* Overpayment amount applied to periods outside the range is not displayed

Account Id Type Section — Property Location
Bill To Name — Address
Cycle

215800-0 BUS SW — 267 FLANDERS ROAD
NAUTA ROBERT — C/O STARBUCKS STORE #09292 P.O. BOX 2440 SPOKANE WA 99210
Water: 1 Sewer: 1

Date	Type	Yr/Prd	Code	Meth	Check No	Description	Apply To	Principal	Penalty	Balance
05/20/24	Payment	24 2 Sewer	S01	CR		MC217228		7,161.95-	0.00	0.00
05/20/24	Payment	24 2 Water	W01	CR		MC217228		5,142.57-	0.00	7,161.95
05/01/24	Adjust	24 2 Water	MD1					25.65-	0.00	12,304.52
05/01/24	Bill	24 2 Sewer	S01			87627249		7,161.95		12,330.17
05/01/24	Bill	24 2 Water	MFW					18.00		5,168.22
05/01/24	Bill	24 2 Water	W01			87627249		5,150.22		5,150.22
11/21/23	Payment	24 1 Sewer	S01	CR		MC89137/E. INSIGHT		1,755.92-	0.00	0.00
11/21/23	Payment	24 1 Water	W01	CR		MC89137/E. INSIGHT		1,307.70-	0.00	1,755.92
11/01/23	Bill	24 1 Sewer	S01			68112502		1,755.92		3,063.62
11/01/23	Bill	24 1 Water	MFW					15.00		1,307.70
11/01/23	Bill	24 1 Water	W01			68112502		1,297.70		1,292.70
10/24/23	Appl Ovr	24 1 Water	WS7	CK	5977315	FR Water	05/22/23	5.00-	0.00	5.00-
05/22/23	Payment	23 2 Sewer	S01	CK	5977315			1,148.82-	0.00	5.00-
05/22/23	Payment	23 2 Water	W01	CK	5977315			800.05-	0.00	1,143.82
05/22/23	Overpayment	Water	WOV	CK	5977315			5.00-	0.00	1,943.87
05/01/23	Adjust	23 2 Water	W10			MINIMUM BILL ADJUSTM		5.00-	0.00	1,948.87
05/01/23	Bill	23 2 Sewer	S01			68112502		1,148.82		1,953.87
05/01/23	Bill	23 2 Water	MFW					15.00		805.05
05/01/23	Bill	23 2 Water	W01			68112502		790.05		790.05
11/16/22	Payment	23 1 Sewer	S01	CK	0005108809			1,747.30-	0.00	0.00
11/16/22	Payment	23 1 Water	W01	CK	0005108809			1,265.25-	0.00	1,747.30
11/01/22	Bill	23 1 Water	MFW					13.00		3,012.55
11/01/22	Bill	23 1 Water	W01			68112502		1,252.25		2,999.55
11/01/22	Bill	23 1 Sewer	S01			68112502		1,747.30		1,747.30
05/18/22	Payment	22 2 Sewer	S01	CK	0004223070			1,081.25-	0.00	0.00
05/18/22	Payment	22 2 Water	W01	CK	0004223070			731.31-	0.00	1,081.25
05/01/22	Appl Dep	22 2 Water	W21			FR Water	12/19/07	12.50-	0.00	1,812.56
05/01/22	Bill	22 2 Sewer	S01			68112502		1,081.25		1,825.06
05/01/22	Bill	22 2 Water	MFW					13.00		743.81
05/01/22	Bill	22 2 Water	SAF					1.00-		730.81
05/01/22	Bill	22 2 Water	W01			68112502		731.81		731.81
11/17/21	Payment	22 1 Sewer	S01	CK	3296908			1,419.50-	0.00	0.00
11/17/21	Payment	22 1 Water	W01	CK	3296908			952.19-	0.00	1,419.50
11/01/21	Appl Dep	22 1 Water	W21			FR Water	12/19/07	12.50-	0.00	2,371.69
11/01/21	Bill	22 1 Sewer	S01			68112502		1,419.50		2,384.19
11/01/21	Bill	22 1 Water	MFW					12.50		964.69
11/01/21	Bill	22 1 Water	SAF					1.00		952.19
11/01/21	Bill	22 1 Water	W01			68112502		951.19		951.19

(through sewer)

Range of Accounts: 215800-0 to 215800-0 Status: Both
Range of Dates: First to 06/30/24 Service Type: All Reading Type Includes:
Range of Years: First to Last Name to Print: Bill To Standard: Y Final: Y Prorated Final: Y
Range of Periods: First to Last Location to Print: Property Reset: Y Interim: Y Consumption: Y
Range of Cycles: First to Last Minimum Usage: -9999999999 Max Usage: 9999999999
Range of Acct Types: First to Last Range of City Ids: First to Last Estimate Flag Includes:
Range of Sections: First to Last Range of Bill Group Ids: First to Last Actual: Y Estimate: Y Customer Reads: Y
Read: Y Do Not Read: Y Retired: Y

Account Id Location / Type Section Name / Cycle Meter Num Mult Size Book Page / Bill Group — Units Code Year Prd Date Type Est Flag Readings Usage Roll Flag Ref Num

215800-0 267 FLANDERS ROAD — 1.00 S01 Water/Sewer Standard Meter: 3 Meter Group: 1 Status: Read
BUS SW NAUTA ROBERT — 1.00 W01 Meter Num: B87627249 Serial Num: 87627249
W: 1 S: 1 B87627249 1 10 FLEX — 1.00 SAF
B61861763 1 10 J 2180 — 1.00 MFW
M040134 0 0

Year	Prd	Date	Type	Est Flag	Readings	Usage	Roll Flag	Ref Num
2025	1	06/19/24	I		343031	15419		20908
2025	1	05/31/24	I		327612	39752		20875
2024	2	04/11/24	S		287860	287860		20750
2024	2	01/09/24	R		0	0		20411
						343031		

Water/Sewer Standard Meter: 1 Meter Group: 1 Status: Retired
Meter Num: B61861763 Serial Num: 68112502

Year	Prd	Date	Type	Est Flag	Readings	Usage	Roll Flag	Ref Num
2024	2	01/09/24	I		5862506	409506		20411
2024	1	08/24/23	S		5453000	188000		19412
2023	2	02/28/23	S		5265000	123000		17807
2023	1	10/05/22	S		5142000	202000		16745
2022	2	03/22/22	S		4940000	125000		14452
2022	1	09/29/21	S		4815000	170000		13130
2021	2	03/09/21	S		4645000	111000		12531
2021	1	09/24/20	S		4534000	130000		12000
2020	2	02/26/20	S		4404000	115000		11132
2020	1	09/30/19	S		4289000	196000		10817
2019	2	03/11/19	S		4093000	154000		10328
2019	1	09/28/18	S		3939000	208000		9935
2018	2	02/22/18	S		3731000	138000		9491
2018	1	09/15/17	S		3593000	241000		9051
2017	2	03/02/17	S		3352000	202000		8604
2017	1	09/15/16	S		3150000	222000		8291
2016	2	03/10/16	S		2928000	156000		7995
2016	1	09/17/15	S		2772000	178000		7765
2015	2	03/16/15	S		2594000	153000		7461
2015	1	10/14/14	S		2441000	195000		7229
2014	2	04/21/14	S		2246000	228000		6881
2014	1	10/11/13	S		2018000	204000		6570
2013	2	04/09/13	S		1814000	173000		6256
2013	1	10/10/12	S		1641000	219000		5990
2012	2	03/27/12	S		1422000	149000		5716
2012	1	10/18/11	S		1273000	209000		5497
2011	2	04/05/11	S		1064000	155000		5255
2011	1	10/08/10	S		909000	168000		5036
2010	2	04/08/10	S		741000	132000		4757
2010	1	10/08/09	S		609000	173000		4544
2009	2	03/27/09	S		436000	158000		4265

Search

Active Devices Only

	Customer Name	Account	Device ID	Meter ID 2	Radio ID	Billing Cycle	Meter Size	Latest Read
S ROAD	NAUTA ROBERT	215800-0	87627249	87627249	C95434822	1	0.625	336147.5 GAL 06/11/2024 09:00 AM EDT

- 06/11/2024

24h 3d 7d 1m 3m 6m 12m

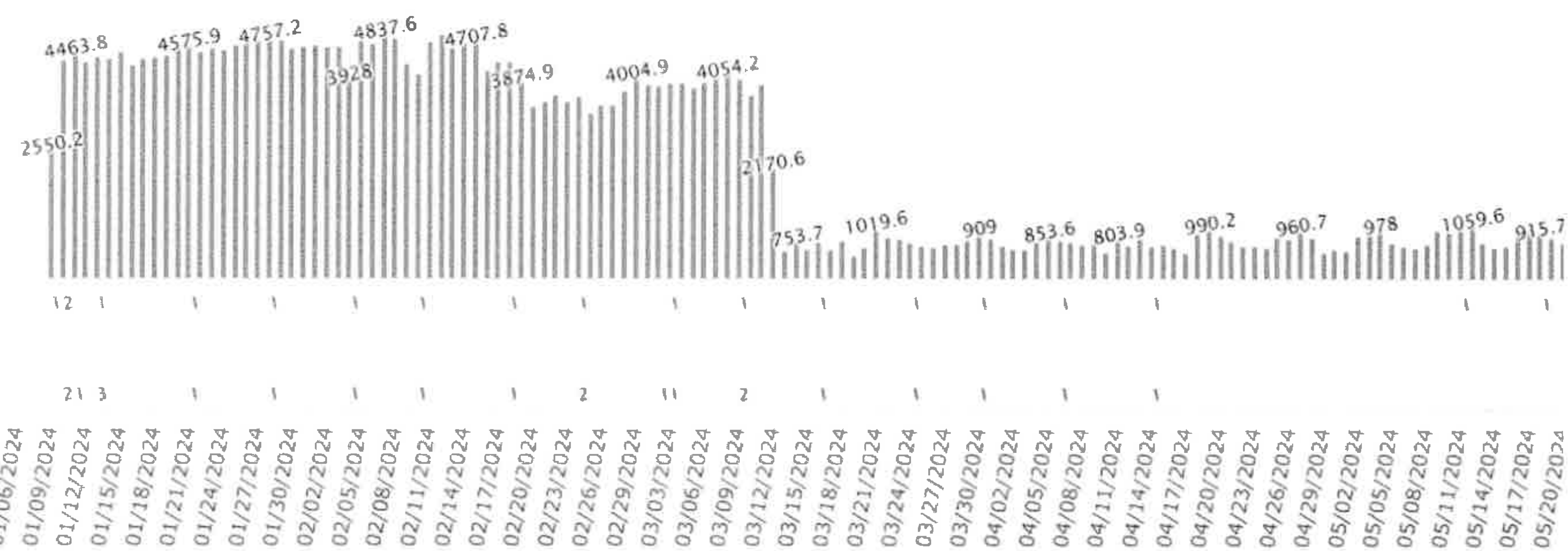
Alarms 44 Notifications Details Actions History

06/11/2024
allons (us gal)
ax: 4837.6 avg: 2168.6

Consumption Graph
Reads Graph

Date Range Detail Level
Daily

GAL



US Gallons (us gal) Continuous Flow High Flow

Legend: Consumption No Consumption Negative Consumption (blank) Missing Interval

4/26/2024 11:00	--	71.6	299308.3
4/26/2024 10:00	--	46.5	299236.7
4/26/2024 9:00	--	51.4	299190.2
4/26/2024 8:00	--	34	299138.8
4/26/2024 7:00	--	29.3	299104.8
4/26/2024 6:00	--	21.4	299075.5
4/26/2024 5:00	--	18.9	299054.1
4/26/2024 4:00	--	1.3	299035.2
4/26/2024 3:00	--	1	299033.9
4/26/2024 2:00	--	1.2	299032.9
4/26/2024 1:00	--	0.6	299031.7
4/26/2024 0:00	--	0.8	299031.1
4/25/2024 23:00	--	1.1	299030.3
4/25/2024 22:00	--	1.1	299029.2
4/25/2024 21:00	--	72.3	299028.1
4/25/2024 20:00	--	79.8	298955.8
4/25/2024 19:00	--	50.5	298876
4/25/2024 18:00	--	69.7	298825.5
4/25/2024 17:00	--	49.4	298755.8
4/25/2024 16:00	--	61	298706.4
4/25/2024 15:00	--	59.2	298645.4
4/25/2024 14:00	--	61.7	298586.2
4/25/2024 13:00	--	33.1	298524.5
4/25/2024 12:00	--	42.8	298491.4
4/25/2024 11:00	--	34.8	298448.6
4/25/2024 10:00	--	32	298413.8
4/25/2024 9:00	--	38.8	298381.8
4/25/2024 8:00	--	47.7	298343
4/25/2024 7:00	--	55.1	298295.3
4/25/2024 6:00	--	22.9	298240.2
4/25/2024 5:00	--	19.1	298217.3
4/25/2024 4:00	--	0.6	298198.2
4/25/2024 3:00	--	0.7	298197.6
4/25/2024 2:00	--	1.6	298196.9
4/25/2024 1:00	--	0.9	298195.3
4/25/2024 0:00	--	2.6	298194.4
4/24/2024 23:00	--	1.1	298191.8
4/24/2024 22:00	--	35.9	298190.7
4/24/2024 21:00	--	43.5	298154.8
4/24/2024 20:00	--	16.7	298111.3
4/24/2024 19:00	--	33.4	298094.6
4/24/2024 18:00	--	22.7	298061.2
4/24/2024 17:00	--	26.7	298038.5
4/24/2024 16:00	--	39.9	298011.8

ISSUE FIXED

4/24/2024 15:00	--	40.9	297971.9
4/24/2024 14:00	--	24.6	297931
4/24/2024 13:00	--	27.7	297906.4
4/24/2024 12:00	--	44.4	297878.7
4/24/2024 11:00	--	61.6	297834.3
4/24/2024 10:00	--	52.1	297772.7
4/24/2024 9:00	--	45.7	297720.6

Utility Account Maintenance

Add | Edit | Close | Delete | Previous | Next | Detail | Letter | View Ma

Account Id: 215800 - 0 Type: BUS Section: SW

Prop Loc: 267 FLANDERS ROAD Location Id: 2726

Serv Loc:

City Id: Block:

Notes Exist

Owner: NAUTA ROBERT

Bill To: NAUTA ROBERT

Alternate Id:

General | Additional | Water | Sewer | W/S Meter | Balances | Recent Activity | Credit History | Location Accounts | Notes

Add | Edit | Delete

Created	Modified	Note	Service Type
04/17/2024	04/17/2024	RICH IN ON 2/6/2024 TO INVESTIGATE POSSIBLE LEAK. MANAGER CIARA STATED SHE WOULD PUT IN A WORK ORDER WITH HER HOME OFFICE. JG	
02/05/2024	02/05/2024	CONTINIOUS CONSUMPTION CARD SENT. 175GPH. JG	
11/30/2017	11/30/2017	PER THE PROPERTY OWNER (NAUTA) THE $70.00 METER DEPOSIT WAS PAID BY STARBUCKS	
12/31/2009	12/31/2009	STAR BUCKS CALLED - MAILED CK TO LB 11/10/09 CK # 15606150 - STOPPING PYMT & SENDING 2ND CK	
03/23/2009	03/23/2009	10/5/05 VACANT¤6/13/07 BILL REMOVED & INT - NO BUILDING THERE NOW OKAYED BY M.P.¤TILL NEW BUILDING ERECTED¤11/2/07 BILL REMOVED PER M.P. - JUST FRAME THERE & WTR OFF¤11/28/07 MTR INSTALED - STARBUCKS¤	

Version 1

WATER LEAK ADJUSTMENT REQUEST
May/2024 request

ADDRESS	UNADJUSTED BILL				EXPLANATION	EXCEEDS TWO BILLS BY 33%	AVERAGE OF TWO COMPARABLE BILLS				RECALCULATED PER "1 in 10"					
	GALLONS	$ WATER	$ SEWER	$ TOTAL			GALLONS	$ WATER	$ SEWER	$ TOTAL	"EXCESSIVE WATER USED"	"EXCESSIVE WATER USED" (%)	ADJUSTED CONSUMPTION (unadjusted gallons less excessive water used)	$ WATER	$ SEWER	$ TOTAL
267 Flanders Rd 215800-0	697,366	5,150.22	7,161.95	12,312.17	BACK FLOW LEAK	YES	124,000	870.66	1,227.60	2,098.26	286,683	462%	410,683	3,057.44	7,161.95	10,219.38

The calculation for adjustment to the water bill is based on the historical average of two comparable billing periods.

Excess water went through sewer system	YES

The water bill adjustment for excessive use shall be calculated by taking the average amount of water used during the two comparable billing periods and then subtracting that amount from the amount of water used during the excessive billing period. One-half of the resulting figure shall be the "excessive water" used. The "excessive water" used is subtracted from the unadjusted water use to get the adjusted consumption. Sewer usage was not adjusted because the water did enter the sewer collection system.

2022-2023	Water Rate	85.00	+	5.58	per 1000 gallons	or	6.52	per 1000 gallons if over 40,000 gallons	or	7.30	per 1000 gallons if over 150,000 gallons
2022-2023	Sewer Rate			9.90	per 1000 gallons	or	10.27	per 1000 gallons if over 2,500,000 gallons			

Version 2

WATER LEAK ADJUSTMENT REQUEST
May/2024 request

ADDRESS	UNADJUSTED BILL				EXPLANATION	EXCEEDS TWO BILLS BY 33%	AVERAGE OF TWO COMPARABLE BILLS				RECALCULATED PER "1 in 10"					
	GALLONS	$ WATER	$ SEWER	$ TOTAL			GALLONS	$ WATER	$ SEWER	$ TOTAL	"EXCESSIVE WATER USED"	"EXCESSIVE WATER USED" (%)	ADJUSTED CONSUMPTION (unadjusted gallons less excessive water used)	$ WATER	$ SEWER	$ TOTAL
267 Flanders Rd 215800-0	697,366	5,150.22	7,161.95	12,312.17	BACK FLOW LEAK	YES	124,000	870.66	1,227.60	2,098.26	217,715	462%	479,652	3,560.91	7,161.95	10,722.85

The calculation for adjustment to the water bill is based on the historical average of two comparable billing periods.

Excess water went through sewer system	YES

Based on when the customer was alerted of leak (02/07/24), another 137,937 went through the meter until problem was resolved

The water bill adjustment for excessive use shall be calculated by taking the average amount of water used during the two comparable billing periods and then subtracting that amount from the amount of water used during the excessive billing period. One-half of the resulting figure shall be the "excessive water" used. The "excessive water" used is subtracted from the unadjusted water use to get the adjusted consumption. Sewer usage was not adjusted because the water did enter the sewer collection system.

2022-2023	Water Rate	85.00	+	5.58	per 1000 gallons	or	6.52	per 1000 gallons if over 40,000 gallons	or	7.30	per 1000 gallons if over 150,000 gallons					
2022-2023	Sewer Rate			9.90	per 1000 gallons	or	10.27	per 1000 gallons if over 2,500,000 gallons								

Range of Accounts: 06- - - - to 06-99- - - Include Cap Accounts: Yes As Of: 05/31/24
Skip Zero Activity: Yes

NOTE: This report includes ONLY activity originally Budgeted/Charged to Budget Year 4.
Prior Year Budgeted/Encumbered/Payable amounts rolled to Budget Year 4 have been EXCLUDED.

Account No	Description	Budgeted	Transfers	Encumber	Net Expd/Reimb	Payable	Balance YTD	%Used
06-00-000-000-000	SEWER DEPARTMENT							
06-01-114-000-000	OPERATIONS, MAINTENANCE AND AD							
06-01-114-100-121	FICA/Medicare	44,900.00	0.00	0.00	40,809.94	0.00	4,090.06	91
Department: 114	**OPERATIONS, MAINTENANCE AND AD Total**	**44,900.00**	**0.00**	**0.00**	**40,809.94**	**0.00**	**4,090.06**	**91**
06-01-200-000-000	EQUIPMENT							
06-01-200-100-006	GENERATOR REPAIR - Lease Payment	0.00	0.07	0.00	0.00	0.00	0.07	0
06-01-200-100-007	Vehicle - Lease Payment	18,856.00	0.00	0.00	15,860.39	0.00	2,995.61	84
Department: 200	**EQUIPMENT Total**	**18,856.00**	**0.07**	**0.00**	**15,860.39**	**0.00**	**2,995.68**	**84**
06-01-300-000-000	OPERATION & MAINTENANCE							
06-01-300-100-000	OPER & MAINT PAY AND BENEFITS							
06-01-300-100-101	SALARIES & WAGES	320,300.00	15,480.00	0.00	309,826.27	0.00	25,953.73	92
06-01-300-100-102	Field OT	59,000.00	2,500.00-	0.00	56,714.81	0.00	214.81-	100
06-01-300-100-122	PERSONNEL BENEFITS	154,000.00	338.03	7,320.77	124,296.05	0.00	22,721.21	85
06-01-300-500-000	OPERATIONS & MAINTENANCE EXPEN							
06-01-300-610-210	TREATMENT PLANT & SYSTEM FEE	992,800.00	111,775.61	35,000.00	802,259.23	0.00	267,316.38	76
06-01-300-610-215	MAINTENANCE OF PUMP STA EQUIP	80,000.00	13,201.12-	5,115.04	61,668.04	0.00	15.80	100
06-01-300-610-217	Maintenance of Wet Wells	60,000.00	32,322.54	0.00	92,322.54	0.00	0.00	100
06-01-300-610-220	MAINTENANCE OF SYSTEM	12,000.00	5,320.99-	0.00	6,679.01	0.00	0.00	100
06-01-300-610-221	Infiltration/Inflow Improvements	1,000.00	1,000.00-	0.00	0.00	0.00	0.00	0
06-01-300-610-225	MATERIALS & SUPPLIES	11,500.00	176.59-	688.85	10,634.56	0.00	0.00	100
06-01-300-610-230	UTILITIES	165,000.00	7,000.00	12,930.74	142,069.26	0.00	17,000.00	90
06-01-300-610-231	Telephones	5,900.00	1,200.07-	1,067.81	3,183.67	0.00	448.45	90
06-01-300-610-235	FUEL OIL AND GASOLINE	29,800.00	10,000.00-	11,579.60	7,328.20	0.00	892.20	95
06-01-300-610-240	CHEMICALS	175,000.00	40,000.00-	26,329.60	108,670.40	0.00	0.00	100
06-01-300-610-250	O&M EXPENSE	16,140.00	2,000.00-	3,239.43	10,831.89	0.00	68.68	100
06-01-300-610-260	MAINTENANCE OF VEHICLES	8,500.00	0.00	667.79	7,077.82	0.00	754.39	91
Department: 300	**OPERATION & MAINTENANCE Total**	**2,090,940.00**	**91,517.41**	**103,939.63**	**1,743,561.75**	**0.00**	**334,956.03**	**85**
06-01-400-000-000	ADMINISTRATION PAY AND BENEFIT							
06-01-400-100-101	SALARIES & WAGES	207,200.00	2,000.00-	0.00	189,149.93	0.00	16,050.07	92

EAST LYME
WATER & SEWER COMMISSION

JUN 25 2024

AGENDA# 7

Account No	Description	Budgeted	Transfers	Encumber	Net Expd/Reimb	Payable	Balance YTD	%Used
06-01-400-200-000	ADMINISTRATION GENERAL							
06-01-400-200-140	LEGAL & ACCOUNTING	18,300.00	5,000.00-	1,156.30	2,952.50	0.00	9,191.20	31
06-01-400-200-210	OUTSIDE SERVICES	21,600.00	0.00	4,751.94	15,002.80	0.00	1,845.26	91
06-01-400-200-290	INSURANCE P,D&L	40,000.00	1,503.44-	0.00	38,496.56	0.00	0.00	100
06-01-400-300-243	PROFESSIONAL DEVELOPMENT	3,000.00	1,474.14-	78.77	1,447.09	0.00	0.00	100
06-01-400-300-320	SUPPLIES & MISCELLANEOUS	2,200.00	0.00	93.26	2,106.74	0.00	0.00	100
Department: 400	**ADMINISTRATION PAY AND BENEFIT Total**	**292,300.00**	**9,977.58-**	**6,080.27**	**249,155.62**	**0.00**	**27,086.53**	**90**
06-01-500-500-000	CAPITAL REPLACEMENT/IMPROVEMEN							
06-01-500-500-310	CAPITAL REPLACEMENT RESERVE	100,000.00	61,043.34-	11,864.88	27,091.78	0.00	0.00	100
06-01-500-500-330	NEW SERVICES/PROJECTS	80,500.00	0.00	0.00	0.00	0.00	80,500.00	0
Department: 500	**Total**	**180,500.00**	**61,043.34-**	**11,864.88**	**27,091.78**	**0.00**	**80,500.00**	**33**
06-01-600-600-000	OPERATING RESERVE							
06-01-600-600-400	CONTINGENCY	85,000.00	20,496.56-	0.00	49,187.82	0.00	15,315.62	76
Department: 600	**Total**	**85,000.00**	**20,496.56-**	**0.00**	**49,187.82**	**0.00**	**15,315.62**	**76**
06-01-800-800-801	OTO - Operating Transfer Out	50,000.00	0.00	0.00	0.00	0.00	50,000.00	0
Department: 800	**Total**	**50,000.00**	**0.00**	**0.00**	**0.00**	**0.00**	**50,000.00**	**0**
Fund: 06	SEWER DEPARTMENT Budgeted Total	2,762,496.00	0.00	121,884.78	2,125,667.30	0.00	514,943.92	81
Fund: 06	SEWER DEPARTMENT Non-Budgeted Total	0.00	0.00	0.00	0.00	0.00	0.00	0
Fund: 06	**SEWER DEPARTMENT Total**	**2,762,496.00**	**0.00**	**121,884.78**	**2,125,667.30**	**0.00**	**514,943.92**	**81**
Final Budgeted		2,762,496.00	0.00	121,884.78	2,125,667.30	0.00	514,943.92	81
Final Non-Budgeted		0.00	0.00	0.00	0.00	0.00	0.00	0
Final Total		**2,762,496.00**	**0.00**	**121,884.78**	**2,125,667.30**	**0.00**	**514,943.92**	**81**

Range of Accounts: 06- - - to 06-99- - Start Month: July Start Year: 2023
Type: Revenue Activity Includes Accounts with Zero Activity: N Year To Date As Of: 06/21/24
Subtotal CAFR: Yes Subtotal Department: Yes

Account No / Total	Description / Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
06-01-100-600	METERED SEWER SERVICE											
452958.15	37833.37	0.00	38954.55	34880.21	41927.92	38632.92	39586.54	41563.68	32862.06	54360.68	48655.36	43700.86
06-01-100-610	METERED(WATER)SEWER SERVICE											
2040711.18	0.00	0.00	0.00	0.00	1146613.74	0.00	0.00	0.00	0.00	0.00	894097.44	0.00
06-01-100-621	DELINQUENT INTEREST(W)											
9048.31	0.00	0.00	2750.32	50.06	0.00	147.69	1354.73	2556.71	1580.77	163.72	110.77	333.54
Department Total												
2502717.64	**37833.37**	**0.00**	**41704.87**	**34930.27**	**1188541.66**	**38780.61**	**40941.27**	**44120.39**	**34442.83**	**54524.40**	**942863.57**	**44034.40**
CAFR Total												
2502717.64	**37833.37**	**0.00**	**41704.87**	**34930.27**	**1188541.66**	**38780.61**	**40941.27**	**44120.39**	**34442.83**	**54524.40**	**942863.57**	**44034.40**
06-05-100-042	MISC ADM FEE											
294.33	0.00	0.00	0.00	0.00	0.00	172.50	0.00	0.00	0.00	0.00	121.83	0.00
06-05-100-044	Maintenance Fees											
6990.60	0.00	1398.12	699.06	0.00	699.06	0.00	699.06	699.06	699.06	699.06	699.06	699.06
06-05-100-550	PERMITS											
80.00	0.00	0.00	80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Department Total												
7364.93	**0.00**	**1398.12**	**779.06**	**0.00**	**699.06**	**172.50**	**699.06**	**699.06**	**699.06**	**699.06**	**820.89**	**699.06**
CAFR Total												
7364.93	**0.00**	**1398.12**	**779.06**	**0.00**	**699.06**	**172.50**	**699.06**	**699.06**	**699.06**	**699.06**	**820.89**	**699.06**
06-07-700-701	INVESTMENT INTEREST											
15529.59	0.00	15529.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Account No / Total	Description / Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Department Total												
15529.59	**0.00**	**15529.59**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
CAFR Total												
15529.59	**0.00**	**15529.59**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
06-08-800-809	MISCELLANEOUS											
4728.93	0.00	1874.21	0.29	0.12	0.00	2853.26	0.23	0.00	0.35	0.35	0.12	0.00
06-08-800-810	OPERATING TRANSFERS IN											
72715.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72715.00	0.00	0.00	0.00	0.00
Department Total												
77443.93	**0.00**	**1874.21**	**0.29**	**0.12**	**0.00**	**2853.26**	**0.23**	**72715.00**	**0.35**	**0.35**	**0.12**	**0.00**
CAFR Total												
77443.93	**0.00**	**1874.21**	**0.29**	**0.12**	**0.00**	**2853.26**	**0.23**	**72715.00**	**0.35**	**0.35**	**0.12**	**0.00**
06-11-400-007	DUE FM WATER-Sewer Sales(W)											
108848.20	108918.20	0.00	4848.58-	5549.15-	10397.73	0.00	0.00	70.00-	0.00	0.00	0.00	0.00
06-11-400-008	Due Fm Water(Delq Interest)											
9996.00	946.88	0.00	2713.81	0.00	87.38	147.69	1354.73	2556.71	1580.77	163.72	110.77	333.54
Department Total												
118844.20	**109865.08**	**0.00**	**2134.77-**	**5549.15-**	**10485.11**	**147.69**	**1354.73**	**2486.71**	**1580.77**	**163.72**	**110.77**	**333.54**
CAFR Total												
118844.20	**109865.08**	**0.00**	**2134.77-**	**5549.15-**	**10485.11**	**147.69**	**1354.73**	**2486.71**	**1580.77**	**163.72**	**110.77**	**333.54**
Fund Total												
2721900.29	**147698.45**	**18801.92**	**40349.45**	**29381.24**	**1199725.83**	**41954.06**	**42995.29**	**120021.16**	**36723.01**	**55387.53**	**943795.35**	**45067.00**
Grand Total	Count: 11											
2721900.29	147698.45	18801.92	40349.45	29381.24	1199725.83	41954.06	42995.29	120021.16	36723.01	55387.53	943795.35	45067.00

Account Range: 06- - - - to 06-99 - - - Date Range: 07/01/23 to 05/31/24
Exclude Accounts with Zero Balance and No Activity: Y

Account No	Description	Type	Begin Balance	Debit	Credit	Net	End Balance
06-100-01-001-	CHECKING A/C Webster 3288	A	905,453.55 Db	3,537,955.09	4,906,262.77	1,368,307.68 Cr	462,854.13 Cr
06-100-02-001-	INVESTMENTS-MONEY MARKET	A	0.00	19,763.17	19,763.17		0.00
06-100-02-005-	METER DEPOSITS - RA - Webster 3288	A	2,617.50 Db				2,617.50 Db
06-100-03-001-	A/R-SALES SERVICE CHARGES	A	30,335.73 Db	409,257.29	477,966.43	68,709.14 Cr	38,373.41 Cr
06-100-03-002-	A/R-UNBILLED	A	403,960.58 Db				403,960.58 Db
06-100-03-003-	A/R - SEWER SALES (WATER)	A	148,655.39 Cr	2,040,711.18	1,277,630.28	763,080.90 Db	614,425.51 Db
06-100-03-007-	A/R-OTHER	A	12,905.68 Db	6,291.54	6,899.78	608.24 Cr	12,297.44 Db
06-100-04-002-	DUE FROM GEN FUND	A	2,058.58 Cr	356,485.77	314,741.77	41,744.00 Db	39,685.42 Db
06-100-04-007-	DUE FROM WATER FUND	A	115,132.67 Db	1,288,360.56	1,398,246.45	109,885.89 Cr	5,246.78 Db
06-100-06-001-	ALLOWANCE FOR DOUBTFUL ACCTS	A	7,500.00 Cr				7,500.00 Cr
06-100-06-002-	INVENTORY - CONSUMABLES	A	6,350.00 Db				6,350.00 Db
06-100-06-003-	INVENTORY - PARTS	A	7,000.00 Db				7,000.00 Db
06-100-07-001-	PROPERTY -LAND & BUILDINGS	A	3,223,483.64 Db				3,223,483.64 Db
06-100-07-002-	UTILITY IN SERVICE - DISTRIBUT	A	38,860,174.72 Db				38,860,174.72 Db
06-100-07-003-	CONSTRUCTION IN PROGRESS	A	14,804.06 Db				14,804.06 Db
06-100-07-006-	EQUIPMENT	A	146,697.06 Db				146,697.06 Db
06-100-09-001-	Prepaid Expenditures	A	5,138.18 Cr				5,138.18 Cr
	Account Totals		43,565,563.04 Db	7,658,824.60	8,401,510.65	742,686.05 Cr	42,822,876.99 Db
06-200-01-001-	ACCOUNTS PAYABLE	L	79,071.62 Cr	1,635,351.75	1,557,404.15	77,947.60 Db	1,124.02 Cr
06-200-01-003-	ACCRUED ACCOUNTS PAYABLE	L	16,506.29 Cr				16,506.29 Cr
06-200-02-005-	METER DEPOSITS - RA	L	3,047.50 Cr				3,047.50 Cr
06-200-04-001-	DUE TO OTHER FUNDS	L	18,675.06 Db	547,492.19	291,495.24	255,996.95 Db	274,672.01 Db
06-200-04-002-	Due To General Fund (01)	L	88,472.05 Cr	1,639,355.10	798,709.85	840,645.25 Db	752,173.20 Db
06-200-04-003-	Due to Sewer Assessment Fund	L	429,805.97 Cr				429,805.97 Cr
06-200-04-007-	DUE TO WATER OPERATIONS	L	59,283.32 Cr				59,283.32 Cr
06-200-05-001-	Deferred Revenue Other	L	15,870.80 Cr				15,870.80 Cr
06-200-08-001-	COMPENSATED ABSENCES	L	77,943.22 Cr				77,943.22 Cr
06-200-55-001-	Reserve Refund of Revenues	L	2,848.15 Db				2,848.15 Db
	Account Totals		748,477.56 Cr	3,822,199.04	2,647,609.24	1,174,589.80 Db	426,112.24 Db
06-300-00-001-	RESERVE FOR ENCUMBRANCE	L	3,000.00 Db	1,617,717.33	1,739,602.11	121,884.78 Cr	118,884.78 Cr
06-300-00-002-	REVENUE CONTROL	L	4,904,642.90 Cr		2,558,322.63	2,558,322.63 Cr	7,462,965.53 Cr
06-300-00-003-	EXPENDITURE CONTROL	L	4,606,089.75 Db	2,159,907.95	33,489.07	2,126,418.88 Db	6,732,508.63 Db
06-300-00-004-	ENCUMBRANCE	L	0.00	1,739,602.11	1,617,717.33	121,884.78 Db	121,884.78 Db

Account No	Description	Type	Begin Balance	Debit	Credit	Net	End Balance
06-300-00-005-	CONTRIBUTED CAPITAL - DEVELOPE	L	1,910,000.00 Cr				1,910,000.00 Cr
06-300-00-008-	CONTRIBUTED CAPITAL - GOVERNME	L	50,896,799.26 Cr				50,896,799.26 Cr
06-300-10-001-	RETAINED EARNINGS-UNRESERVED	F	10,285,639.43 Db				10,285,639.43 Db
	Account Totals		42,816,712.98 Cr	5,517,227.39	5,949,131.14	431,903.75 Cr	43,248,616.73 Cr
	Account Totals		0.00				0.00
	Fund Totals		372.50 Db	16,998,251.03	16,998,251.03		372.50 Db
	Fund Balance Totals			61,506,468.91	61,506,096.41		
Total Accounts ===>	34						
	Report Totals		372.50 Db	16,998,251.03	16,998,251.03		372.50 Db
	Report Balance Totals			61,506,468.91	61,506,096.41		

Account Range: 03- - - - to 03-99 - - - Date Range: 07/01/23 to 05/31/24
Exclude Accounts with Zero Balance and No Activity: Y

Account No	Description	Type	Begin Balance	Debit	Credit	Net	End Balance
03-100-01-001-	CASH - CHECKING A/C	A	292,911.36 Db	365,206.24	596,134.15	230,927.91 Cr	61,983.45 Db
03-100-02-101-003	SEWER ASSESSTMENT-STIF	A	4,082,748.00 Db	225,508.53	19,313.76	206,194.77 Db	4,288,942.77 Db
03-100-02-999-	Cash Over/Short	A	0.25 Db				0.25 Db
03-100-03-002-	A/R SEWER ASSESSMENTS	A	1,434,441.92 Db		298,352.72	298,352.72 Cr	1,136,089.20 Db
03-100-03-003-	A/R-CURRENT SEWER ASSESSMENTS	A	997,600.82 Db	298,352.72		298,352.72 Db	1,295,953.54 Db
03-100-03-005-	A/R-CURRENT DODGETWN ASSMT	A	788.30 Db				788.30 Db
03-100-03-007-	A/R-OTHER	A	15,928.31 Db				15,928.31 Db
03-100-04-001-	DUE FM OTHER FUNDS	A	22,511.26 Db	156,173.10	175,000.00	18,826.90 Cr	3,684.36 Db
03-100-04-006-	Due from Sewer Operations Fund	A	564,400.08 Db				564,400.08 Db
03-100-04-007-	DUE FROM WATER FUND	A	49,970.08 Db				49,970.08 Db
03-100-04-012-	DUE FROM WATER CONSTRUCTION	A	480,547.13 Db				480,547.13 Db
03-100-04-300-	Due from Saunders Point Engineering	A	84,533.23 Db				84,533.23 Db
03-100-06-001-	Allowance for Doubtful Accounts	A	140,000.00 Cr				140,000.00 Cr
	Account Totals		7,886,380.74 Db	1,045,240.59	1,088,800.63	43,560.04 Cr	7,842,820.70 Db
03-200-01-001-	ACCOUNTS PAYABLE	L	11,559.75 Cr	643,781.31	191,289.05	452,492.26 Db	440,932.51 Db
03-200-04-001-	DUE TO OTHER FUNDS	L	259,603.73 Cr	40,158.90	234,474.55	194,315.65 Cr	453,919.38 Cr
03-200-04-006-	Due To Sewer Operations	L	113,937.99 Db				113,937.99 Db
03-200-05-006-	DEFERRED SEWER ASSESSMENTS	L	2,277,081.57 Cr				2,277,081.57 Cr
03-200-05-007-	DEFERRED DODGETWN ASSESSMENTS	L	788.30 Cr				788.30 Cr
03-200-05-008-	Deferred Revenue	L	100,461.54 Cr				100,461.54 Cr
	Account Totals		2,535,556.90 Cr	683,940.21	425,763.60	258,176.61 Db	2,277,380.29 Cr
03-300-00-001-	RESERVE FOR ENCUMBRANCE	L	67,135.00 Cr	194,179.55	206,376.07	12,196.52 Cr	79,331.52 Cr
03-300-00-002-	REVENUE CONTROL	L	1,760,246.19 Cr	20,097.65	590,421.27	570,323.62 Cr	2,330,569.81 Cr
03-300-00-003-	EXPENDITURE CONTROL	L	474,299.14 Db	355,707.05		355,707.05 Db	830,006.19 Db
03-300-00-004-	ENCUMBRANCE CONTROL	L	67,135.00 Db	206,376.07	194,179.55	12,196.52 Db	79,331.52 Db
03-300-00-005-	APPROPRIATION CONTROL	L	16,370.00 Cr				16,370.00 Cr
03-300-00-006-	ESTIMATED REVENUE CONTROL	A	10,370.00 Db				10,370.00 Db
03-300-01-002-	RETAINED EARNINGS - COMMITTED	L	4,058,876.79 Cr				4,058,876.79 Cr
	Account Totals		5,350,823.84 Cr	776,360.32	990,976.89	214,616.57 Cr	5,565,440.41 Cr
	Account Totals		0.00				0.00
	Fund Totals		0.00	2,505,541.12	2,505,541.12		0.00
	Fund Balance Totals			9,457,398.91	9,457,398.91		

Account No	Description	Type	Begin Balance	Debit	Credit	Net	End Balance
Total Accounts ===>	26						
	Report Totals		0.00	2,505,541.12	2,505,541.12		0.00
	Report Balance Totals			9,457,398.91	9,457,398.91		

Account No	Description	Budgeted	Transfers	Encumber	Net Expd/Reimb	Payable	Balance	YTD %Used
07-01-300-660-666	Safety Equip/Training	18,200.00	1,000.00	2,890.00	15,297.54	0.00	1,012.46	95
07-01-300-670-000	TRANSPORTATION & DIST MAINT EX							
07-01-300-670-671	MAINTENANCE OF O & M	16,140.00	0.00	270.00	10,931.90	0.00	4,938.10	69
07-01-300-670-673	MAINT OF TRANSMISSION & DISTR	80,000.00	50,682.00	6,035.27	104,819.34	0.00	19,827.39	85
07-01-300-670-677	MAINTENANCE OF HYDRANTS	2,000.00	6,000.00	2,065.02	5,289.20	0.00	645.78	92
07-01-300-900-000	CUSTOMER ACCOUNTS EXP							
07-01-300-900-903	CUSTOMER RECORDS & COLLECTION	53,000.00	0.00	3,147.55	43,705.98	0.00	6,146.47	88
07-01-300-920-201	ADMINISTRATIVE ASSISTANT SALAR	77,700.00	0.00	0.00	71,415.21	0.00	6,284.79	92
07-01-300-920-202	PW & FINANCE DIR, UTL ENG-SALA	233,700.00	0.00	0.00	222,400.27	0.00	11,299.73	95
07-01-300-920-204	FIELD PERSONNEL SALARIES	668,000.00	0.00	0.00	604,581.87	0.00	63,418.13	91
07-01-300-920-205	Field Personnel Salaries OT	93,200.00	0.00	0.00	49,704.95	0.00	43,495.05	53
07-01-300-920-206	Meter Installers - Temporary	69,680.00	0.00	0.00	56,311.00	0.00	13,369.00	81
07-01-300-920-210	OFFICE SUPPLIES & MISC	2,200.00	500.00	386.98	2,200.00	0.00	113.02	96
07-01-300-920-220	Interconnection	94,500.00	16,537.50-	0.00	77,962.50	0.00	0.00	100
07-01-300-920-230	OUTSIDE SERVICES	97,500.00	15,456.78	6,676.13	106,280.65	0.00	0.00	100
07-01-300-920-240	INSURANCE - PROPERTY	28,000.00	2,088.64-	0.00	25,911.36	0.00	0.00	100
07-01-300-920-260	EMPLOYEE BENEFITS & PENSIONS	322,600.00	0.00	26,613.65	246,168.96	0.00	49,817.39	85
07-01-300-930-321	VEHICLE EXPENSE	10,000.00	3,000.00	1,282.48	11,378.59	0.00	338.93	97
07-01-300-930-323	Vehicle Acquisitio Payments	85,830.00	0.00	0.00	67,171.99	0.00	18,658.01	78
07-01-300-930-325	Capitol Projects	200,000.00	15,456.78-	22,021.89	62,133.38	0.00	100,387.95	46
07-01-300-930-999	CONTINGENCY	152,000.00	88,597.08-	0.00	20,548.30	0.00	42,854.62	32
Department: 300	**SALARIES, WAGES & BENEFITS Total**	**4,308,035.00**	**0.00**	**213,026.63**	**3,248,357.84**	**0.00**	**846,650.53**	**80**
07-98-100-000-001	Refund of Revenues	0.00	0.00	745.28	17,564.93	0.00	18,310.21-	0
Department: 100	**Total**	**0.00**	**0.00**	**745.28**	**17,564.93**	**0.00**	**18,310.21-**	**0**
Fund: 07	WATER DEPARTMENT Budgeted Total	4,393,735.00	0.00	213,026.63	3,320,892.69	0.00	859,815.68	80
Fund: 07	WATER DEPARTMENT Non-Budgeted Total	0.00	0.00	745.28	17,564.93	0.00	18,310.21-	0
Fund: 07	**WATER DEPARTMENT Total**	**4,393,735.00**	**0.00**	**213,771.91**	**3,338,457.62**	**0.00**	**841,505.47**	**81**
Final Budgeted		4,393,735.00	0.00	213,026.63	3,320,892.69	0.00	859,815.68	80
Final Non-Budgeted		0.00	0.00	745.28	17,564.93	0.00	18,310.21-	0
Final Total		**4,393,735.00**	**0.00**	**213,771.91**	**3,338,457.62**	**0.00**	**841,505.47**	**81**

Range of Accounts: 07- - - - to 07-99- - - Include Cap Accounts: Yes As Of: 05/31/24
Skip Zero Activity: Yes

NOTE: This report includes ONLY activity originally Budgeted/Charged to Budget Year 4.
Prior Year Budgeted/Encumbered/Payable amounts rolled to Budget Year 4 have been EXCLUDED.

Account No	Description	Budgeted	Transfers	Encumber	Net Expd/Reimb	Payable	Balance YTD	%Used
07-00-000-000-000	WATER DEPARTMENT							
07-01-114-100-121	FICA/MEDICARE	85,700.00	0.00	0.00	72,534.85	0.00	13,165.15	85
Department: 114	**Total**	**85,700.00**	**0.00**	**0.00**	**72,534.85**	**0.00**	**13,165.15**	**85**
07-01-300-000-000	SALARIES, WAGES & BENEFITS							
07-01-300-200-201	BONDS/PRINCIPAL	679,765.00	115,682.00-	0.00	434,131.65	0.00	129,951.35	77
07-01-300-200-202	Meter Replacement Project Bonds	120,000.00	5,276.78-	3,525.68	94,320.18	0.00	16,877.36	85
07-01-300-340-000	NEW SERVICES							
07-01-300-340-345	NEW SERVICES	8,300.00	0.00	0.00	8,300.00	0.00	0.00	100
07-01-300-340-346	NEW METERS	10,000.00	0.00	1,724.91	2,151.16	0.00	6,123.93	39
07-01-300-390-000	EQUIPMENT							
07-01-300-390-391	OFFICE EQUIPMENT & FURNITURE	0.00	500.00	500.00	0.00	0.00	0.00	100
07-01-300-390-394	TOOLS & EQUIPMENT	10,000.00	4,500.00	1,576.71	11,203.57	0.00	1,719.72	88
07-01-300-390-397	COMMUNICATIONS EQUIPMENT	8,600.00	0.00	1,695.40	5,779.03	0.00	1,125.57	87
07-01-300-400-427	BONDS INTEREST	113,605.00	100,000.00	0.00	136,666.68	0.00	76,938.32	64
07-01-300-500-520	OPERATING TRANSFERS OUT	72,715.00	0.00	0.00	72,715.00	0.00	0.00	100
07-01-300-500-521	OTO - Sewer Assessment Fund	35,000.00	0.00	0.00	0.00	0.00	35,000.00	0
07-01-300-610-000	SOURCE OF SUPPLY MAINTENANCE E							
07-01-300-610-614	MAINTENANCE OF WELLS	90,000.00	62,000.00	13,658.98	134,860.89	0.00	3,480.13	98
07-01-300-620-000	PUMPING OPERATION EXP							
07-01-300-620-622	Fuels	44,100.00	0.00	5,633.88	21,412.84	0.00	17,053.28	61
07-01-300-620-623	Electricity	320,000.00	0.00	50,000.00	219,317.30	0.00	50,682.70	84
07-01-300-630-000	PUMPING MAINTENANCE EXP							
07-01-300-630-631	MAINTENANCE OF PUMPING STATION	41,600.00	0.00	1,292.03	11,532.37	0.00	28,775.60	31
07-01-300-640-000	WATER TREATMENT EXP							
07-01-300-640-641	CHEMICALS	447,200.00	0.00	62,030.07	289,831.41	0.00	95,338.52	79
07-01-300-660-000	TRANSMISSION & DISTRIBUTION EX							
07-01-300-660-665	MISC MAPS & RECORDS	2,900.00	0.00	0.00	1,922.77	0.00	977.23	66

Account No / Total	Description / Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
07-05-100-471	MISC/TURN OFF-ON/ADM FEES											
36292.62	1370.00	4244.00	2470.00	100.00	4081.43	2031.71	872.00	1240.28	1565.00	2517.19	14408.01	1393.00
07-05-100-472	INSPECTION FEE (BILLED)											
8222.50	0.00	0.00	8222.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Department Total												
173890.12	**1370.00**	**4244.00**	**10692.50**	**100.00**	**4081.43**	**2031.71**	**130247.00**	**1240.28**	**1565.00**	**2517.19**	**14408.01**	**1393.00**
07-07-700-700	INVESTMENT INTEREST											
24964.28	0.00	24730.54	11.53	0.00	112.58	92.77	12.47	4.39	0.00	0.00	0.00	0.00
07-07-700-702	STIF0420-F7											
50503.90	4041.98	5290.98	4464.85	4665.01	3929.59	4720.40	4741.91	4441.37	4763.96	4646.78	4797.07	0.00
Department Total												
75468.18	**4041.98**	**30021.52**	**4476.38**	**4665.01**	**4042.17**	**4813.17**	**4754.38**	**4445.76**	**4763.96**	**4646.78**	**4797.07**	**0.00**
07-08-800-472	LEASE/RENTAL											
54234.41	0.00	0.00	13888.49	0.00	5043.24	10086.48	5043.24	0.00	10086.48	5043.24	5043.24	0.00
07-08-800-801	Miscellaneous Revenue											
5964.14	0.00	10.00	0.00	0.00	0.60-	2105.52	0.00	0.00	36.72	0.00	3812.50	0.00
Department Total												
60198.55	**0.00**	**10.00**	**13888.49**	**0.00**	**5042.64**	**12192.00**	**5043.24**	**0.00**	**10123.20**	**5043.24**	**8855.74**	**0.00**
07-11-300-005	AR CONNECTION/BENEFIT PYMTS											
100100.00	12025.00	0.00	18815.00	0.00	0.00	32160.00	1700.00	0.00	17250.00	8100.00	4700.00	5350.00
07-11-300-006	AR METER DEPOSIT											
180.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	180.00	0.00
07-11-300-008	AR HYDRANT											
74619.38	0.00	7350.00	0.00	0.00	0.00	0.00	28325.00	25420.00	10099.38	1100.00	275.00	2050.00
Department Total												
174899.38	**12025.00**	**7350.00**	**18815.00**	**0.00**	**0.00**	**32160.00**	**30025.00**	**25420.00**	**27349.38**	**9200.00**	**5155.00**	**7400.00**

Range of Accounts: 07- - - to 07-99- - Start Month: July Start Year: 2023
Type: Revenue Activity Includes Accounts with Zero Activity: N Year To Date As Of: 06/21/24
Subtotal CAFR: No Subtotal Department: Yes

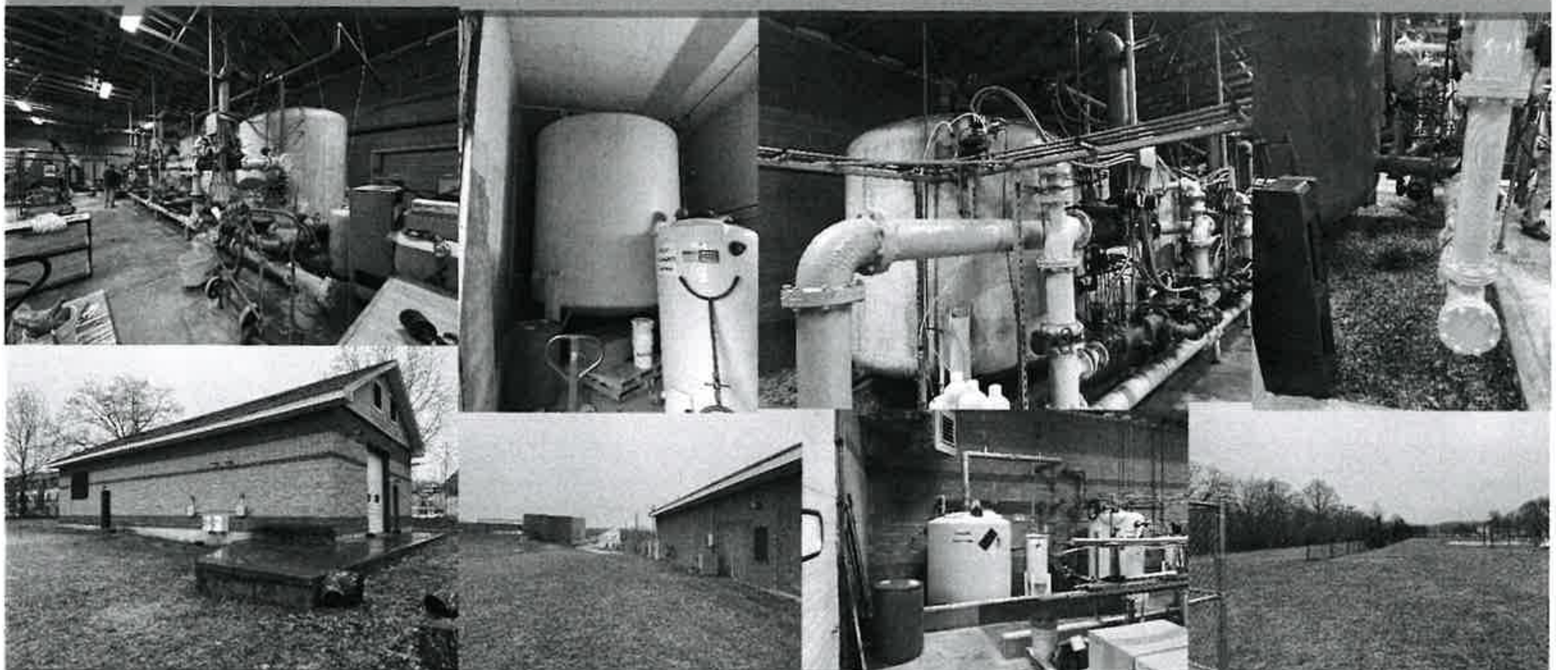
Account No / Total	Description / Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
07-01-100-400	METERED WATER SERVICE											
3844554.63	21965.73	25904.42	22702.29	29273.63	1925729.48	39064.02	27477.29	35805.61	22954.59	54222.85	1603464.41	35990.31
07-01-100-404	DELQ INT-WATER SERVICE											
30165.85	2963.25	3993.98	298.22	67.56	510.56	2498.47	5806.55	6959.29	2722.40	382.44	838.27	3124.86
Department Total												
3874720.48	**24928.98**	**29898.40**	**23000.51**	**29341.19**	**1926240.04**	**41562.49**	**33283.84**	**42764.90**	**25676.99**	**54605.29**	**1604302.68**	**39115.17**
07-02-200-401	BENEFIT CHARGES											
8500.00	0.00	0.00	1700.00	0.00	0.00	850.00	1700.00	0.00	0.00	3400.00	0.00	850.00
07-02-200-402	ASSESSMENTS CHARGES											
28410.00	0.00	0.00	200.00	0.00	0.00	14310.00	0.00	250.00	13250.00	200.00	200.00	0.00
07-02-200-405	CONNECTION CHARGES											
63940.00	8000.00	0.00	20940.00	0.00	0.00	17000.00	0.00	4500.00	0.00	4500.00	4500.00	4500.00
Department Total												
100850.00	**8000.00**	**0.00**	**22840.00**	**0.00**	**0.00**	**32160.00**	**1700.00**	**4750.00**	**13250.00**	**8100.00**	**4700.00**	**5350.00**
07-03-300-471	SALE OF METERS/HYDRANTS											
13390.75	0.00	0.00	653.00	0.00	895.65	0.00	649.35	0.00	53.25	10939.25	200.25	0.00
Department Total												
13390.75	**0.00**	**0.00**	**653.00**	**0.00**	**895.65**	**0.00**	**649.35**	**0.00**	**53.25**	**10939.25**	**200.25**	**0.00**
07-05-100-462	PRIVATE HYDRANT FEES											
66275.00	0.00	0.00	0.00	0.00	0.00	0.00	66275.00	0.00	0.00	0.00	0.00	0.00
07-05-100-463	TOWN FIRE HYDRANT PROTECTION											
63100.00	0.00	0.00	0.00	0.00	0.00	0.00	63100.00	0.00	0.00	0.00	0.00	0.00

Account No / Total	Description / Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Fund Total												
4473417.46	50365.96	71523.92	94365.88	34106.20	1940301.93	124919.37	205702.81	78620.94	82781.78	95051.75	1642418.75	53258.17
Grand Total	Count: 17											
4473417.46	50365.96	71523.92	94365.88	34106.20	1940301.93	124919.37	205702.81	78620.94	82781.78	95051.75	1642418.75	53258.17

Account Range: 07- - - - to 07-99 - - -
Date Range: 07/01/23 to 05/31/24
Exclude Accounts with Zero Balance and No Activity: Y

Account No	Description	Type	Begin Balance	Debit	Credit	Net	End Balance
07-100-01-001-	CHECKING A/C Webster 3273	A	535,884.63 Db	7,164,322.82	7,302,746.99	138,424.17 Cr	397,460.46 Db
07-100-01-001-001	Water for Sewer Webster 3273	A	119,303.62 Db	1,958,566.32	1,402,258.42	556,307.90 Db	675,611.52 Db
07-100-01-006-	PETTY CASH	A	100.00 Db				100.00 Db
07-100-02-004-	STATE TREAS STIF ACCT	A	2,000,000.00 Db	91,401.52	40,897.62	50,503.90 Db	2,050,503.90 Db
07-100-02-005-	METER DEPOSITS - RA - Webster 3273	A	189,640.21 Db	180.00		180.00 Db	189,820.21 Db
07-100-02-999-	Cash Over/Short	A	0.63 Cr	0.99		0.99 Db	0.36 Db
07-100-03-001-	A/R-WATER SERVICE CHARGES	A	229,324.29 Db	3,860,317.00	3,611,235.68	249,081.32 Db	478,405.61 Db
07-100-03-002-	A/R-UNBILLED	A	661,567.91 Db				661,567.91 Db
07-100-03-003-	A/R - ASSESSMENTS	A	26,719.44 Db	35,810.00	7,400.00	28,410.00 Db	55,129.44 Db
07-100-03-004-	A/R - DEFERRED ASSESSMENTS	A	34,173.08 Db				34,173.08 Db
07-100-03-005-	A/R - BENEFIT/CONNECTION	A	75.00 Cr	67,090.00	94,750.00	27,660.00 Cr	27,735.00 Cr
07-100-03-007-	A/R-OTHER	A	0.00	8,222.50	8,222.50		0.00
07-100-03-008-	A/R-HYDRANT	A	5,937.50 Cr	129,900.00	136,194.38	6,294.38 Cr	12,231.88 Cr
07-100-04-002-	DUE FROM GEN FUND	A	14,919.90 Cr	1,324,102.66	730,228.57	593,874.09 Db	578,954.19 Db
07-100-04-003-	DUE FROM OTHER FUNDS	A	0.00	2,015.51	2,710.30	694.79 Cr	694.79 Cr
07-100-04-007-	DUE FROM SEWER FUND	A	74,791.69 Db				74,791.69 Db
07-100-04-122-	Due From 22 Village Dr	A	221.27 Db				221.27 Db
07-100-06-001-	ALLOWANCE FOR DOUBTFUL ACCTS	A	17,000.00 Cr				17,000.00 Cr
07-100-06-002-	INVENTORY - CONSUMABLES	A	23,300.00 Db				23,300.00 Db
07-100-06-003-	INVENTORY - PARTS	A	24,300.00 Db				24,300.00 Db
07-100-09-001-	Prepaid Expenditures	A	7,888.85 Cr				7,888.85 Cr
	Account Totals		3,873,504.26 Db	14,641,929.32	13,336,644.46	1,305,284.86 Db	5,178,789.12 Db
07-200-01-001-	ACCOUNTS PAYABLE	L	173,847.34 Cr	1,825,594.99	1,650,499.65	175,095.34 Db	1,248.00 Db
07-200-01-003-	ACCRUED ACCOUNTS PAYABLE	L	34,333.61 Cr				34,333.61 Cr
07-200-02-005-	METER DEPOSITS - RA	L	332,464.43 Cr		180.00	180.00 Cr	332,644.43 Cr
07-200-04-001-	DUE TO SEWER FUND	L	92,591.10 Cr	2,256,528.55	2,546,761.31	290,232.76 Cr	382,823.86 Cr
07-200-04-002-	DUE TO GEN FUND	L	279,052.63 Cr	1,927,677.31	2,206,304.15	278,626.84 Cr	557,679.47 Cr
07-200-04-003-	DUE TO SEWER ASSESSMENT	L	133,314.08 Cr	1,518.10		1,518.10 Db	131,795.98 Cr
07-200-04-015-	DUE TO HEALTH CARE FUND	L	15,918.00 Cr				15,918.00 Cr
07-200-04-051-	Due to Fund 51	L	126,580.35 Cr				126,580.35 Cr
07-200-04-062-	Due to Water Construction	L	4,852.54 Cr				4,852.54 Cr
07-200-05-001-	Deferred Revenue	L	765,608.18 Cr				765,608.18 Cr
07-200-55-001-	RESERVE REFUND OF REVENUE	L	45,316.71 Db	22,064.93	4,500.00	17,564.93 Db	62,881.64 Db
	Account Totals		1,913,245.55 Cr	6,033,383.88	6,408,245.11	374,861.23 Cr	2,288,106.78 Cr

Account No	Description	Type	Begin Balance	Debit	Credit	Net	End Balance
07-300-00-001-	RESERVE FOR ENCUMBRANCE	L	557.21 Db	1,822,146.97	2,035,173.60	213,026.63 Cr	212,469.42 Cr
07-300-00-002-	REVENUE CONTROL	L	7,161,522.45 Cr	87,694.77	4,340,354.68	4,252,659.91 Cr	11,414,182.36 Cr
07-300-00-003-	EXPENDITURE CONTROL	L	6,696,979.71 Db	3,506,094.07	183,545.89	3,322,548.18 Db	10,019,527.89 Db
07-300-00-004-	ENCUMBRANCE CONTROL	L	557.21 Cr	2,035,173.60	1,822,146.97	213,026.63 Db	212,469.42 Db
07-300-00-009-	Appropriation Control	L	86,214.00 Cr				86,214.00 Cr
07-300-00-010-	Estimated Revenue Control	L	86,214.00 Db				86,214.00 Db
07-300-01-002-	FUND BALANCE - Unreserved	F	1,495,162.52 Cr				1,495,162.52 Cr
	Account Totals		1,959,705.26 Cr	7,451,109.41	8,381,221.14	930,111.73 Cr	2,889,816.99 Cr
07-395-00-000-000	CANCEL PY RECEIVED - REVENUE	R	0.00		311.90	311.90 Cr	311.90 Cr
	Account Totals		0.00		311.90	311.90 Cr	311.90 Cr
	Fund Totals		553.45 Db	28,126,422.61	28,126,422.61		553.45 Db
	Fund Balance Totals			15,626,680.59	15,626,127.14		
Total Accounts ===>	40						
	Report Totals		553.45 Db	28,126,422.61	28,126,422.61		553.45 Db
	Report Balance Totals			15,626,680.59	15,626,127.14		



Well 4A WTP and Well 1A/6 WTP
East Lyme, CT

WELL 4A AND WELL 1A/6 PFAS TREATMENT PRELIMINARY ENGINEERING DRAFT REPORT

Town of East Lyme, CT

June 2024

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Executive Summary

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Section 2 PFAS Treatment Alternatives

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Section 4 Alternative Analysis

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Section 1 Introduction

1.1 Background

Per- and polyfluoroalkyl substances (PFAS) are emerging contaminants that are widely used in consumer, commercial, and industrial products including non-stick cookware, water-repellant clothing, stain resistant fabrics and carpets, cosmetics, firefighting foams, etc. They are long lasting chemicals and do not break down easily, which make them difficult to treat. Exposure to high levels of certain PFAS may lead to adverse health effects including reproductive effects of decreased fertility or increased high blood pressure in pregnant women, developmental delays in children, increased risk of certain cancers, and/or reduced ability of the body's immune system to fight infections.

The East Lyme Water and Sewer Department has conducted PFAS sampling/testing of its water supply wells and associated water treatment plants (WTPs) since November 2023 and has detected PFAS in three of the seven wells that serve the Town. These wells are Well 1A, Well 6 and Well 4A. It is noted that raw water from both Well 1A and Well 6 are treated in Well 1A/6 WTP. The levels of PFAS detected are summarized in **Table 1-1**. As shown, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) levels for these three wellfields and associated WTP point of entry (POE) to the distribution system exceeded the recently promulgated Maximum Contaminant Levels (MCLs) set by the Environmental Protection Agency (EPA). Therefore, treatment is required to remove these PFAS contaminants from both sites. Compliance with the proposed MCLs is required starting in 2029.

TABLE 1-1 Summary of PFAS Testing Results vs. EPA MCL (exceedances are in **bold**)

Parameter	Sample Locations						EPA MCL
	Well 1A Raw	Well 6 Raw	Well 1A/6 WTP POE[1]	Well 4A Raw	Well 4A WTP POE Sample 1	Well 4A WTP POE Sample 2	
PFOA, ppt	6.1	4.5	4.5	11	9.2	10	4
PFOS, ppt	3.1	6.8	5.8	8.7	7.2	8.6	4
PFHxS, ppt	0[2]	2.6	0	2.4	0	2.4	10
PFNA, ppt	0	0	0	0	0	0	10
HFPO-DA, ppt	0	0	0	0	0	0	10
PFBS, ppt	0	0	0	4.3	4.8	4.3	N/A
Hazard Index for Mixtures Containing two of more of PFHxS, PFNA, HFPO-DA and PFBS[3]	0	0.26	0	0.24	0.0024	0.24	1

1. POE: treated water point of entry to distribution system.
2. 0 = below detection limit.

3. Hazard Index is calculated using the equation below:

$$\text{Hazard Index (1 unitless)} = \left(\frac{[HFPO-DA_{ppt}]}{[10\ ppt]}\right) + \left(\frac{[PFBS_{ppt}]}{[2000\ ppt]}\right) + \left(\frac{[PFNA_{ppt}]}{[10\ ppt]}\right) + \left(\frac{[PFHxS_{ppt}]}{[10\ ppt]}\right)$$

1.2 Description of Existing Treatment Plants

Wells 1A/6 WTP

The Well 1A/6 WTP was upgraded as documented on Record Drawings dated March 2022.

Well 1A is located approximately 1,500 feet away from Well 6. Well 1A is located in a pump station building constructed in 2004. The building is 10 feet wide by 16.5 feet long and has an 8-foot ceiling height. The well building is a precast concrete structure with a flat roof and a single door. The well pump is a 100 HP vertical turbine style. Well 1A raw water is pumped via a raw water main to the Well 1A/6 WTP.

The Well 1A/6 WTP building is 36'-6" wide by 73'-8" long and has a 14-foot ceiling height. The building has prefabricated wood trusses. Exterior walls are masonry brick and block. The finished floor elevation is y 39.0 feet. The WTP building houses Well 6.

Treatment equipment includes four 9-foot diameter greensand plus media pressure filter vessels for iron and manganese removal. The four chemical feed systems include the following:

- Potassium Hydroxide: 2,000 gallon bulk tank and 155 gallon day tank
- Sodium Hypochlorite: 1,150 gallon bulk tank and 100 gallon day tank
- Sodium Fluoride: 55 gallon saturator tank
- Potassium Permanganate: 500 gallon mix tank and 100 gallon day tank

The design capacity of the WTP is 1,100 gpm, with a unit design flow rate of 275 gpm per filter. The filter surface loading rate is approximately 4.3 gpm/sf.

The influent design water quality is:

- Iron 0.401 ppm (avg.)
- Manganese 0.411 ppm (avg.)
- pH 6-7 units

The design effluent quality is:

- Iron 0.3 ppm (max.)
- Manganese 0.05 ppm (max.)

The nominal filter backwash rate is 12 gpm/sf (equating to an approximate backwash rate of 760 gpm). In practice, the backwash flow rate is approximately 510 gpm for a duration of 10 minutes followed by a filter-to-waste flow of 150 gpm for a duration of 5 minutes (as stated in the 2021 General Permit for Discharges from Miscellaneous Industrial Users). Filter backwash waste is directed to four 12,000 gallon below ground holding tanks (48,000 gallons total) located adjacent to the sewer connection near Society Road. The

WTP is connected to the tanks via a 15-inch diameter gravity sewer. Backwash is discharged through a pipe to the holding tanks via catch basins. An air gap is provided at the inlet to the tanks, and wastewater then flows into a sewer pump station adjacent to the underground holding tanks and is pumped to a manhole in Society Road. The sewer pump station has two 250 gpm pumps, which pump to the Town's sewer.

Standby Power - The WTP has a natural gas 190KW 277/480V 3 phase standby generator. Similarly, Well 1A has a natural gas 190KW 277/480V 3 phase standby generator.

Finished water leaves the WTP via an 8-inch pipe that connects to a 12-inch water main that delivers finished water to the distribution system.

Well 4A WTP

The Well 4A WTP was originally constructed in 1998. It is a masonry block building with pre-engineered timber trusses and an asphalt shingle roof. The building's interior dimensions are 36 feet wide by 56 feet long with a ceiling height of approximately 14'-8". The northern side of the building has a 10-foot overhead door and a single door by a concrete loading dock. Additionally, there is a single door on the eastern side of the building.

The building houses Well 4A, a gravel packed well that is equipped with a Goulds vertical turbine style pump and 60 HP motor. Well 4A was constructed to replace Well 4, a dug well that was demolished and abandoned during the Well 4 WTP construction. Well 4A was cleaned and redeveloped in 2016 by the Stephen B. Church Company, who noted the presence of a significant amount of black manganese prior to the cleaning.

The well is registered for a withdrawal of 380 gpm, although the Town has indicated that Well 4A is operated much lower than that due to concerns of saltwater intrusion. Historical well production/flow is discussed in **Section 1.3** later.

The WTP building also houses the treatment equipment, which includes three 8-foot greensand media pressure filter vessels for iron and manganese removal. The filters were rehabilitated in 2008 and GreensandPlus media was installed. A potassium permanganate feed system was originally part of the WTP but was decommissioned; only the containment area remains. Current chemical feed systems in use at the Well 4A WTP include:

- Potassium Hydroxide: 900-gallon bulk tank and 40-gallon day tank
- Sodium Hypochlorite: 550-gallon bulk tank and 30-gallon day tank
- Sodium Fluoride: 50-gallon saturator

The design capacity of the WTP is 500 gpm, with a unit design flow rate of 166.7 gpm per filter. Based on data provided by the Town for the period from January 1, 2021, to February 29, 2024, the influent water quality was:

- Iron: 0.35 ppm (avg.)
- Manganese: 0.29 ppm (avg.)
- pH: 7.3 units

During the same period, the effluent water quality was:

- Iron: 0.01 ppm (avg.)
- Manganese 0.01 ppm (avg.)

Based on the 500 gpm design flowrate (166.7 gpm per filter), the filter surface loading rate is 3.3 gpm/sf with all three filters operating in parallel. Based on current operation, backwash occurs two or three times per week after approximately 36 hours of filter runtime. A typical backwash cycle per filter lasts 20 minutes and the backwash flowrate is 550 gpm.

Filter backwash waste is directed to an on-site underground air gap chamber via an 8-inch gravity pipe. The air gap chamber also receives used water from the sinks and analyzers via a 4-inch pipe, as well as water from the well blow-off through a separate 4-inch pipe. All water collected in the air gap chamber flows by gravity through an 8-inch pipe to the Town's sewer.

The WTP is equipped with an automatic transfer switch (ATS) and a liquid propane gas (LPG), 140 kW, 277/480V, 3-phase, Katolight generator to provide emergency power.

Finished water leaves the WTP via an 8-inch pipe that connects to a 10-inch water main that delivers finished water to the distribution system.

1.3 Water Flow & Quality

The Town provided Tighe & Bond with historical data of Well 4A and Wells 1A/6, which was analyzed and is discussed below.

1.3.1 Flow

The well production data from January 2021 to February 2024 are summarized in **Table 1-2**.

TABLE 1-2 Summary of Well Production (gpm)

	Well 1A	Well 6	Well 1A+ Well 6[1]	Well 4A
Minimum	574	239	288	135
1st Percentile	611	283	391	140
5th Percentile	617	290	422	143
Average	684	358	843	196
95th Percentile	776	503	1,116	298
99th Percentile	805	511	1,126	301
Maximum	820	796	1,413	395
2nd Largest Number	810	518	1,196	320
3rd Largest Number	807	515	1,133	304

1. This is the combined production of Well 1A and Well 6, i.e., the combined flow to the Well 1A/6 WTP in the same day.

According to the well production data, the Well 1A/6 WTP typically receives flow in the range of 400-1,200 gpm with an average flow of approximately 850 gpm, while Well 4A WTP has typical flow in the range of 140-400 gpm with average flow of approximately 200 gpm. After discussions with the Town, the following design flows were determined and used to size the treatment equipment.

TABLE 1-3 Design Flows for Well 1A/6 and 4A PFAS Treatment in gpm

Design Flow	Well 1A/6 WTP	Well 4A WTP
Minimum	350	100
Average	1,000	300
Maximum	1,350	400

1.3.2 Water Quality

PFAS treatment at both sites will be downstream of the existing greensand filters. The available PFAS treatment influent (greensand effluent) water quality data is summarized below.

TABLE 1-4 Summary of Influent Water Quality to Future PFAS Treatment

Parameter		Well 1A/6 WTP			Well 4A WTP		
	Units	Min	Max	Average	Min	Max	Average
Bromodichloromethane	mg/L				2.1	2.1	2.1
Bromoform	mg/L				1.9	1.9	1.9
Chloroform	mg/L				1.2	1.2	1.2
Alkalinity	mg/L	72	72	72	59	59	59
Antimony	mg/L					ND[1]	
Arsenic	mg/L					ND	
Barium	mg/L				0.044	0.044	0.044
Beryllium	mg/L					ND	
Cadmium	mg/L					ND	
Calcium	mg/L	12.4	17.5	15.07	10.6	12.4	11.7
Chloride	mg/L	64.9	87.4	79.73	63.4	70.7	67.02
Chlorine- Residual, Total	mg/L				0.66	0.66	0.66
Chromium	mg/L					ND	
Coliform, E. Coli	mg/L		ND			ND	
Coliform, Total	mg/L		ND			ND	
Color	c.u.		ND			ND	
Copper	mg/L				0.055	0.055	0.055
Cyanide-Total	mg/L					ND	
Fluoride	mg/L				0.71	0.71	0.71
Gross Alpha - Net	pCi/L					ND	
Gross Alpha - Total	pCi/L					ND	
Gross Beta Particle Activity	pCi/L				33	33	33
Hardness-Total	mg/L	47.3	67.5	57.57	41.9	45.7	43.75
Iron[2]	mg/L	0.00	0.09	0.01	0.00	0.12	0.01
Lead	mg/L					ND	
Magnesium	mg/L	3.96	5.79	4.84	3.14	3.73	3.53
Man Made Beta Particle & Photon Emitters	mrem/year					ND	
Manganese[2]	mg/L	0.00	0.19	0.01	0.00	0.22	0.01
Mercury	mg/L					ND	
Nickel	mg/L					ND	
Nitrate as N	mg/L	0.86	1.14	1.03	2.24	3.99	3.36
Nitrite as N	mg/L		ND			ND	
Odor	ton	1	2	1.33	1	2	1.75
pH	s.u.	6.93	7.55	7.22	7.01	7.6	7.35
Radium 226	pCi/L					ND	
Radium 228	pCi/L					ND	

Selenium	mg/L					ND	
Silver	mg/L					ND	
Sodium	mg/L	31.3	37	34.2	34.6	37.2	35.56
Strontium - 90	pCi/L					ND	
Sulfate	mg/L	12.1	17.1	15.4	10.1	11.2	10.5
Thallium	mg/L					ND	
Total Organic Carbon	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tritium	pCi/L					ND	
Turbidity	NTU	0.05	0.1	0.075	0.1	0.2	0.133
Uranium - Activity	pCi/L					ND	
Uranium - Mass	ug/L					ND	

1. ND = not detected.
2. The water quality data presented in this table are from the Town of East Lyme's biweekly testing results from September 2023 to February 2024, except for iron and manganese data, which is sourced from the Town of East Lyme's daily forms from September 2021 to February 2024.

According to the water quality data, PFAS treatment influent has low levels of inorganic species, and total organic carbon (TOC) was not detected in the samples tested. Two major species that can cause fouling of the PFAS vessels are iron and manganese. While their average concentrations were low, there were some instances of high levels: maximum iron levels were 0.09 mg/L and 0.12 mg/L for Well 1A/6 WTP and Well 4A, respectively, while maximum manganese levels were 0.19 mg/L and 0.22 mg/L for Well 1A/6 WTP and Well 4A, respectively. Therefore, iron and manganese data were further analyzed and summarized below.

TABLE 1-5 Summary of Iron and Manganese (mg/L)

	Well 1A/6 WTP		**Well 4A WTP**	
	Iron	**Manganese**	**Iron**	**Manganese**
No. of Samples (Data Points)	886	155	885	146
Minimum	0	0	0	0
Maximum	0.09	0.19	0.12	0.22
Average	0.0089	0.0092	0.0118	0.0124
95th Percentile	0.04	0.02	0.04	0.03
99th Percentile	0.06	0.0346	0.0616	0.072
2nd Largest number	0.08	0.04	0.08	0.09
3rd Largest number	0.07	0.03	0.08	0.05

The data analysis confirms that iron and manganese levels are low most of the time. The high levels only occurred once or twice, likely due to system startup or sampling/testing right after backwash. It is anticipated that the typical levels of iron and manganese will not cause fouling of the future PFAS treatment vessels.

Section 2 PFAS Treatment Alternatives

Three main treatment technologies have been shown to be effective for PFAS treatment (Dickenson and Higgins, 2016; Dudley et al., 2015; Campos et al., 2017).

- High pressure membrane filtration [nanofiltration (NF) and reverse osmosis (RO)]
- Granular Activate Carbon (GAC)
- Anion Exchange (IX)

High pressure membrane filtration has been shown to be highly effective for PFAS removal. However, it is typically cost prohibitive and generates a concentrated waste brine stream that must be managed and reduces available water from the source. One method used to manage brine waste includes installation of a GAC system to treat the brine waste. Therefore, use of pressure membranes could necessitate two treatment systems. Membrane filtration systems require high pressure to operate, therefore, high pressure booster pumps are required, and energy consumption is significant. In addition, membrane filtration systems are more complicated to operate compared to GAC and IX systems. Due to cost and brine treatment and disposal complexities, membranes have not been implemented as frequently as other technologies including GAC and IX for PFAS treatment.

GAC and IX have been shown to be effective for a range of PFAS. In particular, GAC systems have been widely used in the United States for PFAS removal. However, further evaluation of the site-specific background water quality for each well including TOC and anion concentrations are required to assess the feasibility of GAC and IX. These two treatment technologies will be further investigated in sections below.

In addition to the three technologies discussed above, in recent years, surface-modified clay adsorbents, such as Fluoro-Sorb, have been considered for PFAS removal. However, this technology is relatively new and there are not many installations nor long-term operations references. In addition, the media is typically proprietary, which limits the Town's selection/flexibility. Therefore, this option will not be further investigated in this report.

2.1 Granular Activated Carbon (GAC)

GAC has been used extensively in drinking water and remediation treatment due to its ability to adsorb a range of trace contaminants, such as organic compounds. GAC media would be housed in a steel pressure vessel that prevents the need for re-pumping of the well water (**Figure 2-1**). When water is passed over the GAC media, the contaminants are adsorbed by the media, which removes them from the water. Once the capacity of the media to adsorb PFAS has been exhausted, the contaminant concentration in the treated water begins to increase and the GAC media is replaced with fresh media. The spent media can be landfilled, incinerated, or regenerated. During regeneration, the media is exposed to high heat, which removes adsorbed contaminants and allows the media to be reused. GAC will remove a range of compounds and competing compounds in the water can reduce its effectiveness for PFAS removal. Organic matter, which is typically low in groundwater, are the compounds that most often compete with PFAS for adsorption by GAC.

GAC has been shown to be an effective treatment option for PFAS. GAC is generally more effective for longer chain PFAS, such as PFOA and PFOS, with breakthrough occurring faster for the shorter chain PFAS. The bed volumes to breakthrough directly impacts the replacement frequency and annual operation and maintenance (O&M) costs. There are several types of GAC media that perform differently depending on the raw water quality and type of contaminant being removed.

FIGURE 2-1 Example of GAC Vessels (provided by Evoqua)

2.1.1 Hydraulic Loading Rate (HLR) and Empty Bed Contact Time (EBCT)

For GAC and IX treatment, equipment sizing is based on acceptable hydraulic loading rates and target Empty Bed Contact Time (EBCT). High acceptable hydraulic loading rates means the vessel passes more flow and requires smaller surface area (i.e., smaller diameter) of vessels. However, if hydraulic loading rates are too low, channeling can occur within the GAC media, which reduces treatment efficiency. If hydraulic loading rates are too high, it will result in abrasion of the media and high headloss across the filter.

EBCT is a measure of the time during which water is in contact with the media. EBCT is calculated by dividing the volume of the media by the flow rate. High target EBCT means that more volume of media is required to treat PFAS, i.e., larger diameter or more media height required in the vessel.

For PFAS removal by a GAC treatment system, hydraulic loading rates should be in the range of 2 - 9.5 gpm per square foot of vessel area (gpm/ft^2), and the recommended EBCT is 10 minutes at the design flow rates.

2.1.2 GAC Media Replacement

As the adsorption capacity of the GAC media is exhausted, PFAS will begin to break through and will require replacement of the GAC media. PFAS breakthrough and GAC media replacement frequency is a function of:

- GAC base material and characteristics;
- PFAS adsorption characteristics (e.g., shorter chain PFAS tend to breakthrough faster);
- PFAS concentrations;
- Hydraulic loading rate and associated bed volumes treated (i.e., amount of water treated divided by the total volume of the media in the vessel.);
- Background organics in the raw water that compete for adsorption sites; and
- Treated water quality goal

The GAC media selected can have an impact on required media changeout frequency and treatment performance. The optimum GAC media is a function of PFAS types and concentration levels present and background water quality.

2.2 Anion Exchange Resin (IX)

IX resin is a treatment technology for PFAS removal with potential to remove long and short chain PFAS (Dickenson and Higgins, 2016; Dudley et al., 2015; Campos et al. 2017). IX has been used extensively for drinking water treatment for other contaminants such as perchlorate, nitrate, and hardness. However, full-scale installations of stand-alone IX for PFAS are limited but growing. In an IX process, the target contaminant is exchanged on the resin for a non-toxic compound. In this case, PFAS would be exchanged for chloride ions. IX resins are operated similar to GAC and can use the same pressure vessels as GAC media. The following sections provide additional details on key design criteria.

2.2.1 Hydraulic Loading Rate (HLR) and Empty Bed Contact Time (EBCT)

Hydraulic loading rates can be higher for IX (4 - 16 gpm/ft^2) as compared to GAC (less than 9.5 gpm/ft^2), which reduces the number and/or diameter of the vessels required. For IX treatment, the typical design EBCT is 2.5 minutes which is significantly less than GAC (10 minutes) and results in shorter vessels.

2.2.2 Anion Exchange Resin Replacement

IX resins can be single pass or regenerable. Regenerable resins are currently being evaluated with use of a sodium chloride brine in a methanol solution to remove PFAS from the resin and replace them with chloride ions. Regenerable resins for PFAS removal are still in development and would require additional equipment for the storage and disposal of regeneration solution that would have high concentrations of PFAS. Single pass resins are removed and landfilled or incinerated once their capacity has been exhausted, however it is becoming increasingly challenging to dispose of media as the number of disposal sites accepting PFAS contaminated material is declining.

IX resins have the potential to have a higher adsorption capacity for PFAS per cubic foot than GAC and can achieve treatment at lower EBCTs. IX resin capacity is also PFAS-specific with many shorter chain PFAS breaking through faster than the longer chain PFAS species. Similar to GAC media replacement, IX resin replacement frequency is dependent on the raw water quality and treatment goals.

2.3 Treatment Alternative Summary

Table 2-1 summarizes the general advantages and considerations for GAC and IX treatment for PFAS.

TABLE 2-1 Comparison of GAC and IX for PFAS Treatment

	Advantages	Considerations
GAC	• Proven technology at full-scale • Simple operation • Can be re-activated and reused	• Competition from background organics. • Breakthrough typically driven by short chain PFAS.
IX	• Simple operation • Potential for higher PFAS capacity than GAC • Lower Empty Bed Contact Times • Lower vessel heights and/or smaller vessel diameters	• If raw water has high chloride concentrations, IX may not be feasible. • Limited full-scale data on PFAS treatment. • Competition from other anions. • Single pass resin must be disposed of in a landfill or incinerated. • Potentially higher head loss than GAC. • Breakthrough driven by short chain PFAS. • Media clogging noted at some sites. • Incompatible with chlorine and other residual oxidants from iron/manganese treatment.

Section 3 Design Criteria, Configuration and Limiting Factors

3.1 Design Criteria

Design criteria are presented for both WTP sites (Well 1A/6 WTP and Well 4A WTP) and for both treatment technologies (GAC and IX resin). The following design criteria are used for the alternatives analysis described later in Section 4:

1) Design Flow: as discussed in Section 1, the following design flows were used for the alternatives:

    a. Well 1A/6 WTP: Minimum Flow = 350 gpm; Average Flow = 1,000 gpm; Maximum flow = 1,350 gpm.

    b. Well 4A WTP: Minimum Flow = 100 gpm; Average Flow = 300 gpm; Maximum flow = 400 gpm.

    c. The average flow will be used as the design flow while maximum flow will be checked for HLR.

2) Design EBCT:

    a. GAC vessel

        i. Targeted EBCT: 10 minutes

        ii. Design EBCT

            - 20 minutes at average flow (10 minutes from lead vessel + 10 minutes from lag vessel)

            - 14.8 minutes at maximum flow (7.4 minutes from lead vessel _ 7.4 minutes from lag vessel)

    b. IX Vessel

        i. Targeted EBCT: 2.5 minutes

        ii. Design EBCT

            - 5 minutes at average flow (2.5 minutes from lead vessel + 2.5 minutes from lag vessel)

            - 3.7 minutes at maximum flow (1.85 minutes from lead vessel + 1.85 minutes from lag vessel)

3) Design HLR: GAC vessel = <9.5 gpm/ft^2; IX = <16 gpm/ft^2

4) Design Water Quality: as presented in Section 1.

5) Effluent Goals: effluent PFAS levels less than 50% of MCL's. In this case, PFOA <2 ppt and PFOS < 2 ppt.

3.2 Configuration

3.2.1 Parallel Vs. Series Configuration

For GAC and/or IX systems, when multiple vessels (two or more vessels) are provided, the vessels can be operated in parallel or in series. **Figure 3-1** below presents a schematic of a typical parallel configuration (two trains with one vessel per train) vs. series configuration (one train with two vessels).

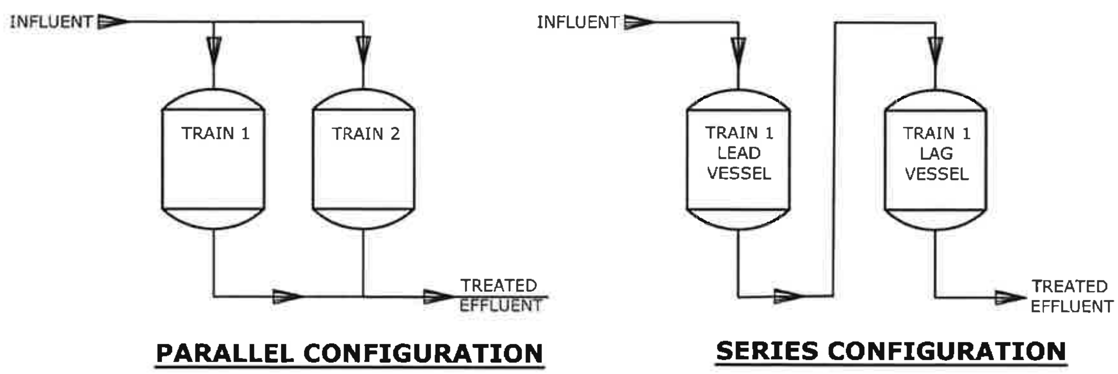


FIGURE 3-1 Typical Parallel Configuration vs. Series Configuration

Parallel

In a parallel configuration, each treatment train only has one vessel, and water only passes a vessel once. For a multiple vessel/train system, flow is split among operating vessels. For redundancy, the system can include an additional train with the same size vessel operated in parallel, allowing operation of the system at full capacity when one vessel/train is out of service for maintenance such as media changeout. This also allows for future flexibility to increase treatment flow by utilizing both contactors at their full design loading rate (ie eliminating the redundancy).

Since water only passes a vessel once, the treatment performance should be carefully monitored to avoid PFAS breakthrough. PFAS breakthrough time varies with water flow/quality variation, and this makes the prediction of breakthrough time (e.g., media changeout time) difficult and likely inaccurate. Therefore, to avoid permit violation, the media will have to be changed out early before the vessel reaches breakthrough point. In this case, the media's treatment capacity is not fully utilized and operation cost is higher due to more frequent media changeout.

Series

In a series configuration each treatment train includes two vessels: a lead vessel and a lag vessel. Water flows through two vessels: first the lead vessel, which would be the primary vessel for treatment, then the lag vessel. The lag vessel provides a safety buffer zone and 100% redundancy. Media changeout of the lead vessel can wait until the lead vessel reaches breakthrough point since the lag vessel will provide the required treatment to avoid permit violation. This allows maximum utilization of the media in the lead vessel and reduce operation cost. Both the lead and lag vessels are identically sized to meet the design HLR and EBCT. These two vessels are exchangeable for being lead or lag with the given valving configuration. Once the media in the lead vessel is exhausted, the media would be replaced, and the lag vessel would become the lead.

For a system with redundancy, typically parallel configuration will have N+1 vessels (N duty trains/vessels + one redundant) while series configuration will have N+N vessels (N lead vessels + N lag vessels). Therefore, for a system with more than one train, a series configuration will result in higher capital costs for the additional vessels and larger building footprint. However, series configuration provides the following benefits:

- Reduced annual operation and maintenance (O&M) costs by increased utilization of the media. With series configuration, the lead vessel media can be run until breakthrough occurs to fully utilize the media capacity. Conversely, with a parallel system, the media would have to be changed out prior to any PFAS breakthrough to meet the treated water quality goals.
- Increased reliability for meeting the treated water quality goals. PFAS monitoring can be reduced due to the lag vessel offering treatment backup if PFAS breaks through the lead vessel.
- Increased operational flexibility for scheduling media changeouts. The configuration allows the WTP to change out the media in the lead vessel without decreasing the treatment capacity as the flow can be fully treated in the lag vessel during media changeouts. A redundant unit is not necessary in this case.

Additionally, it can be challenging to get a parallel configuration approved by a government agency due to the concern of potential PFAS breakthrough. Therefore, a series configuration is recommended for the Town's future PFAS treatment systems and the evaluation below is based on series configuration.

3.2.2 Single Train Vs. Two Trains Configuration

For both WTPs, PFAS treatment can be done with a single train or two train system, with each train consisting of a lead/lag pair of vessels. A single train system has a lesser number of vessels with larger diameter, which requires less space for installation. A two train system has smaller diameter vessels, but results in a larger footprint since the number of vessels is doubled. However, compared to a single train system, a two train system provides more operational flexibility to handle a wider range of water flow. In addition, for two train systems, if one entire train is taken offline for repair or maintenance, the WTP still can remain at 50% treatment capacity with another train remaining in operation. Single train and two train systems will be compared in more detail in **Section 4** of this report.

3.3 Limiting Factor

There are potential limiting factors that also need to be considered during the alternatives analysis. These are discussed below in more detail.

3.3.1 Competition from Background Organics in Influent

Background organics will compete with PFAS for GAC adsorption. For East Lyme, as presented in Section 1, influent TOC is below detection limit for both WTP sites. Therefore, competition from organics is not anticipated to be an issue.

3.3.2 Tolerance to Oxidant in Influent

Both Well 4A WTP and Well 1A/6 WTP have the capability of using either sodium hypochlorite or potassium permanganate as an oxidant for the upstream greensand filters. Currently, both WTPs are using sodium hypochlorite, which we understand is preferred by the Town. As a result, there will be some chlorine residuals in the greensand filter effluent, i.e., PFAS vessel influent. Per the provided historical data, chlorine levels at Well 1A/6 site are: minimum = 0.22 mg/L, average = 0.76 mg/L, and maximum = 1.52 mg/L. Chlorine levels at the Well 4A site are: minimum = 0.20 mg/L, average = 0.59 mg/L, and maximum = 1.45 mg/L.

For a GAC system, chlorine can compete with PFAS and reduce the useful capacity of the GAC media. However, Calgon Carbon (a primary GAC supplier) stated that they have no concern about these levels of chlorine. To be conservative, there may be a 5% reduction in bed life at most, but it is typically negligible. Another one of the vendors, Veolia Water Technologies, stated there will be no more than 10-15% reduction caused by up to 1.6 mg/L chlorine in PFAS vessel influent.

Permanganate residual will not impact GAC capacity; however, permanganate may form manganese dioxide and settle in the GAC vessel and cause fouling of the vessel. Therefore, it is recommended to minimize permanganate level in the influent to a GAC system.

For an IX resin system, oxidants such as permanganate or chlorine must be completely removed before the water contacts the resin since an oxidant will destroy the resin. Therefore, if an IX resin system is preferred, a de-oxidant system using sodium bisulfite or sodium thiosulfate must be provided.

3.3.3 Backwash Water Required

When new media are placed in the vessel (e.g., during startup and/or when the spent media is replaced), backwash is used to wash out the fine particles, clean the media, and produce the required expansion and stratification for proper system performance. Backwash water flowrate is impacted by temperature, and higher temperature will require higher flowrate.

Backwash could be used to expand the media during normal operation when headloss is high due to compressed media. However, backwash during normal operation could potentially mix the PFAS-loaded layer at the top of the media with less-used media at the bottom, causing premature breakthrough of PFAS. The need to backwash during normal operation is rare for GAC, and IX resin typically does not recommend a backwash.

GAC media is typically designed to have 30% expansion during backwash, which requires approximately 10.3 gpm/ft^2 backwash water at 55°F. This equates to approximately 1,170 gpm for 12-ft diameter vessel, 810 gpm for 10-ft diameter vessel, 520 gpm for 8-ft diameter vessel, and 300 gpm for 6-ft diameter vessel.

Backwash water can be drawn directly from the distribution system or from a storage tank. If drawing from distribution system, high flowrate could impact water the supply to customers.

3.3.4 Backwash Wastewater Discharge

The backwash wastewater generated during media installation, although infrequent, must be managed and disposed of. For both WTPs, a sewer connection for backwash wastewater already exists. As such, an investigation was conducted to estimate the capacity of the sewer/drain systems to handle the backwash waste.

At the Well 4A WTP, it is assumed that the backwash waste will be sent to the 8-inch ductile iron sanitary sewer pipe. Per the record drawings provided by the Town, the 8-inch pipe has a slope of 0.01. Using Manning's equation, the sewer/drain system can handle a flow up to 590 gpm without the need for an equalization tank.

At the Well 1A/6 WTP, it is assumed that the backwash waste will be sent to the 15-inch PVC sanitary sewer pipe. With a slope of 0.004, the 15-inch PVC pipe can handle up to 2,400 gpm flow. The sanitary sewer pipe drains to the equalization tanks that include four (4) 12,000-gallon tanks. The equalization tanks are equipped with two (2) 250 gpm pumps. If the wastewater flow is higher than the pump capacity, the equalization tanks should be able to detain the flow temporarily. However, before backwash, the equalization tanks must be pumped down to a level that provides adequate storage/equalization capacity.

3.3.5 Pump Capacity and Headloss

The Well 1A pump has a design capacity of 810 gpm at 345-feet of total dynamic head (TDH) at the pump bowl, and 312.8 feet or 135.4 psi at the discharge flange. The Well 6 pump has a design capacity of 810 gpm at 345 TDH (at pump bowl) and 312.4 ft or 135.2 psi at discharge flange. Currently, both well pumps have discharge pressures in the range of 90-110 psi since they are not operating at 100% speed. According to the Town, the Well 1A pump is typically operating at 54 Hz and the Well 6 pump is typically operating at 52 Hz. For GAC and IX resin, the typical headloss for a system in series is approximately 6-10 psi. Presumably the well pumps can provide more head/pressure to account for the additional headloss caused by PFAS systems. A detailed analysis should be conducted during future PFAS treatment design to confirm this.

For Well 4A, information provided by East Lyme indicated that the Well 4A pump is typically operating at 56 Hz and has extra capacity to provide more head. East Lyme also indicated that the pump is aged and that replacement of the pump will be considered in the future PFAS treatment design. Therefore, a new well pump with adequate capacity will be designed to compensate for the additional headloss from the addition of a PFAS treatment system.

Section 4
Alternative Analysis

Tighe & Bond evaluated alternatives for PFAS treatment at both the Well 1A/6 and Well 4A sites. Tighe & Bond contacted several equipment vendors requesting budgetary proposals and information for different PFAS treatment alternatives.

Whether GAC or IX media is used in the vessels, the future PFAS treatment system can be connected to the existing WTP process, as shown on the process flow diagrams presented in **Appendix A**. PFAS system influent will be taken from the effluent manifold of the greensand filters, and PFAS system effluent will be connected back to the existing treated water pipe before finished water chemical injection. Installing the PFAS system after the greensand filters is critical for ensuring the PFAS treatment influent water has low concentrations of iron and manganese, which could foul the PFAS vessels. After water passes through the PFAS treatment system, it can return to the greensand filter building for chemical injection (potassium hydroxide, sodium hypochlorite, and sodium fluoride), and then flow into the distribution system.

De-oxidant pretreatment is not expected to be required for a GAC PFAS treatment system, as the GAC media is typically tolerant of constituents found in the influent water. However, for an IX PFAS treatment system, a deoxidization pretreatment system would be required to ensure the longevity of the IX resin. This pretreatment system could be installed in the new PFAS treatment building and would treat the PFAS system influent water.

4.1 Well 1A/6 WTP Site PFAS Treatment Alternatives

4.1.1 GAC Vessel for Well 1A/6 WTP

Information for both single-train (one pair) and two-train (two pair) GAC systems designed to operate in lead/lag configuration are summarized in **Table 4-1**.

TABLE 4-1 GAC Vessel Options for Well 1A/6 WTP

	Single Train	Two Trains				
	Calgon	**Calgon**	**Hungerford & Terry**	**Clear Creek**	**Veolia**	**Xylem/ Evoqua**
Equipment Price	$660,000	$800,000	$1,882,000	$1,705,000	$1,725,000	$1,379,000
EBCT of Each Vessel at Design Flow, minutes	8.8	10	10.1	10	10	10
# of Trains/# of Total Vessels	1/2	2/4	2/4	2/4	2/4	2/4
Vessel Diameter, ft	12	10	11.5	10	12	10
Skid Dimension (LxW)	31'4"x13'4"	26'1"x11'3"	35'x19'6"	32'x18'	34'2"x15'3"	26'10"x11'3"
Skid Height (H), ft	26'9"	21'9"	16'		23'6"	19'2"
Total Skid Space Required (LxW)[1]	31'4"x13'4"	26'1"x27'6"	35'x44'	32'x41'	34'2"x35'6"	26'10"x27'6"
Total Skid Space, sf	418	717	1,540	1,184	1,213	738
Building Size, sf[2]	1,740	2,330	3,741	3,383	3,173	4,102
HLR at Average Flow, gpm/sf	8.84	6.37	4.81	6.37	4.42	6.37
HLR at Max Flow, gpm/sf	11.5	8.28	6.26	8.28	6.26	8.28
Headloss, psi (at 55 °F)	20.5	6.6		8	9	4
Media Life at Average Flow, years[3]	1.67	1.67		0.55	3.15	2.51
Media Weight of All Lead Vessels, lbs	40,000	20,000	45,482	40,000	80,000	40,000
Media Replacement Cost, $/lb	$2.30	$2.30		$4.60	$4.50	$4.00
Spent Media Disposal Cost, $/lb[4]	$0	$0		$0	$1.40	$1.40
Media Replacement Cost/Change[5]	$92,000	$92,000		$184,000	$472,000	$216,000

	Single Train	Two Trains				
	Calgon	Calgon	Hungerford & Terry	Clear Creek	Veolia	Xylem/ Evoqua
20 Years Media Replacement Cost[5]	$1,102,000	$1,102,000		$6,716,000	$2,993,000	$1,721,000
Backwash Water, gpm	1,165	809	830		1400	475
Lead Time, weeks[6]	34	34	35	28	38	26/40
BABA Compliance[7]	Yes w/ extra cost	Yes w/ extra cost	Vessel only	Yes, except media	Not yet compliant	Yes w/ extra cost

1. Total skid space includes two skids in parallel with 5-ft of separation for two train system.
2. Building size assumes 7 ft clearance around skid and additional 10 ft room length for storage and chemical containment area.
3. Media life, and therefore replacement costs, are rough estimates since pilot studies were not conducted.
4. If media replacement cost includes spent media disposal cost, the spent media disposal cost will be shown as $0. Otherwise, a rough estimate of $1.40/lb is used for disposal.
5. Media replacement cost is assuming lead vessel media to be replaced at predicted frequency.
6. Lead time for standard units/BABA compliant units.
7. Build America Buy America Act (BABA) requirement became effective May 14, 2022, and will apply to all DWSRF funding from that point forward, unless a project qualifies for a waiver or one is specifically granted.
8. All costs presented in the table are present costs (2024)

As shown, most vendors do not have a suitable size single train system for Well 1A/6 WTP. Calgon has a single train system, however, the headloss is very high and the HLR at maximum flow is higher than the maximum recommended HLR of 9.5 gpm/sf . Therefore, if using GAC vessel for Well 1A/6, a two train system is recommended.

4.1.2 IX Vessel for Well 1A/6 WTP

Information for both single-train (one pair) and two-train (two pair) IX systems designed to operate in lead/lag configuration are summarized in **Table 4-2**.

TABLE 4-2 IX Vessel Options for Well 1A/6 WTP

	Single Train				Two Trains		
	H&T	**Clear Creek**	**Veolia**	**Xylem (Evoqua)**	**H&T**	**Clear Creek**	**Veolia**
Equipment Price	$1,491,000	$1,044,000	$1,365,000	$1,087,000	$1,397,000	$999,000	$1,433,000
EBCT of Each Vessel at Design Flow, minutes	2.5	2.5	2.5	3.2	2.4	2.5	2.5
# of Trains/# of Total Vessels	1/2	1/2	1/2	1/2	2/4	2/4	2/4
Vessel Diameter, ft	11	10	12	12	8	8	8
Skid Dimension (LxW)	34'x19'	32'x18'	34'2"x15'3"	30'5"x13'3"	28'x16'	28'x16'	30'2"x11'3"
Skid Height (H), ft	12'		23'6"	16'	11'6"	14'9"	20'3"
Total Skid Space Required[1] (LxW)	34'x19'	32'x18'	34'2"x15'3"	30'5"x13'3"	28'x37'	28'x37'	30'2"x27'6"
Total Skid Space, sf	646	576	521	403	1,036	1,036	830
Building Size, sf[2]	2,271	2,138	2,037	1,797	3,095	3,095	2,643
HLR at Average Flow, gpm/sf	10.52	12.73	8.80	8.80	9.95	9.95	9.95
HLR at Max Flow, gpm/sf	13.68	16.55	11.49	11.49	12.93	12.93	12.93
Headloss, psi (at 55 °F)		8	9	6.1		6	2
Media Life at Average Flow, years[3]		3.29	2.57	4.95		3.29	
Media Weight of All Lead Vessels, lbs	14,542	27,060	15,165	20,000	14,542	27,060	

	Single Train				Two Trains		
	H&T	Clear Creek	Veolia	Xylem (Evoqua)	H&T	Clear Creek	Veolia
Media Replacement Cost, $/lb		$7.87	$11.67	$10.20		$7.87	$11.67
Spent Media Disposal Cost, $/lb[4]		$0	$1.40	$1.40		$0	$1.40
Media Replacement Cost/Change[5]		$212,962	$198,207	$232,000		$212,962	
20 Years Media Replacement Cost[5]		$1,296,000	$1,543,000	$937,000		$1,296,000	
Backwash Water, gpm	95				50		
Additional Systems Needed	De-oxidant system, emergency eye wash and shower station, tempered water system.						
Lead Time, weeks[6]	35	28	38	26/40	35	28	38
BABA Compliance[7]	Vessel only	Yes, except media	Not yet compliant	Yes. Cost is for non BABA	Vessel only	Yes, except Media	Not yet compliant

1. Total skid space includes two skids in parallel with 5-ft of separation for two train system.
2. Building size assumes 7 ft clearance around skid and additional 10 ft room length for storage and chemical containment area.
3. Media life and costs are rough estimates since pilot studies were not conducted.
4. If media replacement cost includes spent media disposal cost, the spent media disposal cost will be shown as $0. Otherwise, a route estimate of $1.40/lb is used for disposal.
5. Media replacement cost is assuming lead vessel media to be replaced at predicted frequency.
6. Lead time for standard units/BABA compliant units.
7. Build America Buy America Act (BABA) requirement became effective May 14, 2022, and will apply to all DWSRF funding from that point forward, unless a project qualifies for a waiver or one is specifically granted.
8. All costs presented in the table are present costs (2024)
9. H&T = Hungerford & Terry

4.1.3 Conceptual Site Plan and Building Layout

A conceptual site layout for the Well 1A/6 site is included in **Appendix B.** The Town-owned open space and grassy area south of the existing Well 6 building is a potential candidate for the future PFAS treatment building for Well 1A/6. Although the size of the future building is variable at this stage and will ultimately depend on the chosen configuration, its proximity to the existing Well 1A building creates operational efficiencies for the Town.

A sidewalk, loading dock, and stairway can be provided with the new PFAS treatment building to allow for operator access to and from the building. With the additional impervious area created from the new building, a stormwater retention system will likely be required. This system can be located south of the new PFAS treatment building.

Conceptual building layouts for both GAC and IX treatment systems for the new Well 1A/6 PFAS building are included in **Appendix C**. These conceptual layouts are considered conservative, meaning that the proposed building size is generous and could decrease for each treatment option as decisions are refined throughout later stages of the design. At this stage, an estimated clearance (7-ft) was provided around the PFAS vessel skid(s) with additional space (10-ft length) for storage and auxiliary systems. As discussed previously, IX systems will require a de-oxidant system with a chemical containment area, so additional length is used to provide adequate storage area.

4.1.4 Alternatives Comparison for Well 1A/6 WTP

As discussed previously, a single train GAC system is not a suitable alternative for Well 1A/6 WTP. Therefore, the other three alternatives (GAC Trains, IX Single Train, and IX Two Trains) are compared and summarized in **Table 4-3**.

TABLE 4-3 Alternatives Comparison for Well 1A/6 WTP

Parameter	GAC Two Trains	IX Single Train	IX Two Trains
Equipment Cost Min/Max	$800,000 /$1,882,000	$1,044,000 /$1,491,000	$999,000 /$1,433,000
Equipment Footprint , sf Min/Max	720/1,540	400/650	830/1,040
Nominal Building Size, sf Min/Max	2,330/4,100	1,800/2,270	2,640//3,090
Pretreatment Required	No	Yes. De-oxidant required.	Yes. De-oxidant required.
Additional Systems Required	No	De-oxidant, emergency eye wash/shower station, tempered water supply	De-oxidant, emergency eye wash/shower station, tempered water supply
Media Life at Average Flow, years Min/Max	0.55/3.15	2.57/4.95	3.29
Media Replacement Cost (20 yrs) Min/Max	$1,102,000 /$6,716,000	$937,000 /$1,543,000	$1,296,000[1]

Parameter	GAC Two Trains	IX Single Train	IX Two Trains
Chemical Cost[2]	No	Low	Low
Operational Flexibility	High	Low	High
Operational Complexity	Low	Medium with De-oxidant System	Medium with De-oxidant System

1. Media replacement cost information is only available from one vendor for two train IX system.
2. Chemical cost is insignificant for IX system due to low usage.

Well 1A/6 WTP is receiving water from two wells: Well 1A and Well 6. The WTP could be operating with just a single well or both wells running. The PFAS system will need to be designed to treat the flow from both wells. When only one well is in operation, there is a concern that the flow is too low and may not meet the minimum flow requirements for a single train alternative. Therefore, a two train system is recommended to provide operational flexibility that will handle various flowrates, particularly at low flowrates. Therefore, the below evaluation only compares the two train GAC system with the two train IX system.

GAC systems equipment cost and building size are comparable to IX system. The cost per media changeout is lower for GAC than for IX, however the predicted changeout frequency is higher. Over twenty years the projected media replacement cost for two of the three GAC vendors were significantly higher than projected for IX systems. However, Calgon GAC media replacement cost is slightly lower than IX system. It is noted that the media life is just a rough estimate since bench or pilot testing was not conducted. According to Tighe & Bond's past experience, annualized media replacement cost of GAC is slightly lower or equal to IX media since IX media has a higher price per pound even though it has longer media life. There are also current uncertainties with long-term IX media disposal alternatives.

An IX system requires a de-oxidant system, which consequently requires a chemical containment area, emergency eye wash/shower station, and a tempered water supply for the station, and could potentially trigger the building code requirement of a sprinkler system for fire protection.

De-oxidant control can be complicated and would require monitoring and automation. Chlorine residual from the greensand filter effluent varies. To achieve complete de-oxidant required by IX resin, overdosing of de-oxidant chemical is likely required. After PFAS treatment, the treated water will then need to be re-chlorinated for disinfection. Chlorine dosing would need to be high enough to neutralize the de-oxidant chemical residual first before providing adequate chlorine residual into the distribution system, resulting in usage of more chemicals.

With a current average flow of 0.735 million gallons per day (mgd) and an assumed chlorine residue of 1 mg/L, it is estimated that Well 1A/6 WTP will use about 2 gallons per day (gpd) of 38% sodium bisulfite solution, which results in a storage volume of 180 gallons, assuming three months of chemical storage. Due to the small amount of usage, there will be a limited selection of chemical suppliers since some chemical suppliers have minimum delivery volume requirements (3,000 gallons for Borden & Remington, and 1,000 gallons minimum from Holland Company) which is significantly higher than what Well 1A/6 will use. This will lead to the use of drums, which requires additional operational labor and careful handling.

It is also noted that presently only one vendor (Xylem) can provide a Build America Buy America Act (BABA) compliant IX system, which may be problematic if East Lyme intends to utilize Drinking Water State Revolving Funds (DWSRF). The BABA requirement became effective May 14, 2022, and applies to all DWSRF funding, unless a project qualifies for a waiver. As such, if only one IX vendor is BABA compliant it eliminates competitive pricing and may result in higher bid pricing.

In summary, it appears that a two train GAC system is a better alternative and therefore is recommended for Well 1A/6 WTP site.

4.2 Well 4A WTP Site PFAS Treatment Alternatives

4.2.1 GAC Vessel for Well 4A WTP

Information for both single-train (one pair) and two-train (two pair) GAC systems is summarized in **Table 4-4**.

TABLE 4-4 GAC Vessel Options for Well 4A WTP

	Single Train			Two Train		
	Calgon	**Veolia**	**Xylem (Evoqua)**	**Calgon**	**Hungerford & Terry**	**Clear Creek**
Equipment Price	$480,000	$1,226,000	$695,000	$608,000	$1,112,000	$755,000
EBCT of Lead Vessel at Design Flow, minutes	16.6	10	16.9	10	10.1	10
# of Trains/# of Total Vessels	1/2	1/2	1/2	2/4	2/4	2/4
Vessel Diameter, ft	10	12	10	6	6.5	8
Skid Dimension (LxW)	26'1" x 11'3"	34'2"x15'3"	26'10"x11'3"	17'x 7'10"	25'x14'6"	28'x16'
Skid Height (H), ft	21'9"	23'6"	19'2"	14'8"	14'	14'9"
Total Skid Space Required[1] (LxW)	26'1" x 11'3"	34'2"x15'3	26'10"x11'3"	17" x 19'10"	25'x34'	28'x37'
Total Skid Space, sf	293	521	302	337	850	1,036
Building Size, sf[2]	1,473	1,942	1,494	1,630	2,618	2,934

	Single Train			Two Train		
	Calgon	Veolia	Xylem (Evoqua)	Calgon	Hungerford & Terry	Clear Creek
HLR at Average Flow, gpm/sf	3.82	2.65	3.82	5.31	4.80	2.98
HLR at Max Flow, gpm/sf	5.09	3.54	5.09	7.07	6.03	3.98
Headloss, psi (at 55 °F)	3.3	9	2	10	4.8	6.00
Media Life at Average Flow, years[3]	2.09	5.26	2.57	1.14		0.61
Media Weight of All Lead Vessels, lbs	20,000	40,000	20,000	12,000	6,708	20,000
Media Replacement Cost, $/lb	$2.30	$4.50	$4.05	$2.30		$5.01
Spent Media Disposal Cost, $/lb[4]	$0	$1.40	$1.40	$0		
Media Replacement Cost/change[5]	$46,000	$180,000	$109,000	$27,600		$60,000
20 Years Media Replacement Cost[5]	$440,000	$898,000	$848,000	$484,000		$3,287,000
Backwash Water Requirements, gpm	809	1400	475	285		
Lead Time, weeks[6]	34	38	26/40	34	35	28
BABA Compliance[7]	Yes w/ extra cost	Not yet compliant	Yes w/ extra cost	Yes w/ extra cost	Vessel only	Yes, except media

1. Total skid space includes two skids in parallel with 5-ft of separation for two train system.
2. Building size is assumes 7 ft clearance around skid and additional 10 ft room length for storage and chemical containment area.
3. Media life and replacement costs are rough estimates since pilot studies were not conducted.
4. If media replacement cost includes spent media disposal cost, the spent media disposal cost will be shown as $0. Otherwise, a route estimate of $1.40/lb is used for disposal.
5. Media replacement cost is assuming lead vessel media to be replaced at predicted frequency.
6. Lead time for standard units/BABA compliant units.

7. Build America Buy America Act (BABA) requirement became effective May 14, 2022, and will apply to all DWSRF funding from that point forward, unless a project qualifies for a waiver or one is specifically granted.
8. All costs presented in the table are present costs (2024)

As shown in the table, backwash flow for a single train GAC system is high for Calgon and Veolia and exceeds the drain capacity of 590 gpm estimated in Section 3. Xylem's (Evoqua) system only requires 475 gpm backwash water which can be handle by the existing drain. However, Xylem confirmed that their system requires lower backwash flow because their GAC is lighter than other manufacturer's GAC. If East Lyme wants to use other manufacturer's GAC for replacement (e.g., Calgon's GAC, which has lower price), it will likely require higher backwash flow exceeding existing drain capacity. In this case, an equalization tank or a renter Frac-tank needs to be provided for backwash.

4.2.2 IX Vessel for Well 4A WTP

The information for both single-train and two-train IX system is summarized in **Table 4-5** below.

TABLE 4-5 IX Vessel Options for Well 4A WTP

	Single Train			Two Train		
	Hungerford & Terry	Clear Creek	Veolia	Hungerford & Terry	Clear Creek	Xylem (Evoqua)
Equipment Price	$646,000	$309,000	$897,900	$699,000	$384,000	$340,000
EBCT of Lead Vessel, minutes	2.5	2.5	2.8	2.5	2.5	2.7
# of Trains/# of Total Vessels	1/2	1/2	1/2	2/4	2/4	2/4
Vessel Diameter, ft	6	6	8	4	4	4
Skid Dimension (LxW)	24'x14'	24'x14'	30'2"x11'3"	20'x12'	20'x12'	11'6'x6'6"
Skid Height (H), ft	11'		20'3"	10'6"		8'2"
Total Skid Space Required[1] (LxW)	24'x14'	24'x14'	30'2"x11'3"	20'x29'	20'x29'	11'6"x18'
Total Skid Space, sf	336	336	339	580	580	207
Building Size, sf[2]	1,646	1,646	1,670	2,268	2,268	1,427
HLR at Average Flow, gpm/sf	10.61	10.61	5.97	11.94	11.94	11.94

	Single Train			Two Train		
	Hungerford & Terry	Clear Creek	Veolia	Hungerford & Terry	Clear Creek	Xylem (Evoqua)
HLR at Max Flow, gpm/sf	14.15	14.15	7.96	15.92	15.92	15.92
Headloss, psi (at 55 °F)		4	2		4.00	4.3
Media Life at Average Flow, years [3]		3.29	2.85		3.29	1.90
Media Weight of All Lead Vessels, lbs	4,336	5,000	5,561	4,380	4,000	6,000
Media Replacement Cost, $/lb[4]		$7.87	$11.67		$7.87	$12.27
Spent Media Disposal Cost, $/lb[4]		$0	$1.40		$0	$1.40
Media Replacement Cost[5]		$32,200	$64,897		$31,4800	$82,020
20 Years Media Replacement Cost[5]		$239,000	$510,000		$192,000	$863,000
Backwash Water Requirements, gpm	28			13		
Additional System Needed	De-oxidant system , emergency eye wash and shower station, tempered water system.					
Lead Time, weeks[6]	35	18	38	35	12	26/40
BABA Compliance[7]	Vessel only	Yes, except media	Not yet compliant	Vessel only	Yes, except media	Yes w/ extra cost

1. Total skid space includes two skids in parallel with 5-ft of separation for two train system.
2. Building size is assuming 7 ft clearance/space around skid and additional 10 ft room length for storage and chemical containment area.
3. Media life is a rough estimate since pilot studies were not conducted. Therefore, media replacement costs are rough estimates as well.
4. If media replacement cost includes spent media disposal cost, the spent media disposal cost will be shown as $0. Otherwise, a route estimate of $1.40/lb is used for disposal.
5. Media replacement cost is assuming lead vessel media to be replaced at predicted frequency.

6. Lead time for standard units/BABA compliant units
7. Build America Buy America Act (BABA) requirement became effective May 14, 2022, and will apply to all DWSRF funding from that point forward, unless a project qualifies for a waiver or one is specifically granted.
8. All costs presented in the table are present costs (2024)

4.2.3 Conceptual Site Plan and Building Layout

A conceptual site layout for the Well 4A site is included in **Appendix B**. The Town-owned space northeast of the existing Well 4A has potential for the future PFAS treatment building for Well 4A. Although the size of the future building is variable at this stage and depends on the chosen configuration, its proximity to the existing Well 4A building creates operational efficiencies for the Town.

A new loading dock can connect to the existing Well 4A loading dock to allow for operator ease of access to and from the building. With the additional impervious area created from the new building, a stormwater retention system will likely be required, which can be located to the east of the new PFAS treatment building. Additionally, construction of the new PFAS treatment building will likely require the relocation of the existing propane tanks, as shown on the conceptual site plan.

Conceptual building layouts for both GAC and IX treatment systems for the new Well 4A PFAS building are included in **Appendix C**. These conceptual layouts are considered conservative, meaning that the proposed building size is generous and could decrease for each treatment option as decisions are refined throughout later stages of the design. At this stage, an estimate of clearance was provided around the PFAS vessels with additional space for storage and auxiliary systems.

4.2.4 Alternatives Comparison for Well 4A WTP

Four alternatives for Well 4A WTP are compared and summarized in **Table 4-6** below.

TABLE 4-6 Alternatives Comparison for Well 4A WTP

Parameter	GAC Single Train	GAC Two Trains	IX Single Train	IX Two Trains
Equipment Cost Min/Max	$480,000 /$1,226,000	$608,000 /$1,112,000	$309,000 /$898,000	$340,000 /$699,000
Equipment Footprint, sf Min/Max	290/520	340/1,040	340/340	210/580
Nominal Building Size, sf Min/Max	1,470/1,940	1,630/2,930	1,650/1,670	1,430/2,270
Pretreatment Required	No	No	Yes. De-oxidant required.	Yes. De-oxidant required.
Additional Systems Required	No	No	De-oxidant, emergency eye wash/shower station, tempered water supply	De-oxidant, emergency eye wash/shower station, tempered water supply
Media Life at Average Flow, years Min/Max	2.09/5.26	0.61/1.14	2.85/3.29	1.9/3.29
Media Replacement Cost (20 yrs) Min/Max	$440,000 /$898,000	$484,000 /$3,287,000	$239,000 /$510,000	$192,000 /$863,000
Chemical Cost[1]	No	No	Low	Low
Operational Flexibility	High	High	Low	High
Operational Complexity	Low	Low	High with De-oxidant System	High with De-oxidant System

1. Chemical cost is insignificant for IX system due to low usage.

Calgon GAC system building size is comparable to IX systems, while the equipment costs and media replacement costs of all GAC systems are higher than IX systems. As one of the largest manufacturer of GAC systems, Calgon GAC systems costs less than other GAC vendors. It appears that the major reason for high GAC media replacement cost is the shorter estimated media life. It is noted that the media life is just a rough estimate since a pilot study was not conducted to better estimate media life. Tighe & Bond's past experience for projects with a pilot study found that typically media replacement cost of GAC is slightly lower or equal to IX media replacement cost since IX media has higher price even though it has longer media life.

Similar to the Well 1A/6 WTP site, an IX system has the following disadvantages: 1) requires de-oxidant system, chemical containment area, emergency eye wash/shower station and tempered water supply for the station, and could potentially trigger the building code requirement of sprinkler system for fire protection; 2) De-oxidant control could be complicated, and overdosing of de-oxidant chemical and additional chlorine for disinfection will be required; 3) Limited selection of chemical suppliers due to low chemical usage of de-oxidant chemical. It is estimated that Well 4A WTP will use about 0.5 gpd of 38% sodium bisulfite solution with current production of 0.17 mgd. This will lead to use of drums which requires additional operational labor and careful handling.

Because of the disadvantages associated with an IX system, GAC systems are more widely used for PFAS treatment at this time. In addition, since a GAC system is recommended for Well 1A/6 WTP, it is advantageous to have the same treatment technology that provides process simplicity and familiarity, minimizing operational and maintenance efforts of operators. Therefore, a GAC system is also recommended for the Well 4A WTP. Since the single train GAC system is more cost effective and requires a smaller building size than the two train GAC system, a single train GAC system is recommended for the Well 4A WTP site.

4.3 Reuse of Existing Vessels

There are three existing vessels with GAC media in the Well 1 Filter Building. These vessels/contactors are made of carbon steel and were installed in 1985 but never put into operation. The vessels are 9-ft in diameter, with an overall skid height of approximately 14 ft and sidewall height of 9 ft. GAC media in these vessels are anticipated to be not usable due to the age and exposure to air for such a long time. To save construction cost for the future PFAS treatment system, it was considered to utilize these vessels as new PFAS treatment vessels.

The Town retained Water Service Professional (WSP-US), an independent contractor, to conduct a visual inspection of the existing vessels on June 6,2024. The inspection report is attached in **Appendix D**. According to the inspection report, Vessels 2 and 3 appear to be in good condition. Minor corrosion was observed on the interior of vessels. However, the influent distributors were observed to be heavily corroded and tuberculated. Vessel 1 was previously retrofit with a calcium-based media which has been become "cemented" into the vessel. WSP-US estimated that removal of the calcium-based media will be difficult and costly. Therefore, only two of three existing vessels might be considered for reuse.

4.3.1 Reuse at Wells 1A/6 WTP

If the existing vessels were to be used as one of the dual trains recommended at the Well 1A/6 WTP, they would have a HLR of 7.9 gpm/ft^2 at average flow and 10.2 gpm/ft^2 at maximum flow, exceeding the maximum recommended GAC HLR of 9.5 gpm/ft^2 at maximum flow. The HLR's will be doubled for a single train system. For comparison, vendors recommended 10-ft diameter vessels for the two train system at Well 1A/6 WTP. In addition, to provide an EBCT of 10 minutes, the existing 9 ft vessels requires a media depth of 8.5 ft, which requires a sidewall height of 11 ft in minimum for 30% expansion. This exceeds the 9 ft sidewall height of existing vessels. Therefore, the existing vessels do not seem suitable for use at the Well 1A/6 WTP.

4.3.2 Reuse at Wells 4A WTP

At the Well 4A WTP site, if using the existing vessels for a single train system, HLR will be 4.7 gpm/ft^2 at design flow and EBCT will be 10 minutes with 6.3 ft media height. With 30% expansion, the required sidewall height is 8.2 ft. Existing vessels with 9 ft sidewall height might be adequate. It seems that the existing vessel can be considered to be used at The Well 4A WTP.

4.3.3 Concerns on Reusing Existing Vessel

Before being reused the vessels would require sand blasting, recoating and replacement of influent distributors. Other defects (e.g. pitting, pin holes, corrosion at threaded connections, etc.) uncovered during this work will also require repair. In addition, these vessels do not have side sample ports for intermediate sampling as typically provided for PFAS vessels, therefore modifications will be required to reuse the existing vessels. It is noted that such modifications and penetrations might impact the integrity, pressure rating and certification of the vessels. Additionally, the vessels were not pressure tested as part of the inspection. The future PFAS system will operate at a high pressure condition (over 100 psi), as such there is some risk with using the existing vessels unless they are successfully pressure tested and re-certified.

It is estimated that a new 9-ft diameter vessel will cost approximately $150,000. However, the existing vessels are aged, and they require rehabilitation and modification for being reused. Therefore, the saving from reusing existing vessels will be considerably less than $300,000.

Reusing the existing vessels seems not to be a good option due to the following reasons: 1) Savings will be offset by modification/rehabilitation costs; 2) Remaining life of these vessels are unknown and they may fail unexpectedly; 3) There is a concern on the pressure rating of these vessels, especially after modification.

Section 5 Recommendations

5.1 Well 1A/6 WTP Site

At Well 1A/6 WTP site, a two train system with each train operating in lead/lag configuration is recommended to handle the wide flow range associated with the two wells. A GAC system is recommended since it has costs and building size comparable to IX systems, does not need de-oxidant and ancillary systems (emergency eye washer/shower station with tempered water supply), is a simpler system, and requires less operation & maintenance effort of operators.

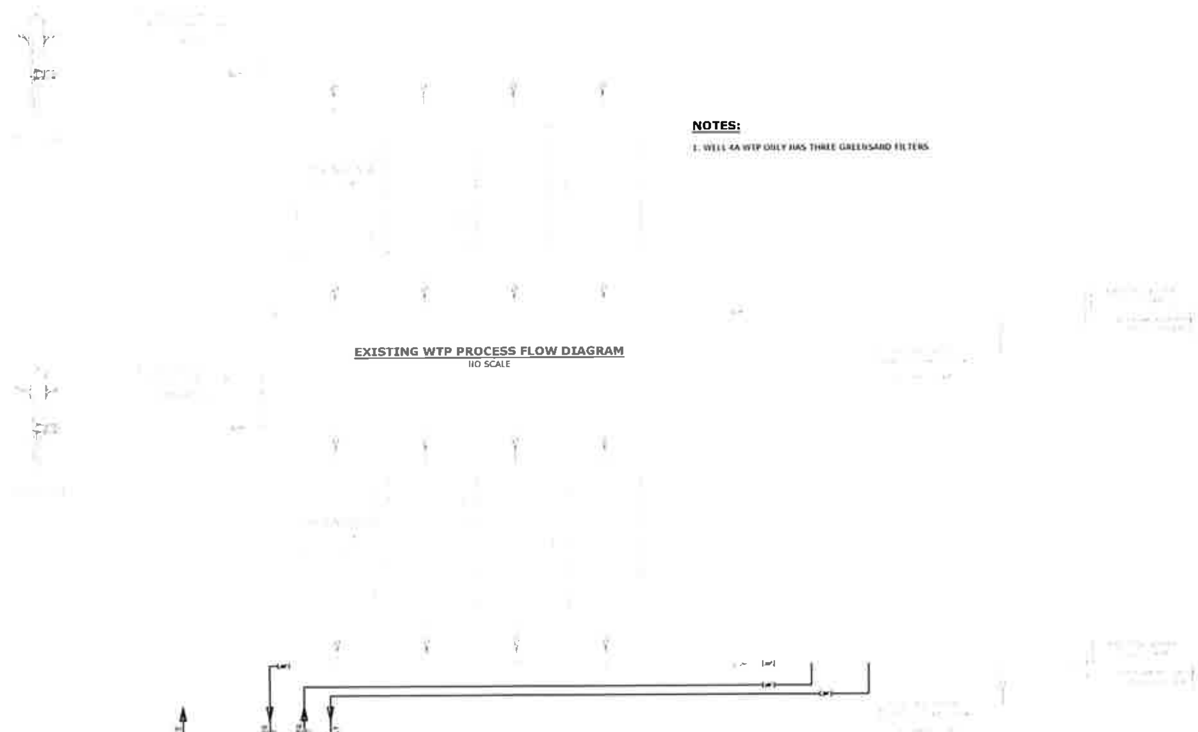
5.2 Well 4A WTP Site

At Well 4A WTP site, while a GAC system has higher equipment and media replacement costs, it is a simpler system with less operation & maintenance effort of operators. An IX system costs less but requires de-oxidant and ancillary systems (emergency eye washer/shower station with tempered water supply). Since Well 1A/6 WTP is recommended to have a GAC system for PFAS treatment, it is also recommended to have a GAC system for Well 4A WTP site for operator's familiarity of the treatment process. Based on the evaluation, a single train GAC system is recommended.

Due to the capacity limitation of the existing sewer/drain system at the Well 4A WTP site, a rental frac tank(s) might be required for backwash equalization and settling of fines during startup and each media changeout.

Appendix A

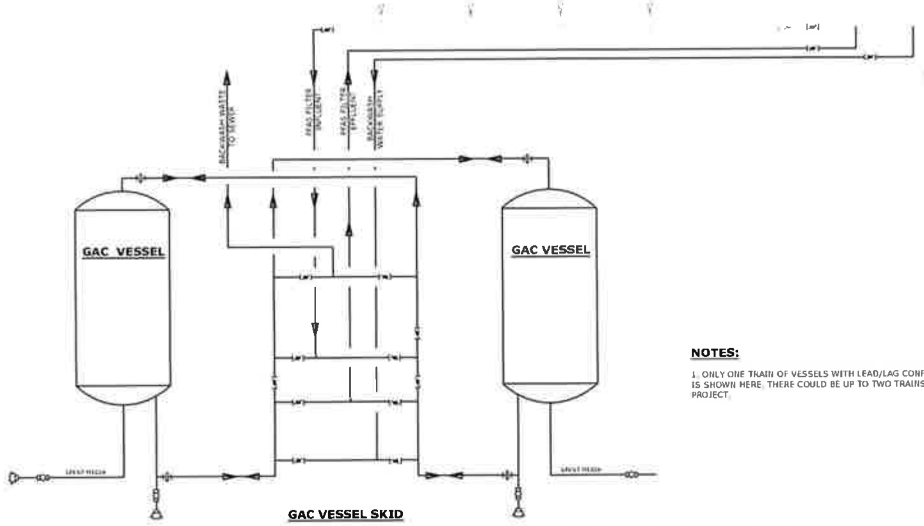
Conceptual Process Flow Diagrams



NOTES:

1. WELL 4A WTP ONLY HAS THREE GREENSAND FILTERS

EXISTING WTP PROCESS FLOW DIAGRAM
NO SCALE



GAC VESSEL SKID

NOTES:

1. ONLY ONE TRAIN OF VESSELS WITH LEAD/LAG CONFIGURATION IS SHOWN HERE. THERE COULD BE UP TO TWO TRAINS FOR THIS PROJECT.

PROPOSED WTP PROCESS FLOW DIAGRAM W/ GAC SYSTEM
NO SCALE

Tighe&Bond

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EAST LYME PFAS TREATMENT

TOWN OF EAST LYME

East Lyme, Connecticut

MARK	DATE	DESCRIPTION

PROJECT NO	E0610-037
DATE	MAY 2024
FILE	E0610-037-601.dwg
DRAWN BY	XX
DESIGNED/CHECKED BY	XX
APPROVED BY	XX

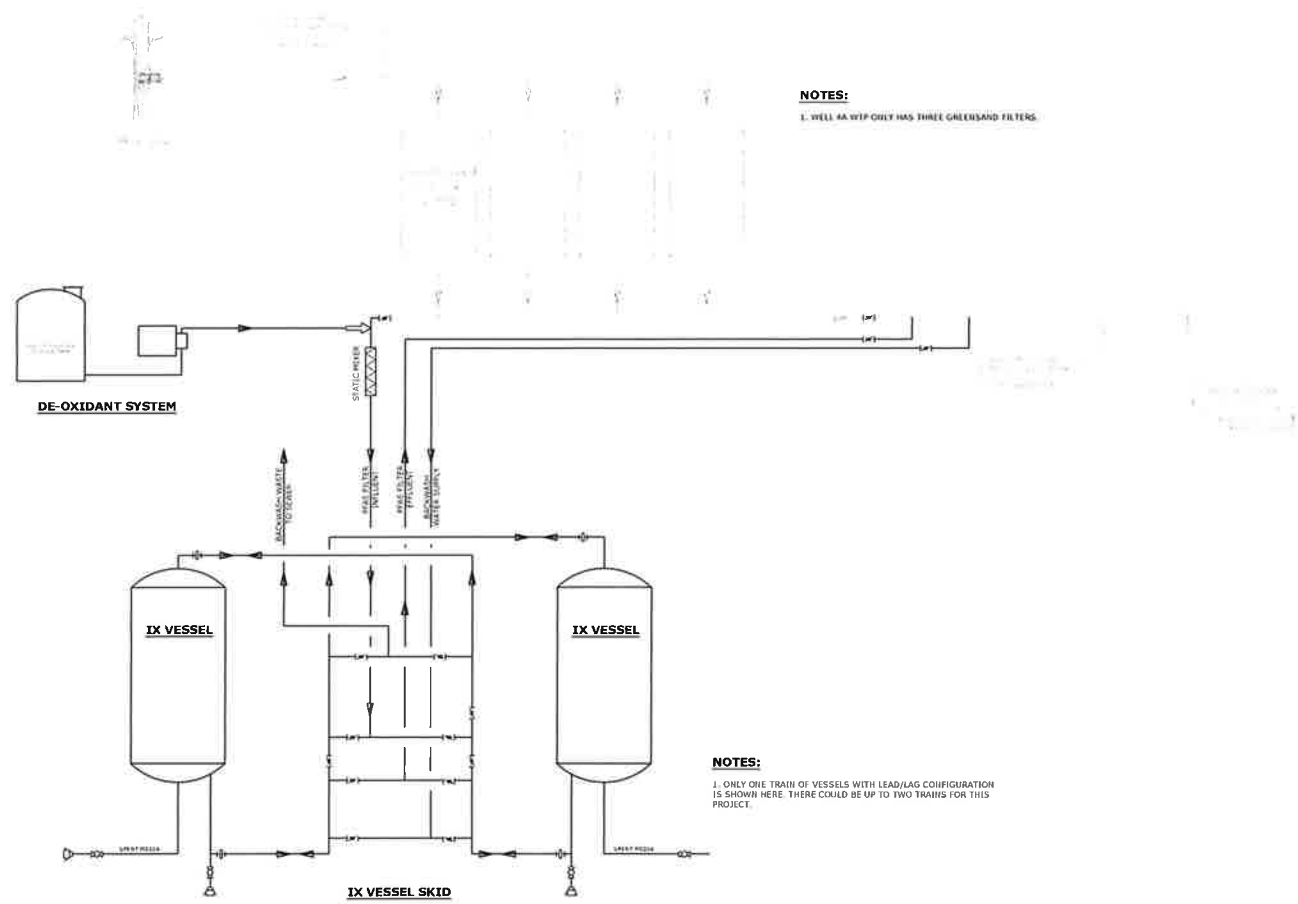
PROCESS FLOW DIAGRAM - GAC

SCALE: AS SHOWN

M-601
SHEET XX OF XX

NOTES:

1. WELL 4A WTP ONLY HAS THREE GREENSAND FILTERS.



NOTES:

1. ONLY ONE TRAIN OF VESSELS WITH LEAD/LAG CONFIGURATION IS SHOWN HERE. THERE COULD BE UP TO TWO TRAINS FOR THIS PROJECT.

PROPOSED WTP PROCESS FLOW DIAGRAM W/ IX SYSEM

NO SCALE

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East Lyme, Connecticut

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PROCESS FLOW DIAGRAM - IX

SCALE: AS SHOWN

M-602

SHEET XX OF XX

Appendix B

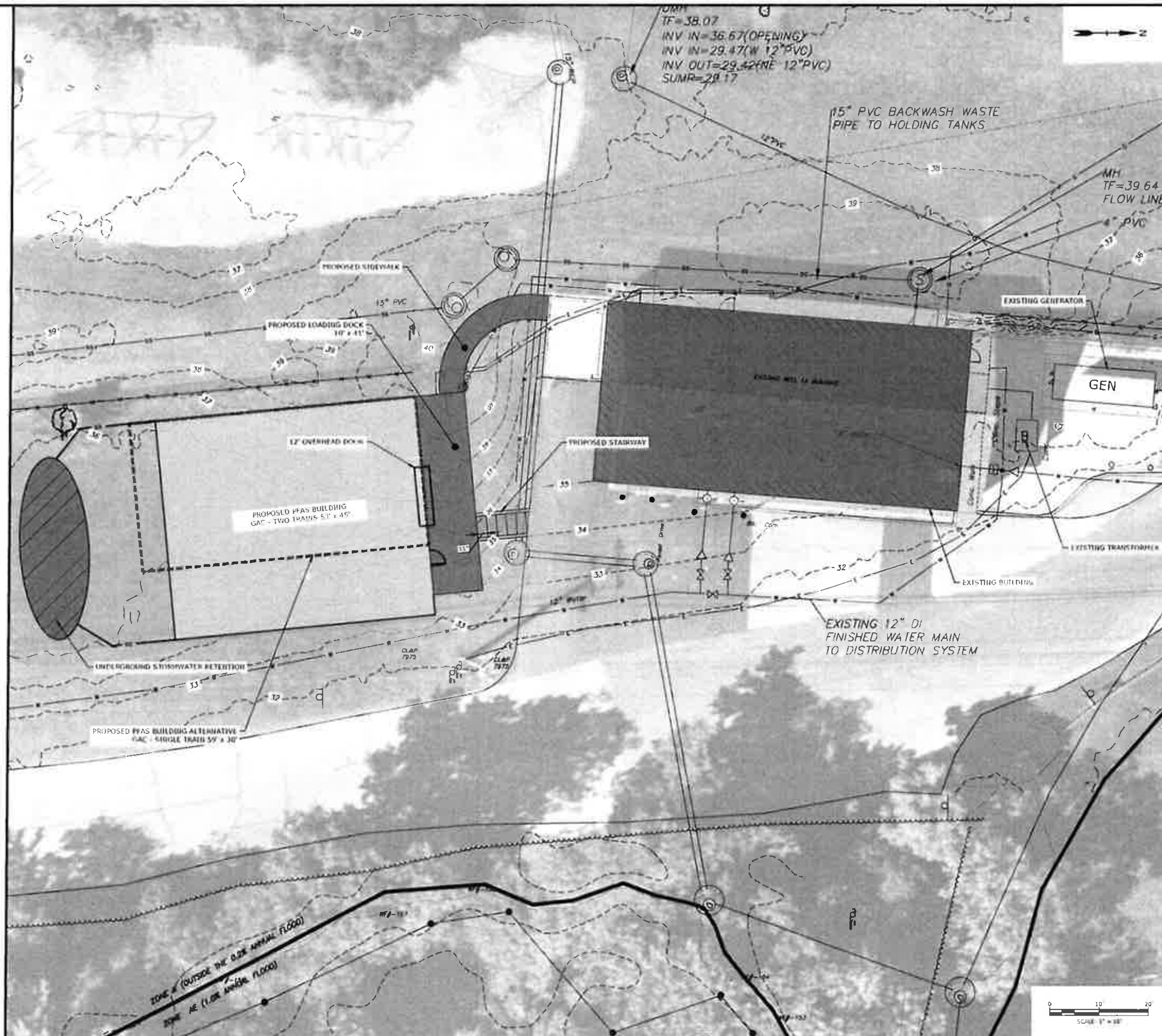
Conceptual Site Plans

CONCEPTUAL SITE PLAN NOTES

1. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING AND OTHER DATA SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES, GOVERNMENTAL AGENCIES AND/OR OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH DATA MAY EXIST ON SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO TIGHE & BOND. THE EXISTENCE, SIZE AND LOCATION OF ALL SUCH FEATURES MUST BE DETERMINED AND VERIFIED IN THE FIELD BY APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION @ CALL-BEFORE-YOU DIG 1-800-922-4455.
2. REFERENCE IS MADE TO NEAR MAPS AERIAL IMAGE, DATED MARCH 26, 2024.
3. REFERENCE IS MADE TO CT ECO LIDAR MAPPING, DATED 2016.
4. REFERENCES IS MADE TO "WELL 1A & 6 TREATMENT PROJECT" AS PREPARED BY TIGHE AND BOND DATED 04/16/2019.

CONCEPTUAL SITE PLAN LEGEND

- EXISTING WATER LINE
- EXISTING POWER LINE
- EXISTING GAS LINE
- EXISTING CHAINLINK FENCE
- EXISTING SEWER LINE
- EXISTING BOLLARD
- EXISTING TREELINE
- EXISTING BUILDING
- PROPOSED STORMWATER LINE
- PROPOSED BUILDING
- PROPOSED BUILDING ALTERNATIVE



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EAST LYME PFAS TREATMENT

TOWN OF EAST LYME

East Lyme, Connecticut

MARK	DATE	DESCRIPTION

PROJECT NO.	[illegible]
DATE	MAY 2024
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DESIGNED/CHECKED BY	[illegible]
APPROVED BY	PBE

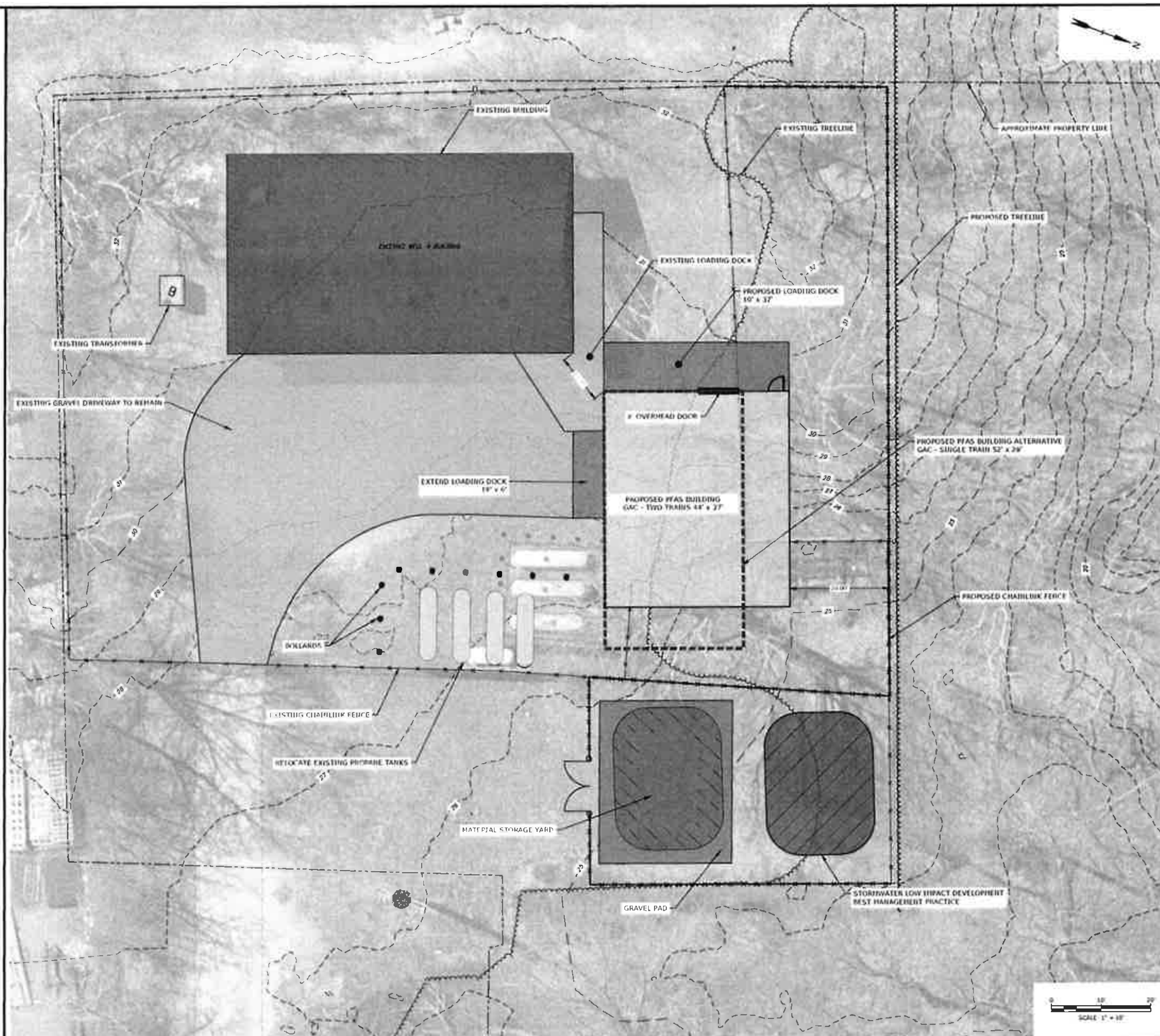
WELL 1A
CONCEPTUAL SITE PLAN

SCALE: AS SHOWN

C-101

CONCEPTUAL SITE PLAN NOTES

1. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING AND OTHER DATA SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES, GOVERNMENTAL AGENCIES AND/OR OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH DATA MAY EXIST ON SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO TIGHE & BOND. THE EXISTENCE, SIZE AND LOCATION OF ALL SUCH FEATURES MUST BE DETERMINED AND VERIFIED IN THE FIELD BY APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION & CALL BEFORE YOU DIG 1-800-922-4455
2. REFERENCE IS MADE TO NEAR MAPS AERIAL IMAGE, DATED MARCH 26, 2024.
3. REFERENCE IS MADE TO CT ECO LIDAR MAPPING, DATED 2016.



CONCEPTUAL SITE PLAN LEGEND

- EXISTING CHAINLINK FENCE
- EXISTING BUILDING
- PROPOSED CHAINLINK FENCE
- PROPOSED BOLLARD
- PROPOSED BUILDING
- PROPOSED BUILDING ALTERNATIVE
- TREELINE
- PROPERTY LINE
- MATERIAL STOCK PILE

Tighe&Bond

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EAST LYME PFAS TREATMENT

TOWN OF EAST LYME

East Lyme, Connecticut

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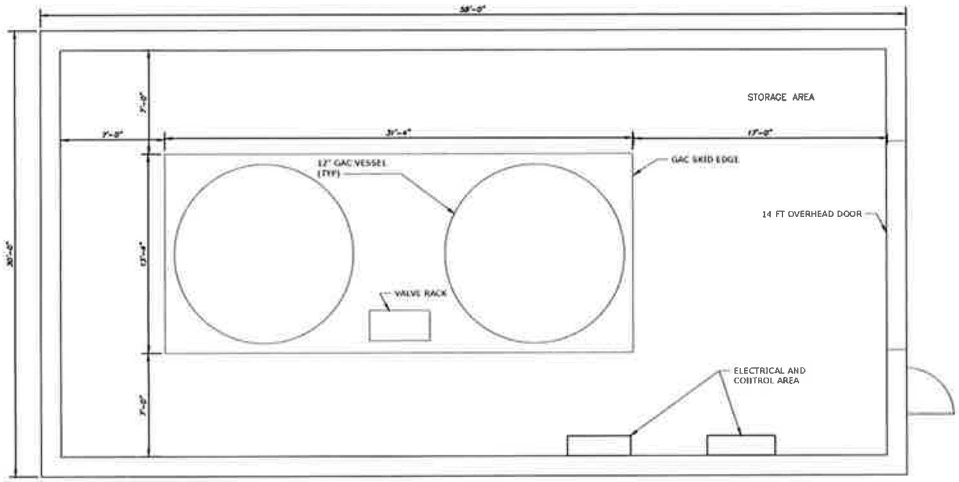
DRAWN BY		EB
DESIGNED/CHECKED BY		APW
APPROVED BY		FBE

WELL 4
CONCEPTUAL SITE PLAN

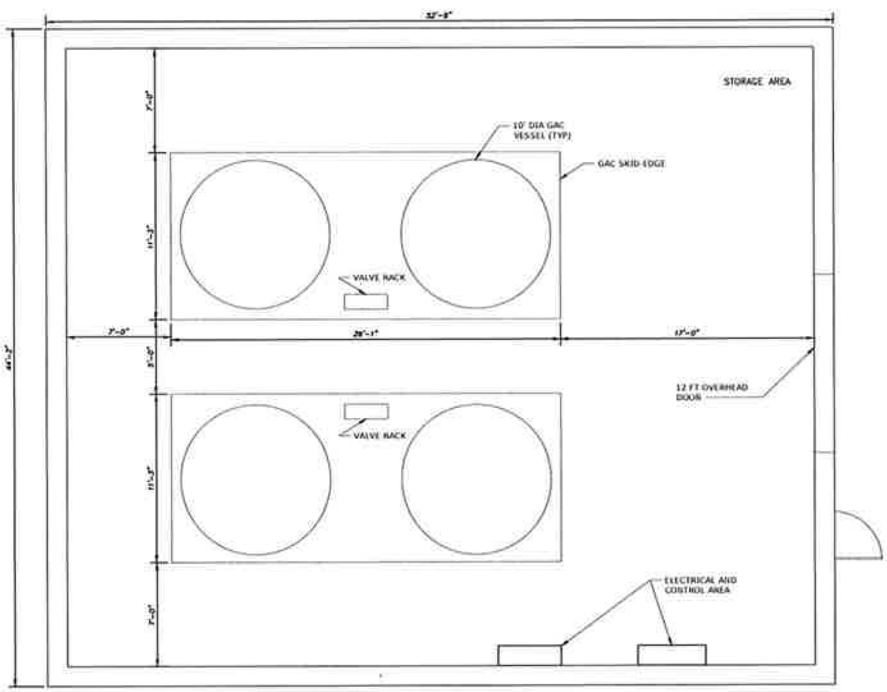
SCALE: AS SHOWN

C-102

Appendix C
Conceptual Building Layout



GAC SINGLE TRAIN W/ 12-FT DIA VESSELS
1/4" = 1'-0"



GAC - TWO TRAINS W/ 10-FT DIA VESSELS

NOTES:

1. LAYOUTS SHOWN ARE BASED ON CALGON SYSTEM.

Tighe&Bond

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EAST LYME PFAS TREATMENT

TOWN OF EAST LYME

East Lyme, Connecticut

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PROJECT NO.	E0610.037
DATE	MAY 2024
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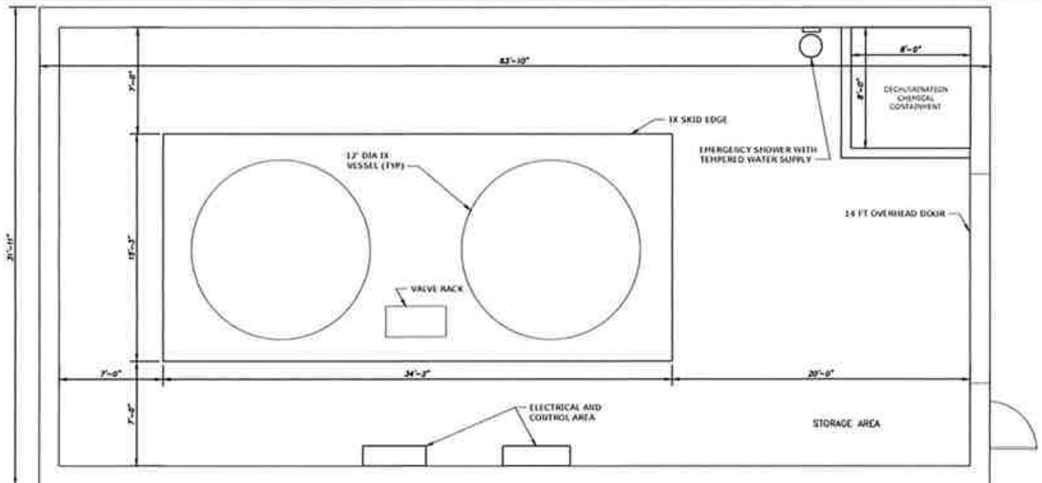
DESIGNED/CHECKED BY	XX
APPROVED BY	XX

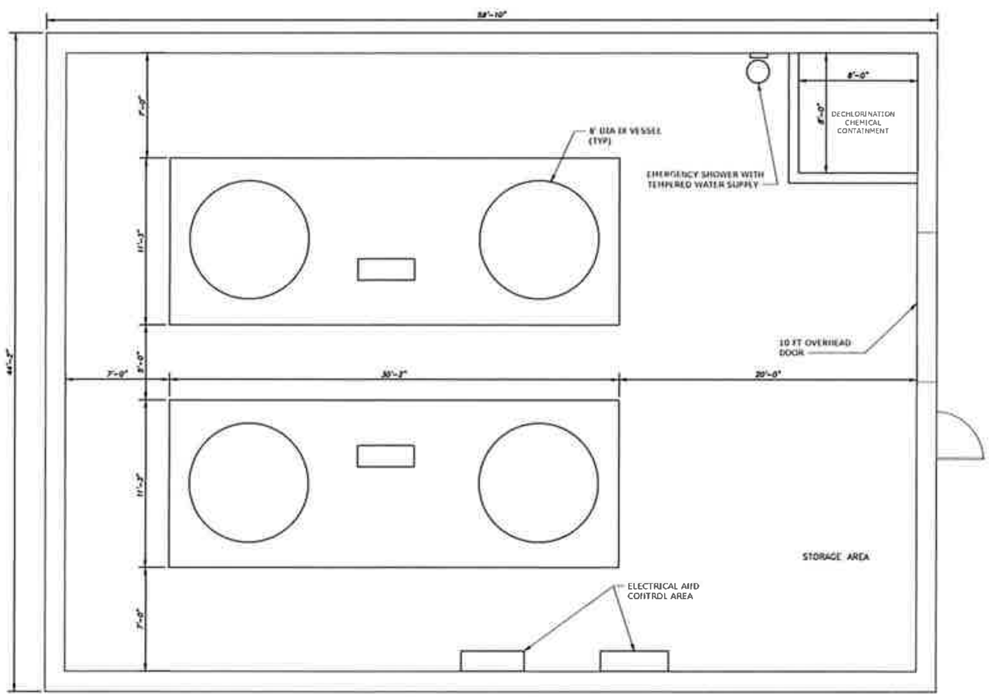
WELL 1A/6 WTP PFAS BUILDING LAYOUT - GAC

SCALE: AS SHOWN

M-101-GAC
SHEET XX OF XX



IX SINGLE TRAIN W/ 12-FT DIA VESSELS
1/4" = 1'-0"



IX - TWO TRAINS W/ 8 -FT DIA VESSELS
1/4" = 1'-0"

NOTES:

1. LAYOUTS SHOWN ARE BASED ON VEOLIA SYSTEM.

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EAST LYME PFAS TREATMENT

TOWN OF EAST LYME

East Lyme, Connecticut

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PROJECT NO	E0610-037
DATE	MAY 2024
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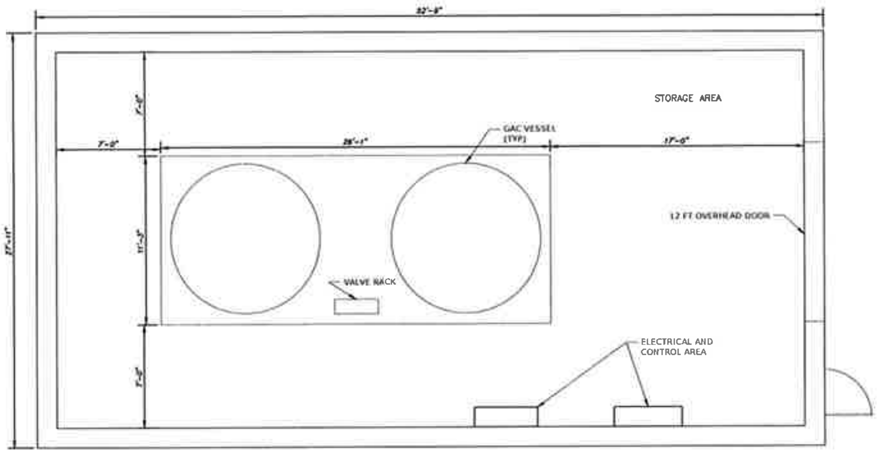
APPROVED BY	XX

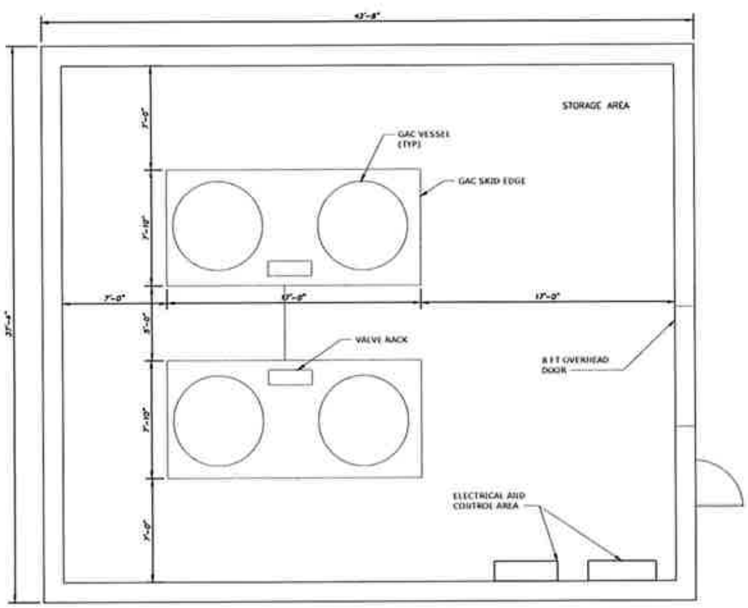
WELL 1A/6 WTP PFAS BUILDING LAYOUT -IX

SCALE: AS SHOWN

M-101-IX



GAC SINGLE TRAIN W/ 10-FT DIA VESSELS
1/4" = 1' 0"



GAC - TWO TRAINS W/ 6-FT DIA VESSELS
1/4" = 1' 0"

NOTES:

1. LAYOUTS SHOWN ARE BASED ON CALGON SYSTEM.

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EAST LYME PFAS TREATMENT

TOWN OF EAST LYME

East Lyme, Connecticut

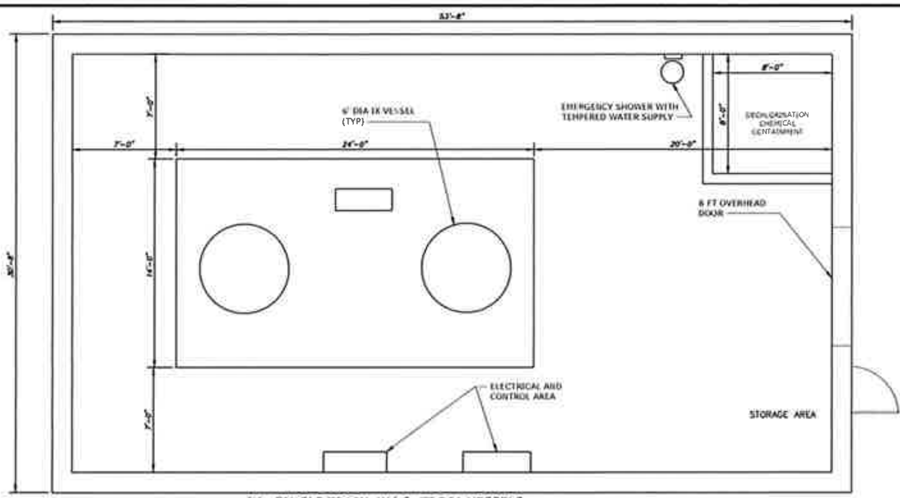
MARK	DATE	DESCRIPTION
PROJECT NO		E0630-037
DATE		MAY 2024
FILE		E0630-037-FL-101A.dwg
DRAWN BY		XX
DESIGNED/CHECKED BY		XX
APPROVED BY		XX

WELL 4A WTP PFAS BUILDING LAYOUT - GAC

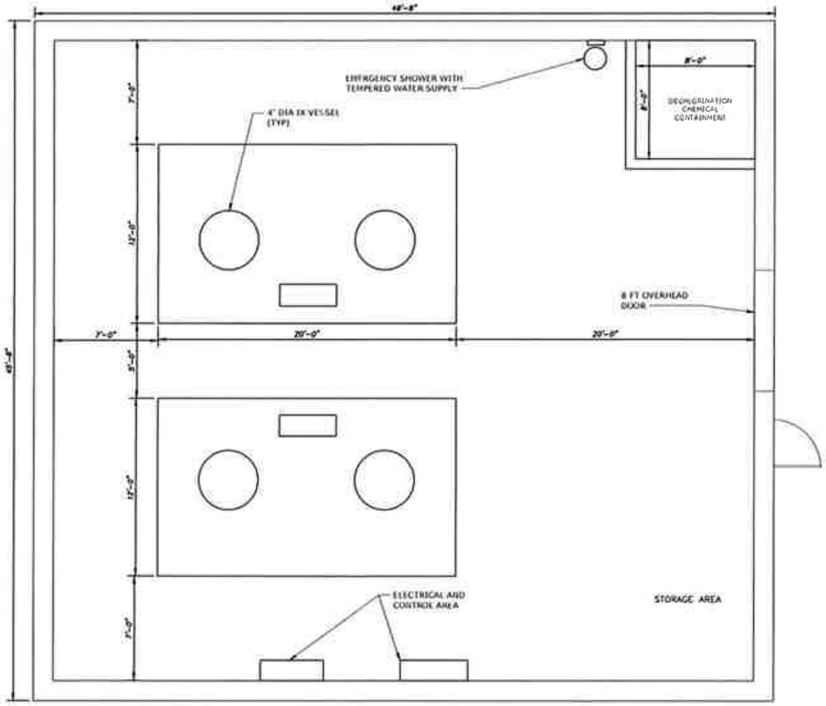
SCALE: AS SHOWN

M-101A-GAC

SHEET XX OF XX



IX - SINGLE TRAIN W/ 6 -FT DIA VESSELS
1/4" = 1'-0"



IX - TWO TRAINS W/ 4 -FT DIA VESSELS
1/4" = 1'-0"

NOTES:

1. LAYOUTS SHOWN ARE BASED ON HUNGERFORD & TERRY SYSTEM AND CLEAR CREEK SYSTEM (SAME DIMENSIONS)

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EAST LYME PFAS TREATMENT

TOWN OF EAST LYME

East Lyme, Connecticut

MARK	DATE	DESCRIPTION

PROJECT NO	E0610-037
DATE	MAY 2024
FILE	E0610-037-FL-101A.dwg
DRAWN BY	XX
DESIGNED/CHECKED BY	XX
APPROVED BY	XX

WELL 4A WTP PFAS
BUILDING LAYOUT - IX

SCALE: AS SHOWN

M-101A-IX
SHEET XX OF XX

Appendix D
Well 1 GAC Contactor Inspection Summary
By Water Service Professionals

TECH MEMO

To:	East Lyme Water & Sewer	Ref:	Well #1
			GAC Contactor Inspection
Attn:	Matthew Garneau		
cc:		Subject:	GAC Contactor Inspection
Written by:	**Andrew Taylor**	**Memo Date:**	06/10/2024

OVERVIEW

On Thursday, June 6, 2024, representatives from Water Service Professionals (WSP-US) met with Matt Garneau at the Well #1 Water Treatment Plant in East Lyme, CT. The purpose of the site visit was to inspect the three (3) existing GAC contactors at the facility. Contactors 2 and 3 had been emptied on a previous visit by Water Service Professionals of PA. Contactor 1 was previously retrofitted with a calcium-based media which has been become "cemented" into the unit. As such the condition of the underdrain in Filter #1 could not be verified.

Figure 1: GAC Contactor #1. Units 2 and 3 are behind the unit shown.

Contactor #1

Figure 2 on the following page shows the calcium-based media which remains in Contactor #1. Figure 2 also shows the condition of the influent distributor in Contactor #1. All three (3) inlet distributors were covered with heavy tuberculation, but structurally they appeared to be "sound".

TECH MEMO

Figure 2: Inlet distributor with tuberculation and calcium-based filter media in GAC Contactor #1

<u>Contactor 2 and 3</u>

Contactors #2 and #3 appear to be in good condition. Some minor corrosion was identified on the interior of Contactors 2 and 3. See Figure 5 on the next page for a photo. The stainless steel underdrains, while dirty, appear to be in excellent condition. As with Contactor #1, the influent distributors in both units are heavily tuberculated, but the supports and the piping appear to be in good condition.

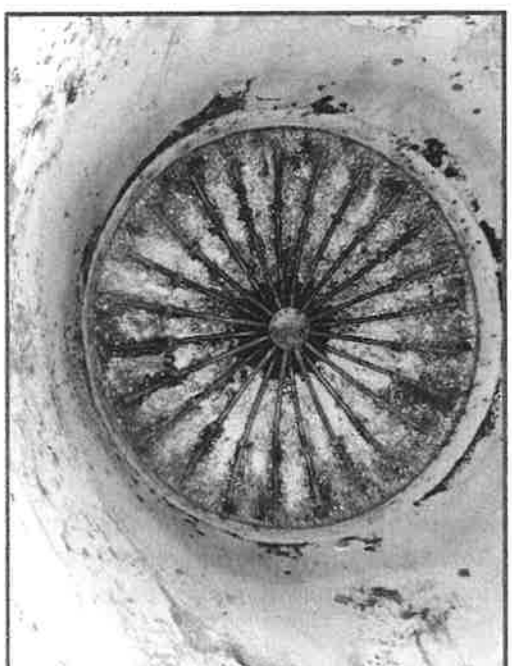


Figure 3: Stainless steel underdrain and tank walls.

TECH MEMO

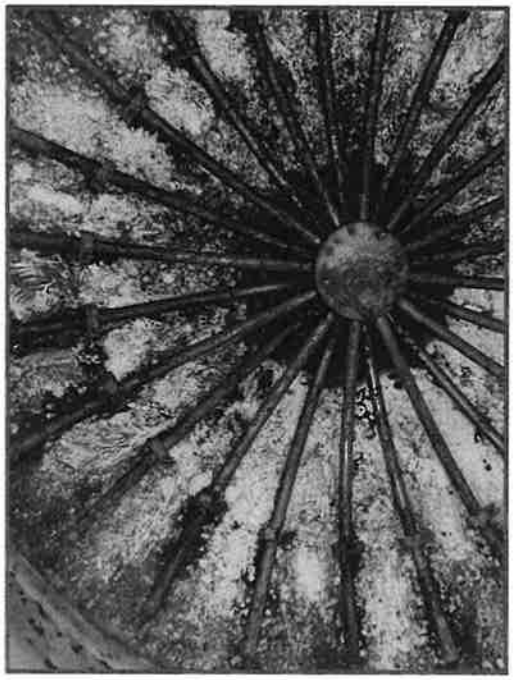


Figure 4: Close-up of stainless steel underdrain laterals and supports.

Figure 5: Minor corrosion on wall of Contactor #2

WATER SERVICE PROFESSIONALS

TECH MEMO

GENERAL SUMMARY

The calcium-based media in Contactor #1 will need to be jack-hammered out of the unit. WSP-US evaluated the use of a Blue Earth chemical designed to break down the calcium deposits, but the extremely high chemical demand will render this approach very cost prohibitive.

If these three (3) units are to be repurposed elsewhere, our recommendation would be to power wash the interior of all three (3) units. Remove and clean the existing stainless steel underdrains. Remove and replace the existing influent distributors with new PVC influent distributors. Following cleaning of the tank interiors, if it is determined that the units should be recoated, that work should be performed prior to reinstalling the influent distributors and the underdrains.

Water Service Professionals of PA • 10 Pettit's Bridge Road • Jamison, PA 18929 • ph: 610-202-7378 • e-mail: sales@wsp-us.com

East Lyme Water Department
Monthly Report for May 2024

1. General Statistics

TASKS PERFORMED BY WATER DEPT	May 2024	TOTAL THIS YEAR	TOTAL LAST YEAR (Jan 1 to Dec 30)
Meters Installed (New Accounts)	1	5	22
New Meters In System	21	357	New / Total 6791 / 6848 or 99.2%
New Service Connections Installed	1	2	18
Services and Mains Repaired(1)	0 Mainbreaks / 7 Service Leak	20	33
Total Gallons Pumped *Millions of Gallons*	59.312	253.881	676.364

(1) Repair or replacement of service line from main to curb stop.

2. Monthly Average Day Demand (MADD)

	May 2024	May 2023	% Difference LY
Water Produced *Millon Gallons Daily*	1.913	2.285	-16.26%

MADD as a % of 3.16 MGD available water (24-hour pumping) = 60.55%
MADD as a % of 2.37 MGD available water (18-hour pumping) = 80.73%
Note: Available water based on 2005 Water Supply Plan and subsequent revisions approved February 20, 2007. Figures not adjusted for additional water available from New London during the summer months.

3. Significant Items

1. Precipitation was 6.82 inches for the month.
2. Water production remains low, about %16 lower than last year and but slightly higher than 2021 and 5 MG lower than last year.
3. The field crew has discovered many leaks this month, with 7 leaks reported and repaired by either the utility or private homeowners.
4. Staff is currently flushing the distribution system, and are making great progress towards the goal of flushing the entire system this year. We flushed 133 hydrants in May.
5. Staff completed a major repair at the black point four corners intersection. The lateral to the fire hydrant on the corner was leaking out of the valve box, and it was initially believed that the valve packing was leaking. Upon excavating the valve, it was discovered that the hydrant and valve were constructed in a very unconventional way, whereby the a larger-diameter valve and pipe was installed over the lateral and leaded in place to create a fitting that allowed for deflection of the lateral to the hydrant. A before and after picture is included in this packet for added clarity. The piping leading to the valve was cracked and blown out, requiring a partial replacement of the valve and lateral, while working in a tight area in a busy intersection. The crew did a great job and completed the work within a day, bringing Cafe Sol back online sooner than expected.


Milwaukee


PIC•COLL

EAST LYME WATER DEPARTMENT

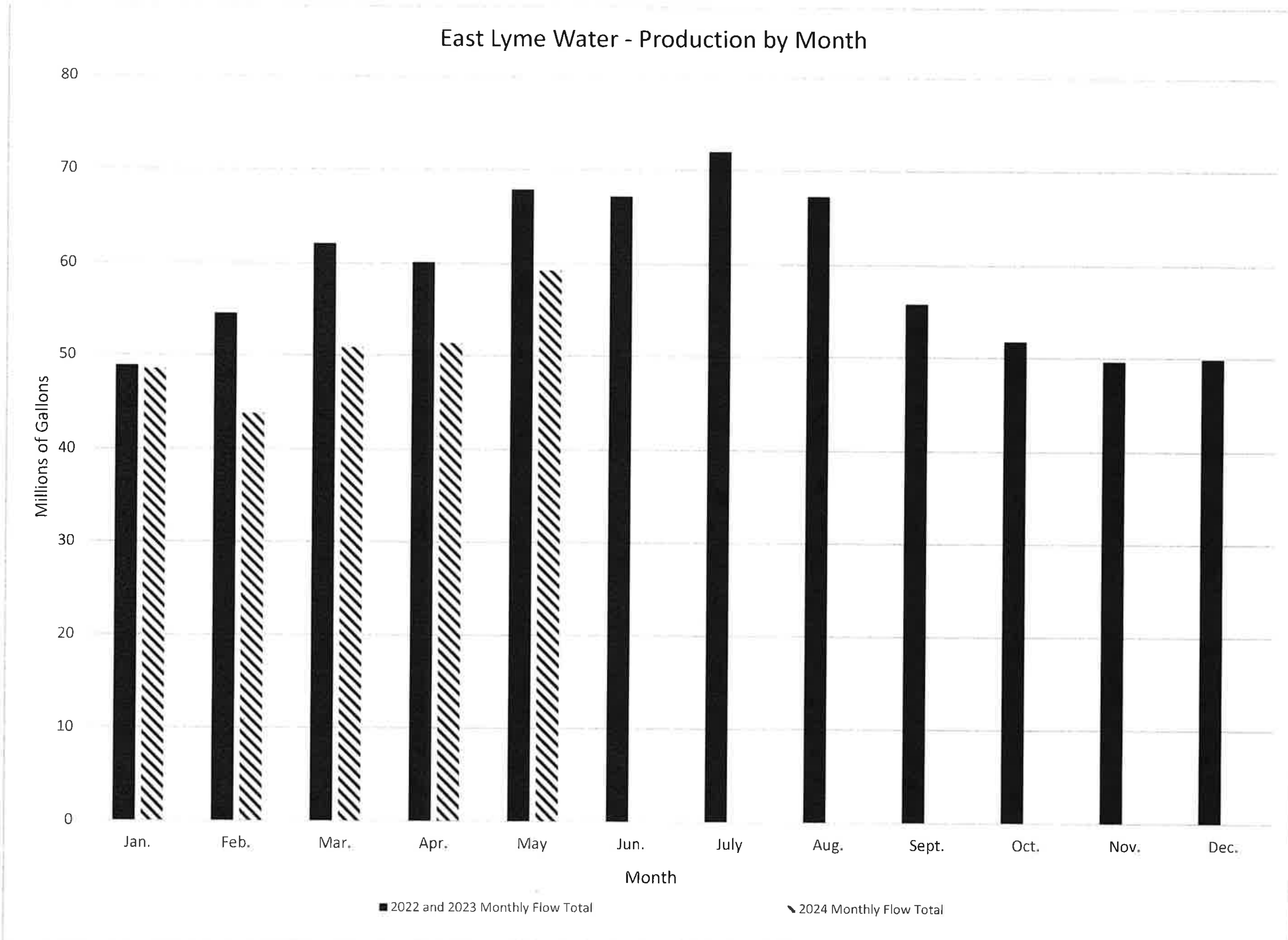
Historic Water Production in Million Gallons per Month

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	% +/- (Previous Year)	Monthly Precip. (in.)
Jan.	53.405	55.502	55.699	48.433	44.334	44.334	45.053	63.884	49.219	48.554	-1.35%	8.63
Feb.	50.538	58.426	56.887	41.951	44.733	47.832	41.912	61.236	47.891	43.782	-8.58%	1.98
Mar.	55.848	56.130	55.300	44.903	54.467	50.150	48.343	65.938	58.247	50.871	-12.66%	10.34
Apr.	54.891	56.931	49.606	46.231	52.493	48.753	49.554	60.322	59.939	51.362	-14.31%	4.75
May	68.621	65.388	58.395	51.915	57.692	55.327	57.411	65.009	70.825	59.312	-16.26%	6.82
Jun.	64.086	74.172	64.325	57.332	58.021	64.665	57.685	68.306	66.084			
July	80.638	81.529	67.948	67.364	69.703	64.939	62.206	79.552	64.318			
Aug.	71.557	73.078	62.844	61.898	65.912	66.044	63.933	75.649	58.913			
Sept.	62.752	56.264	48.592	52.642	58.151	56.757	55.281	56.869	54.729			
Oct.	56.829	53.767	45.152	48.004	51.836	48.088	53.507	54.484	48.969			
Nov.	56.798	51.876	39.400	51.065	45.917	40.639	52.801	54.519	44.729			
Dec.	59.049	53.697	45.664	40.675	48.171	40.399	56.781	53.467	46.355			
Average	61.251	61.397	54.151	51.034	54.286	52.327	53.706	63.270	55.852	50.776		32.52
% +/- (Previous Year)		0.24%	-11.80%	-5.76%	6.37%	-3.61%	2.63%	17.81%	-11.72%			
% +/- Running Annual Average											-10.63%	

EAST LYME WATER DEPARTMENT

Historic Water Production in Million Gallons per Month

	2015	2016	2017	2018	2019	2020	2021	2022	2023	AVG. Previous Years	2024	% +/- (Previous Years)	Monthly Precip. (in.)
Jan.	53.405	55.502	55.699	48.433	44.334	44.334	45.053	63.884	49.219	51.096	48.554	-4.97%	8.63
Feb.	50.538	58.426	56.887	41.951	44.733	47.832	41.912	61.236	47.891	50.156	43.782	-12.71%	1.98
Mar.	55.848	56.130	55.300	44.903	54.467	50.150	48.343	65.938	58.247	54.370	50.871	-6.43%	10.34
Apr.	54.891	56.931	49.606	46.231	52.493	48.753	49.554	60.322	59.939	53.191	51.362	-3.44%	4.75
May	68.621	65.388	58.395	51.915	57.692	55.327	57.411	65.009	70.825	61.176	59.312	-3.05%	6.82
Jun.	64.086	74.172	64.325	57.332	58.021	64.665	57.685	68.306	66.084	63.853			
July	80.638	81.529	67.948	67.364	69.703	64.939	62.206	79.552	64.318	70.911			
Aug.	71.557	73.078	62.844	61.898	65.912	66.044	63.933	75.649	58.913	66.648			
Sept.	62.752	56.264	48.592	52.642	58.151	56.757	55.281	56.869	54.729	55.782			
Oct.	56.829	53.767	45.152	48.004	51.836	48.088	53.507	54.484	48.969	51.182			
Nov.	56.798	51.876	39.400	51.065	45.917	40.639	52.801	54.519	44.729	48.638			
Dec.	59.049	53.697	45.664	40.675	48.171	40.399	56.781	53.467	46.355	49.362			
Total	735.012	736.760	649.812	612.413	651.430	627.927	644.467	759.235	670.218	676.364	253.881		32.52
% +/- (Previous Year)		0.24%	-11.80%	-5.76%	6.37%	-3.61%	2.63%	17.81%	-11.72%				
% +/- Running Annual Average												-6.12%	


East Lyme Water - Production by Month
80
70
60
50
40
30
20
10
0
Millions of Gallons
Jan.
Feb.
Mar.
Apr.
May
Jun.
July
Aug.
Sept.
Oct.
Nov.
Dec.
Month
2022 and 2023 Monthly Flow Total
2024 Monthly Flow Total

EAST LYME WATER DEPARTMENT
Well Production Report - May 2024

Withdrawals	Well 1A		Well 2A		Well 3A		Well 3B		Well 4A		Well 5		Well 6		Wells 3A/3B	Wells 2A/3A/3B	Daily Total (Wells)	Water From NL	Water To NL	Daily Total (Wells & NL)(3)	
	(MGD)	(WL-ft)	(MGD)	(WL-ft)	(MGD)	(WL-ft)	(MGD)	(WL-ft)	(MGD)	(WL-ft)	(MGD)	(WL-ft)	(MGD)	(WL-ft)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	
Max. Reg./Perm.(1,2)	1.160		0.864		0.560		0.993		0.547		0.780		0.440		0.993	1.857	4.784	1.000	1.000	5.784	
24-hr Pumping	1.160		0.648		0.446		0.993		0.324		0.619		0.440		1.439	2.087	4.630	0.500	NA	5.130	
18-hr Pumping	0.870		0.486		0.335		0.745		0.243		0.464		0.330		1.080	1.566	3.473	0.500	NA	3.973	
SFR 24-hr Pumping(2)	1.160		0.648		0.446		0.993		0.324		0.000		0.000		0.993	1.641	3.125	0.500	NA	3.625	
SFR 18-hr Pumping	0.870		0.486		0.335		0.745		0.243		0.000		0.000		0.745	1.231	2.344	0.500	NA	2.844	
Monthly Average	0.447		0.176		0.203		0.529		0.188		0.000		0.370		0.732	0.908	1.913	0.000	0.000	1.913	Precip
Date	"Alert" Trigger	12.0		4.0		15.0		20.0		6.0		18.0		22.0							inches
5/1/2024	0.420	14.4	0.129	35.0	0.212	44.2	0.562	34.1	0.167	6.70	0.000	35.3	0.349	32.1	0.774	0.903	1.839	0.000	0.000	1.839	0.05
5/2/2024	0.453	14.3	0.216	20.0	0.201	17.4	0.538	23.5	0.169	6.60	0.000	35.3	0.377	31.9	0.739	0.954	1.953	0.000	0.000	1.953	0.00
5/3/2024	0.408	14.4	0.129	36.0	0.174	17.5	0.499	23.4	0.208	6.70	0.000	35.3	0.339	32.0	0.673	0.801	1.757	0.000	0.000	1.757	0.00
5/4/2024	0.503	19.1	0.161	22.0	0.146	43.5	0.394	36.8	0.155	14.60	0.000	35.3	0.418	40.9	0.540	0.701	1.777	0.000	0.000	1.777	0.00
5/5/2024	0.380	14.5	0.217	20.0	0.193	43.6	0.519	24.0	0.158	6.60	0.000	35.3	0.316	32.0	0.712	0.929	1.783	0.000	0.000	1.783	0.00
5/6/2024	0.483	14.3	0.198	21.0	0.211	16.4	0.549	23.2	0.213	6.60	0.000	35.4	0.402	31.9	0.760	0.958	2.057	0.000	0.000	2.057	0.54
5/7/2024	0.485	14.2	0.158	21.0	0.219	16.8	0.589	23.3	0.181	6.60	0.000	35.2	0.401	31.7	0.808	0.967	2.034	0.000	0.000	2.034	0.00
5/8/2024	0.418	14.1	0.176	22.0	0.176	15.7	0.445	23.0	0.218	6.50	0.000	35.3	0.348	32.1	0.621	0.797	1.782	0.000	0.000	1.782	0.30
5/9/2024	0.449	14.4	0.130	21.0	0.196	15.9	0.517	23.5	0.172	6.60	0.000	35.2	0.373	31.7	0.713	0.843	1.837	0.000	0.000	1.837	0.60
5/10/2024	0.365	14.4	0.155	21.0	0.174	15.7	0.444	23.5	0.177	6.60	0.000	35.3	0.304	31.7	0.618	0.773	1.618	0.000	0.000	1.618	0.34
5/11/2024	0.443	14.4	0.157	20.0	0.189	15.8	0.485	23.6	0.151	6.50	0.000	35.2	0.368	31.8	0.674	0.831	1.793	0.000	0.000	1.793	0.00
5/12/2024	0.454	14.4	0.160	21.0	0.183	43.6	0.477	37.1	0.143	14.60	0.000	35.3	0.372	32.3	0.660	0.820	1.789	0.000	0.000	1.789	0.00
5/13/2024	0.384	14.4	0.226	20.0	0.244	15.3	0.632	23.3	0.199	14.60	0.000	35.5	0.319	32.2	0.876	1.103	2.005	0.000	0.000	2.005	0.00
5/14/2024	0.493	14.3	0.137	21.0	0.160	14.8	0.424	22.6	0.205	6.60	0.000	35.2	0.410	31.7	0.584	0.721	1.829	0.000	0.000	1.829	0.00
5/15/2024	0.400	14.5	0.148	21.0	0.205	15.9	0.517	23.3	0.217	6.50	0.000	35.2	0.332	33.1	0.722	0.870	1.818	0.000	0.000	1.818	0.03
5/16/2024	0.462	14.6	0.199	22.0	0.206	15.2	0.528	23.4	0.176	6.60	0.000	35.2	0.385	31.6	0.734	0.933	1.956	0.000	0.000	1.956	2.96
5/17/2024	0.374	14.8	0.167	21.0	0.218	15.4	0.576	23.7	0.188	6.70	0.000	35.3	0.311	32.0	0.794	0.960	1.833	0.000	0.000	1.833	0.03
5/18/2024	0.411	14.7	0.134	21.0	0.162	15.1	0.409	23.2	0.184	6.80	0.000	35.2	0.342	32.0	0.571	0.705	1.642	0.000	0.000	1.642	0.01
5/19/2024	0.440	14.8	0.190	36.0	0.208	43.6	0.540	37.0	0.140	6.80	0.000	35.4	0.366	32.2	0.748	0.938	1.884	0.000	0.000	1.884	0.21
5/20/2024	0.419	14.7	0.158	21.0	0.201	14.9	0.527	29.4	0.209	14.80	0.000	35.3	0.349	31.8	0.728	0.885	1.862	0.000	0.000	1.862	0.00
5/21/2024	0.483	14.8	0.173	21.0	0.234	15.1	0.606	23.4	0.171	6.90	0.000	35.3	0.402	32.0	0.840	1.012	2.068	0.000	0.000	2.068	0.00
5/22/2024	0.514	14.7	0.211	22.0	0.246	15.9	0.633	23.4	0.236	14.80	0.000	35.2	0.420	31.9	0.879	1.090	2.260	0.000	0.000	2.260	0.00
5/23/2024	0.413	14.6	0.212	21.0	0.198	15.0	0.518	23.2	0.169	6.70	0.000	35.3	0.343	32.3	0.716	0.928	1.853	0.000	0.000	1.853	0.00
5/24/2024	0.449	14.7	0.187	36.0	0.202	14.7	0.509	23.1	0.198	6.80	0.000	35.3	0.374	31.8	0.711	0.898	1.920	0.000	0.000	1.920	0.76
5/25/2024	0.496	14.6	0.162	20.0	0.218	43.2	0.574	36.6	0.201	6.70	0.000	35.3	0.413	31.8	0.792	0.954	2.064	0.000	0.000	2.064	0.00
5/26/2024	0.480	19.3	0.229	23.0	0.221	14.7	0.571	23.4	0.175	6.70	0.000	35.2	0.399	41.2	0.792	1.022	2.075	0.000	0.000	2.075	0.00
5/27/2024	0.457	14.6	0.150	20.0	0.193	14.7	0.509	23.2	0.194	14.70	0.000	35.2	0.360	32.3	0.702	0.852	1.863	0.000	0.000	1.863	0.00
5/28/2024	0.490	14.6	0.185	21.0	0.239	14.8	0.605	23.4	0.200	14.70	0.000	35.3	0.408	31.8	0.844	1.029	2.127	0.000	0.000	2.127	0.54
5/29/2024	0.434	14.5	0.254	21.0	0.213	14.7	0.559	23.0	0.212	14.70	0.000	35.2	0.361	31.6	0.772	1.026	2.033	0.000	0.000	2.033	0.00
5/30/2024	0.482	14.5	0.135	21.0	0.199	14.6	0.524	23.0	0.186	6.70	0.000	35.2	0.401	31.5	0.723	0.857	1.927	0.000	0.000	1.927	0.43
5/31/2024	0.510	14.5	0.216	21.0	0.248	14.8	0.628	23.2	0.256	6.70	0.000	35.2	0.420	31.5	0.876	1.091	2.277	0.000	0.000	2.277	0.02
Average	0.447	14.8	0.176	22.9	0.203	20.9	0.529	25.6	0.188	8.73	0.000	35.3	0.370	32.5	0.732	0.908	1.913	0.000	0.000	1.913	0.23
Minimum	0.365	14.1	0.129	20.0	0.146	14.6	0.394	22.6	0.140	6.50	0.000	35.2	0.304	31.5	0.540	0.701	1.618	0.000	0.000	1.618	0.00
Maximum	0.514	19.3	0.254	36.0	0.248	44.2	0.633	37.1	0.256	14.80	0.000	35.5	0.420	41.2	0.879	1.103	2.277	0.000	0.000	2.277	2.96
Total	13.852		5.457		6.289		16.406		5.827		0.000		11.482		22.695	28.152	59.312	0.000	0.000	59.312	6.82

% Recvd. of Total Monthly Demand	0.00		Total Monthly Demand
% of Total Sent to NL (Wells)		0.00	59.312
Running Total (water received 2023)	0.214		
Goal	14.850		
% of Goal	1.44		
Running Total (water sent to NL 2023)		0.000	
Goal		25.074	
% of Goal		0.00	

Notes:

MGD = Million Gallons Per Day

WL = Water (in feet) above the airline or pressure transducer (set approximately 4 ft above the pump suction for each well; 17 ft above suction for Well 4A).

SFR = stream flow restrictions (Wells 5 and 6 not operating).

NR = No Reading Available

(1) A condition of the Well 3A diversion permit limits the combined maximum withdrawal from Wells 2A, 3A, and 3B to 1.857 mgd.

(2) Another condition of the Well 3A permit restricts the combined maximum withdrawal from Wells 3A and 3B to 0.864 mgd during "low" stream flow. If Well 3A is not pumped, Well 3B alone can be pumped at 0.993 mgd during "low" stream flow.

(3) Totals represent well production plus water from New London. Does not include water to New London.

June 2024

East Lyme Sewer Maintenance Report for May 2024

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1. Sewer tie-ins, inspections and CBYDs at various locations
2. Daily chemical machine checks and maintenance
3. Monthly alarm tests and meter readings
4. Daily station maintenance checks
5. General Sewer Pump Station Maintenance
6. General equipment maintenance
7. Monitor Odor Control System 31 Arbor Xing for H2s
8. Monitor Oder Control System. 170 Giants Neck Rd for H2S
9. Monitor H2S (Point O Woods)
10. O/M Maintenance

EAST LYME
WATER & SEWER COMMISSION

JUN 25 2024

AGENDA# 11b

Sewer Department Monthly Report

June 25 2024

Data For the Month of:	**May 2024**
Monthly Running Avg:	**1,039,152 GPD**
Daily Avg:	**989,756 GPD**
Daily Max:	**1,285,272 GPD**
Daily Min:	**564,648 GPD**

Daily Average as a Percent of Monthly Running Average: **95.25%**

State CT Flows:

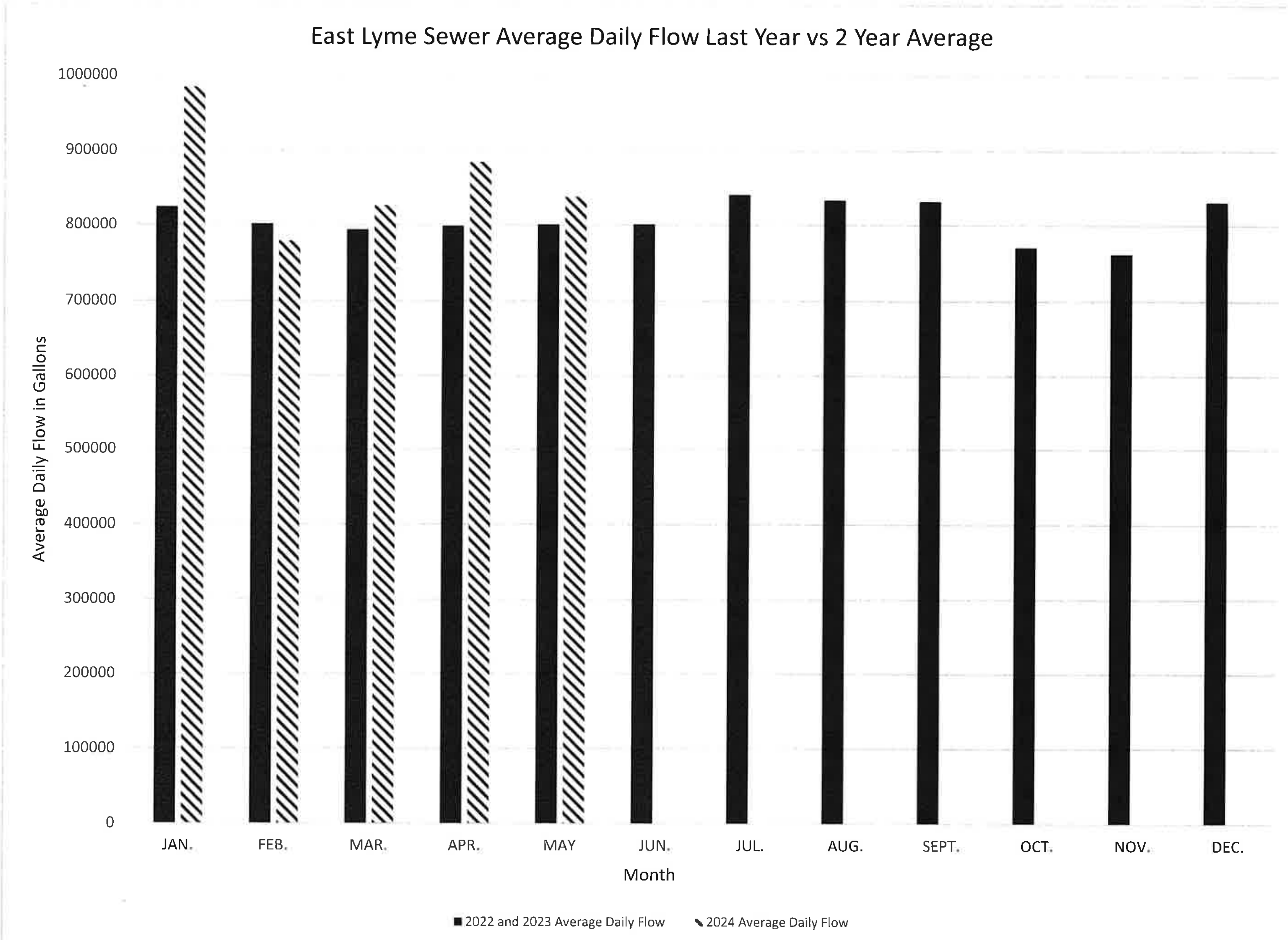
	DOC	Camp Nett	Rocky Neck	POW	Pine Grove	Total
Actual GPD AVG.	72,524	14,663	0	24,370	40,000	151,557
Design GPD AVG.	250,000	58,400	24,600	105,000	40,000	478,000
% of Design GPD	29.0%	25.11%	0	23.21%	100.00%	31.71%
% of East Lyme Average Daily Flow	7.33%	1.48%	0.00%	2.46%	4.04%	15.31%
% of East Lyme 1.5 MGD Allotment	4.83%	0.98%	0.00%	1.62%	2.67%	10.10%

EAST LYME SEWER FLOWS - HISTORY

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	% +/- Prev. Yr.	Precip. 2024 (in.)
JAN.	787,646	747,284	784,837	781,519	1,090,311	849,497	938,302	942,646	1,029,157	1,177,819	14.45%	8.63
FEB.	832,681	809,701	765,648	865,263	842,611	859,175	911,422	988,646	997,413	912,457	-8.52%	1.98
MAR.	1,017,280	790,851	777,452	927,771	893,805	832,803	886,441	948,873	984,116	1,048,941	6.59%	10.34
APR.	938,861	796,611	897,161	778,780	918,456	885,983	962,591	965,456	1,015,438	1,066,788	5.06%	4.75
MAY	913,816	777,446	872,268	746,049	947,042	900,485	951,501	922,857	1,061,763	989,756	-6.78%	6.82
JUN.	880,190	815,281	849,504	906,535	875,000	882,463	976,981	989,299	984,241			
JUL.	1,048,427	879,952	883,851	1,026,307	977,552	853,930	1,047,771	995,433	1,086,674			
AUG.	977,543	868,636	873,017	905,718	932,181	911,419	978,158	1,000,871	1,063,381			
SEPT.	878,563	762,544	769,493	875,918	833,237	823,590	1,051,008	921,227	1,020,678			
OCT.	861,521	738,247	752,273	903,915	806,576	812,506	917,384	905,482	1,053,620			
NOV.	803,842	709,481	732,848	871,111	815,129	786,482	937,414	864,223	954,365			
DEC.	788,121	728,649	728,437	894,050	927,335	896,694	895,121	950,524	1,057,605			
RUNNING AVERAGE	894,041	785,390	807,232	873,578	904,936	857,919	954,508	949,628	1,025,704		2.16%	6.50
											Precip. Total	32.52

EAST LYME SEWER FLOWS - HISTORY

	2015	2016	2017	2018	2019	2020	2021	2022	2023	AVG. Prev. Years	2024	% +/- AVG. Prev. Years	Precip. 2023 (in.)
JAN.	787,646	747,284	784,837	781,519	1,090,311	849,497	938,302	942,646	1,029,157	865,255	1,177,819	36.1%	8.63
FEB.	832,681	809,701	765,648	865,263	842,611	859,175	911,422	988,646	997,413	859,393	912,457	6.2%	1.98
MAR.	1,017,280	790,851	777,452	927,771	893,805	832,803	886,441	948,873	984,116	884,410	1,048,941	18.6%	10.34
APR.	938,861	796,611	897,161	778,780	918,456	885,983	962,591	965,456	1,015,438	892,987	1,066,788	19.5%	4.75
MAY	913,816	777,446	872,268	746,049	947,042	900,485	951,501	922,857	1,061,763	878,933	989,756	12.6%	6.82
JUN.	880,190	815,281	849,504	906,535	875,000	882,463	976,981	989,299	984,241	896,907			
JUL.	1,048,427	879,952	883,851	1,026,307	977,552	853,930	1,047,771	995,433	1,086,674	964,153			
AUG.	977,543	868,636	873,017	905,718	932,181	911,419	978,158	1,000,871	1,063,381	930,943			
SEPT.	878,563	762,544	769,493	875,918	833,237	823,590	1,051,008	921,227	1,020,678	864,448			
OCT.	861,521	738,247	752,273	903,915	806,576	812,506	917,384	905,482	1,053,620	837,238			
NOV.	803,842	709,481	732,848	871,111	815,129	786,482	937,414	864,223	954,365	815,066			
DEC.	788,121	728,649	728,437	894,050	927,335	896,694	895,121	950,524	1,057,605	851,116			
AVG.	894,041	785,390	807,232	873,578	904,936	857,919	954,508	949,628	1,025,704	878,404	1,039,152	18.6%	6.50
												Precip. Total	32.52


East Lyme Sewer Average Daily Flow Last Year vs 2 Year Average
Average Daily Flow in Gallons
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
JAN.
FEB.
MAR.
APR.
MAY
JUN.
JUL.
AUG.
SEPT.
OCT.
NOV.
DEC.
Month
2022 and 2023 Average Daily Flow
2024 Average Daily Flow

East Lyme Sewer Department

Monthly Average Day Wastewater Flows (MGD)

June 25 2024
Sewer Flows for the Month of May

	Total Daily Combined Flows from East Lyme and State			State Average Daily Flows by Facility					State Allocation (0.478 MGD)			East Lyme Allocation (1.022 MGD)		
Year	Month	Niantic Sewer Pump Station Flows			DOC	Camp Nett	Rocky Neck	POW	Pine Grove	Daily Usage	Capacity Remaining	Percent Capacity Remaining	Daily Usage	Capacity Remaining	Percent Capacity Remaining
		Average	Max	Min	0.250	0.058	0.025	0.105	0.040						
2024	January	1.178	1.748	0.977	0.120	0.013	0.000	0.020	0.040	0.193	0.285	60%	0.985	0.037	4%
	February	0.912	1.076	0.619	0.080	0.007	0.000	0.007	0.040	0.133	0.345	72%	0.779	0.243	24%
	March	1.049	1.430	0.844	0.157	0.009	0.000	0.017	0.040	0.223	0.255	53%	0.826	0.196	19%
	April	1.067	1.544	0.925	0.110	0.015	0.000	0.017	0.040	0.182	0.297	62%	0.885	0.137	13%
	May	0.990	1.285	0.565	0.073	0.015	0.000	0.024	0.040	0.152	0.327	68%	0.838	0.184	18%
	June														
	July														
	August														
	September														
	October														
	November														
	December														
	Annual Avg. (Jan - Dec)	1.039	1.417	0.786	0.108	0.012	0.000	0.017	0.040	0.177	0.301	63%	0.863	0.159	16%

Rolling 2 Year Average	0.806	0.216	21%

All figures reported in Million Gallons Daily (MGD)
**New Main Flow Meter installed - 2/24*
***Data during bypass was estimated using Waterford PS Data*