Request for Qualifications (RFQ)
Engineering Services for WWTP Upgrade
Town of Manchester by the Sea, Massachusetts

NOTICE

The Town of Manchester by the Sea (MBTS), acting through the Department of Public Works, is soliciting qualifications from Engineering Firms for comprehensive engineering design services for a wastewater treatment plant (WWTP) upgrades project. The qualifications-based selection (QBS) of consultant professional services may include, *but are not limited to*, engineering professional services for concept designs including planning level cost estimates, design development including cost estimates, final design documents to be bid under MGL Chapter 149, public bid support services, construction administration and construction oversight services, and any other related services or processes contemplated in MGL chapter 7c.

Proposals will be received at the Department of Public Works - Room 6, Town Hall, 10 Central Street, Manchester by the Sea, MA 01944 until **Wednesday December 18th, 2024 at 11:00 am as specified in the RFQ**. Proposals shall be to the attention of Nathan Desrosiers, PE Owner's Project Manager (OPM).

Detailed specifications are available online at the Town of MBTS's website https://www.manchester.ma.us/629/Bids-Quotes-and-Proposals and also available at the DPW office Room 6, Town Hall, 10 Central Street, Manchester by the Sea, MA 01944 between the hours of 8:00 AM and 4:00 PM Monday thru Thursday.

All inquiries regarding this bid should be directed to Nathan Desrosiers, PE Town Engineer & OPM by email: desrosiersn@manchester.ma.us and cc: damc@manchester.ma.us. Inquires will be accepted until December 11th, 2024.

The Town of MBTS Department of Public Works shall lead a QBS process that may include shortlisting firms for interviews. A designer fee has not yet been set with a not to exceed amount of $400,000 and will be negotiated with the most Highly Advantageous respondent. The Town of MBTS reserves the right to withdraw the RFQ to reject any and all RFQ responses; and to accept the response deemed to be in the best interest of the Town of MBTS.

Non-responsive and/or unbalanced bids may be rejected.

Greg Federspiel, Town Administrator
Chuck Dam, PE Director of Public Works
Nathan Desrosiers, PE Town Engineer & OPM

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Town of Manchester by the Sea, Massachusetts

Request for Proposal Conditions and Instructions to Respondents

Introduction & Background

The Town of Manchester by the Sea (MBTS), acting through the Department of Public Works, is soliciting qualifications from Engineering Firms for comprehensive engineering design services for a wastewater treatment plant (WWTP) upgrades project. The qualifications-based selection (QBS) of consultant professional services may include, *but are not limited to*, engineering professional services for concept designs including planning level cost estimates, design development including cost estimates, final design documents to be bid under MGL Chapter 149, public bid support services, construction administration and construction oversight services, and any other related services or processes contemplated in MGL chapter 7c.

The purpose of this RFQ is to identify a firm with the expertise and experience to provide comprehensive design services that meet the specific needs and objectives of the Towns wastewater treatment plant located at 12 Church St, Manchester by the Sea, Massachusetts 01944.

The WWTP, with an average wet day design capacity of 1.2 MGD, currently serves about two- thirds of Town residents. The current permitted effluent is 670,000 gpd although the 12-month rolling average has been in the 300,000-400,000 gpd range. The current NPDES General Permit is included in Appendix A. The goal of this project is to upgrade major systems in need of replacement, optimize operations by right sizing any currently oversized equipment; and flood proof or harden any plant equipment or areas that are vulnerable to sea level rise (SLR) or storm surge observed during more frequent storm events especially longer duration events that span multiple tide cycles.

Previous Studies and information including the Basis of Design (also found in Appendix B) report for this project can be found on the Towns website at the following address: https://manchester.ma.us/695/DPW-Reports-and-Information

Work completed at the WWTP in recent years includes significant SCADA and PLC upgrades, aeration system improvements, comminutor rebuild and various valve and piping replacements. Other pumping systems have had various levels of replacement and rehabilitation over the years.

The ultimate goal of this project is to extend the life of the existing plant systems for another 20 years of service while meeting or exceeding our current treatment limits and mitigate any near-term impacts of climate change and/or SLR. No plant expansion or increase of plant capacity over the current permit limits is anticipated at this time. Outside of the potential for upgrades to meet Total Recoverable Copper (TRC) permit limit discussed below, no additional major upgrades are envisioned over the next 20-year lifecycle outside of potential seawall protection of the site. Additional information on anticipated SLR and impacts of climate on the WWTP and surrounding area can be found in the Town's Coastal Vulnerability Action Plan on the Town website- https://issuu.com/fando1/docs/2023-06-29_mbts_coastal_vulnerability_action_plan_

The Facility's General Permit, issued in 2023, introduced a new Total Recoverable Copper limit of 5.8 µg/L daily maximum and 3.7 µg/L monthly average. Prior to this, the Facility only had a monitoring requirement and no existing means to treat or remove copper within our current wastewater treatment processes. The Town considered piloting and bench scale testing for meeting TRC limits and quickly realized the potential solutions and associated engineering and construction implications would be better addressed as part of this RFP/Q and upgrade. In the interim we continue to focus our internal efforts on additional QA/QC and data collection. Initial "clean" re-sampling efforts took place in October 2024 and results will be made available to interested respondents when available. Correspondence with EPA/DEP are included in Appendix C. Based on subsequent discussion with EPA and DEP it is likely that the Towns revised clean sampling SOP will be sufficient to meet TRC limits as set forth in the permit, however, additional correspondence and consultation may be requested by the Town as part of this work.

Town Organization & Personnel

This project has been initiated and will be overseen by the Department of Public Works (DPW) consisting of the following key personnel: Director of Public Works, Town Engineer (serving as Owner Project Manager), and Clerk of the Works who is dedicated to this project. The WWTP has four full time operators employed by the Town (not contract ops). DPW reports to the Town Administrator and Select Board (acting as the Town water and sewer commissioners). The Director, Engineer, and Clerk will be the main point of contact and decision makers for all aspects of the project, supported by the operations staff. It may be necessary to update and report or present to the Town Administrator and Select Board from time to time.

Timeline and Funding

Town appropriation is currently available for funding this Proposal effort and the Town would like to proceed with the selected Firm as early as possible in 2025. Town appropriation of approximately $4 million is currently available for design, permitting, and

the construction and services during construction parts of the Project. Additional Town funding, if any, will only be available through Town Meeting appropriation. No outside funding is currently available, however the Town is interested in, and has a history of obtaining grants that may be available for these types of projects. Exact timing and amount of potential outside funding will be determined after the selected Firm is under contract. Any potential amendments to this contract in support of grant or outside funding will be considered at a later date. It is anticipated the design and permitting efforts to be completed in 12 months +/-.

Through this solicitation and the resulting contract, the selected proposer (also referred to as Respondent and/or Consultant herein) will provide professional designer services to the Town of MBTS, working for the Department of Public Works, and interacting with the following Town of MBTS Departments: Town Administrator's Office, Inspectional Services, Police & Fire, Planning Dept, and various Town Committees and Boards.

Each of these Departments may be involved with the reviews of various components of the design and construction documents and the construction phase services and inspections associated with the project.

General Process

The Town of MBTS will engage the most advantageous architect/engineer for the planning, design, construction support, construction services and inspections, and other services as required for a successful and complete project. The Town will be adhering to MGL Chapter 7C Designer Selection Law for this procurement and will use the following criteria, further detailed herein, for rating and ranking respondents:

- Quality and applicability of prior similar experience;
- Past performance on public projects;
- Financial stability;
- Identity and qualifications of the staff and subconsultants who will work on the project;
- Demonstrated technical thoughts about the specifics of the project;
- Quality and professionalism of the RFQ response as an indication of the caliber of the Respondent's work product

General Conditions

This section of the RFQ contains the general conditions and restrictions covering the preparation, submission, and content of RFQ Responses (also referred to as "proposal(s)" or "bid(s)" throughout this document, however this is not a price-based bid selection) and the eventual Professional Services Contract to be awarded.

Uniform Proposals: To enable the Town to perform a fair comparative analysis and evaluation of proposals, it is essential that a uniform format be employed in structuring each proposal. The required proposal format is specified later in this RFQ. The consultant's degree of compliance with the requirements of this RFQ and their clarity in such proposal will be a significant factor in the evaluation of the package. Each proposer must comply with all submission requirements as directed herein. Proposals that are defective, irregular, or not in compliance will be considered unresponsive and will be rejected. Unnecessarily elaborate responses and excess material beyond that requested above may be considered unresponsive or not advantageous.

Proposers' Examination of the Request for Qualifications: Proposers shall examine all information and materials contained in and with this RFQ. Failure to do so shall be at the proposer's risk. By submitting a proposal all proposers certify that they have read and agree to comply with each provision of this RFQ, and the award of contract.

Date of Submission: All proposals must be received in the Department of Public Works - Room 6, Town Hall, 10 Central Street, Manchester by the Sea, MA 01944, by the date and time stated in the advertisement. Late bids will not be accepted and deemed unresponsive.

Independent Contractor: The selected individual(s) or company(s) will be considered an independent contractor(s) to the Town of MBTS and will not be entitled to any benefits provided to regular Town employees. The consultant(s) will be responsible for paying his or her own income and Social Security taxes, as well as any other employment benefits.

Compliance with Regulations: The successful proposer(s) must comply with all applicable federal, state, and local laws and regulations.

Withdrawal of Proposals: Proposals may be withdrawn by written notice received by Nathan Desrosiers of Town of MBTS Department of Public Works prior to the time specified for receipt of proposals.

Proposals Considered Firm: All proposals in response to this RFQ will be considered "firm" and may not be withdrawn for a period of sixty (60) days after the time specified for receipt of proposals. Proposals must be unconditional.

Incurring Costs: The Town shall not be liable for any costs incurred by proposers in preparing, submitting or presenting proposals, or in satisfying and demonstrating requirements. The Town shall not reimburse any costs incurred by proposers in anticipation of being awarded the contract under this RFQ.

Assignment of Contract: A Consultant who is awarded a contract shall not assign, transfer, convey, sublet or otherwise dispose of said contract, or his right, title, obligation,

or interest in or to the same, or any part thereof, without previous consent in writing from the Town of MBTS, endorsed on or attached to the contract.

Notice to Proceed and Availability of Funds: Services provided by the successful proposer(s) shall be rendered through a Professional Services Contract based on the requirements and conditions provided in this RFQ. After a contract is approved it shall only become operative upon the delivery to the Consultant of a contract signed by the Town of MTBS. The Consultant must receive in writing, from the applicable department, permission to begin any project assignment or task up to an agreed dollar amount. The Consultant cannot exceed agreed upon amounts without certification as to available funds and the Town shall only be obligated under the contract to the extent of such orders. The Consultant shall prepare separate bills for each individual assignment or task order. If requested, a detailed bill shall be prepared showing a separation of tasks and the number of hours spent on each. All fees will be collected, and the applicable Department will approve payments for work. No work shall begin until an authorization Notice to Proceed is received from the Director of the applicable Town department.

Availability to meet with MBTS: Proposers shall be available to meet with the Department of Public Works and/or other Town of MBTS Departments within three business days of a request.

Force Majeure: Neither party will be liable to the other for any failure or delay in rendering performance arising out of causes beyond its control and without its fault or negligence. Such causes may include, but not be limited to, acts of God or the public enemy, freight embargoes, and unusually severe weather. Dates or times of performance may be extended to the extent of delays excused by this section, provided that the party whose performance is affected notifies the other promptly of the existence and nature of such delay.

Requests for Clarification: Any questions regarding this RFQ should be submitted in writing to the Department of Public Works and received no later than the date and time stated in the advertisement. Such questions should be directed to the Town of MBTS's Owner's Project Manager by email to: desrosiersn@manchester.ma.us. All responses will be provided by MBTS's OPM in the form of an addendum. All firms who have requested a copy of this RFQ from the Town of MBTS will receive a copy of all questions raised (if any), and their answers. If it should become necessary to revise any part of this RFP or otherwise provide additional information, the MBTS Department of Public Works will issue an Addendum as well. It is the respondent's sole responsibility to acknowledge all posted addenda.

Proposals are Public Records: All documents submitted in response to this RFQ are deemed public records under Massachusetts General Laws, Chapter 30B, Section 3 and

open to public inspection upon request. However, pursuant to M.G.L. C.30B Section 3, all proposals shall remain confidential until the completion of all evaluations pursuant to this RFQ. Notwithstanding the provisions of M.G.L Chapter 4, Section 7, proposals shall remain confidential until completion of the evaluation of all proposals, in accordance with M.G.L. Chapter 30B, Section 6(d).

Rights to Submitted Material: All proposals, responses, inquiries, or correspondence relating to or in reference to this RFQ shall become the irrevocable and sole property of the Town of MBTS unless otherwise specified in this RFQ. The Town of MBTS shall be under no obligation to return any proposals or material submitted by a consultant in response to this RFP unless specified in this RFP.

Price and Technical Proposal Format & Submission Requirements

One (1) unstapled original, one (1) thumb drive (with both price and technical submissions on the drive) and two (2) copies of the technical submission of the proposal including all attachments thereto must be delivered in two separate sealed envelopes. One Marked "Technical Proposal" and one marked "Price Proposal". On the outside the name and address of the bidder, the name of the bid proposal and the proposal submission date to: Department of Public Works - Room 6, Town Hall, 10 Central Street, Manchester by the Sea, MA 01944 by the date and time stated in the advertisement or as amended via addendum. Postmarked submissions will not be accepted. Overnight deliveries arriving after the due date/time, regardless of payment for early delivery, shall not be accepted.

Price Proposal:

Price proposal shall be in a separate sealed envelope. The outside of the envelope should be marked with "RFQ – Price Proposal for WWTP Upgrade Project" and with the Proposer's name and the date submitted. The provided "Price Proposal Form" first page shall be used. The "Price Proposal Form" second page, which is hourly rates by labor category may be used or substituted with a company created labor rate sheet.

Please note that even with a Price Proposal envelope being included, this is a qualifications based solicitation. Price will only become a factor in review if multiple firms are rated and ranked as equivalently advantageous.

The request for pricing is so that the Town is aware of proposer's hourly costs for funding, budgeting, and contracting purposes. The Proposer shall submit a listing of hourly billing rates and corresponding estimated number of hours under this assignment for those staff and positions it anticipates assigning to the project. The billing rates shall include all charges to the Town of MBTS including salary, overhead, indirect costs and profit. The rates of all technical personnel whose use is anticipated shall be specifically noted for each service on which a proposal is submitted and shall be considered the price proposal page.

A hard professional services fee for the yet to be defined scope of services should not be speculated on or included.

Technical (Non-Price) Proposals:

The Technical Proposal, also referred to as the Non-Price Proposal herein, must be in a sealed envelope. The outside of the envelope must be marked with "RFQ- Technical Proposal for WWTP Upgrade Project," and with the Proposer's name and the date submitted.

The Technical (Non-Price) Proposal shall generally follow the format identified below, separated by tabbed dividers, labeled as indicated, and contain the information required in the sections where it is requested. If the information is not found in the appropriate section it may be considered missing and therefore non-responsive. All proposals shall include the following elements within each section respectively:

Technical Proposal Format

Tabbed Divider	Section Title & Contents
LOT	Letter of Transmittal: Brief letter of introduction providing a narrative describing the firm and key subcontractors, identification of lead professional(s) and primary contact, acknowledging receipt of Addenda (even if none are issued), and any key information to differentiate the firm on this project.
Section 1	**Qualifications of the Firm***
	A) Introduction: Introduction page(s) providing a concise narrative describing the nature, size, background, and qualifications of the firm, names and applicable background of key personnel who will be working on the contract from all firms, including Subcontractors. Identification of lead professionals, identification of home office / production locations, and availability of key staff. **B) References:** A minimum of five (5) firm or individual references including name, title, agency, address, phone, email, project name and start/completion dates (if applicable). Services to these references must have been delivered within the last three (3) year period. The Reference Form in Section 3A may be used, pre-existing reference sheets may also be used. **C) Firm Interests:** Names and addresses of all partners, if a partnership; of all officers, directors, and all persons with an ownership interest of more than five (5) percent in the proposal if not a partnership. **D) Professional Registrations:** The lead Architect/ Engineer supervising the design and submittal reviews shall be either a

	Professional Engineer (PE) or Licensed Architect and must be registered in Massachusetts. The registration numbers, licenses, certifications and status of each key personnel in every jurisdiction in which such person has ever been registered as a professional engineer, architect, or related profession. A professional structural engineer must be on the team. **E) Municipal Experience:** Previous and on-going experience in similar work by the prime Respondent firm. A brief narrative indicating that your firm has relevant and similar experience with providing municipal design, public bidding, and construction phase services similar to those requested in this RFQ. Include a list of all cities and towns within the Commonwealth for which the applicant has performed or has entered into a contract to perform similar scope of services for design, bidding, and construction phase services within the last three (3) year period. Five (5) of these cities and towns must be listed in Section 1B above.
Section 2	**Approach & Scope of Work***
	A) Provide concise outline of the firm's anticipated **Project Approach** to working with the Town of MBTS to deliver the expected services. Brief discussion about how Respondent's approach ensures competence and quality in deliverables and the construction oversight. The Approach must communicate how single-point responsibility for all in-house disciplines and all subcontractors will be maintained during cohesive, well-coordinated design and construction phases of the project. Methodologies for construction cost estimating prior to bidding must be clear. B) Proposed **Scopes of Work** for the design and permitting phases, public bidding phase, and construction phase of services. Any regulatory requirements should also be included. The proposed Scope must demonstrate the capabilities, expertise, and qualifications, should be clearly noted within the proposal. The Scope of Work will form the future basis of a Services Contract. C) Possible **Project Timeline** and key milestones and Town decision points. This timeline may be in Gantt chart or milestone list formats. D) Any initial project specific technical matters, thoughts or directions which frame the Approach and Scope of Work. Graphics are acceptable.
Section 3	**Documentation & Appendices**
	A) **Town of MBTS Forms**: Include signed versions of all required forms. B) **Documentation/Certificates:** Workmen's Compensation Insurance and Professional Liability Insurance for the minimum amount as required by applicable state law. C) **Financial Documentation:** demonstrate in the form of a sealed balance sheet and income statement for the past three (3) audited

	years. These documents will remain confidential but will be used to address the MGL Chapter 7C Financial Stability requirements for screening. **D) Resumes:** Resumes of the principals, lead professionals and key personnel in each field of expertise including any Subconsultants. Include resumes of personnel who will work directly with the Town. Reduce resume content to 2 pages each. E) Submit the **DSB Form** formally known as "Standard Designer Application Form for Municipalities and Public Agencies not within DSB Jurisdiction," which is available for download from the Massachusetts Designer Selection Board website.

*If appropriate, indicate subcontracted firm(s) and include applicable information accordingly.

Award/Terms of Contract

The Town of MBTS through a technical selection committee shall review all respondents rated as Qualified, then rank each. This review may include interviews with the lead firm and any key subcontractor firms who will perform key work under this contract. The selection committee, led by the OPM, shall deliver a written recommendation to the Town Administrator for the execution of a contract. The recommendations shall include any conditions to the recommended award which require successful negotiation or revisions to the Scope of Work identified by the selection committee and/or other MBTS officials. The contract will be awarded to, and negotiated with, the recommended respondent upon the completion of evaluation of proposals. The anticipated not to exceed value of this contract shall be $400,000 to include design, permitting and bidding. A separate contract assignment for General Services and Resident Inspection during construction will be negotiated at a later date.

Execution of Contract

Upon the award of a Contract, the OPM will prepare a contract. In the event that the successful Consultant(s) fails, neglects or refuses to execute the contract(s) within fourteen (14) days after receiving a letter of award from the Town, the Town may at its option terminate its action in awarding the contract and the selection of the Consultant(s) shall become null and void and of no effect. The Consultants must provide insurance certificates to the Town prior to award of the Contract.

Incorporated by reference into the Professional Services Contract which is to be entered into by the Town and the successful Consultant pursuant to this RFQ shall be:

1. All of the information presented in this RFQ and the consultant's response thereto. Within the Professional Services Contract, the term "proposer" shall be

synonymous with the terms “consultant” and “firm” for any and all provisions therein.

2. An authorized official of the consultant(s) and the Town of MBTS shall execute the contract(s).

Reservation of Rights: The Town of MBTS reserves the right to cancel this RFQ to accept or reject in whole or in part any and all proposals, or to waive any informality in the proposing when it is determined that said cancellation or rejection serves the best interests of the Town. Reasons for cancellation or rejection shall be stated in writing.

Compliance with Laws & Regulations: The selected proposer(s) will be required to review all plans for compliance with federal, state, and local laws, statues and regulations, and federal law and regulations. The Consultant (s) shall adhere at all times to the highest professional certifications, standards, and guidelines, any and all such laws, statutes and regulations, as applicable to the profession(s).

Billing: All bills for services rendered shall be submitted to the applicable Town Department to the attention of that Department’s Director for approval and payment, and shall state the date(s), hours, and product or matter worked upon. All bills shall be rendered within thirty (30) days of the service having been performed.

Errors and Omissions Insurance: The awarded respondent(s) shall provide and maintain Errors and Omissions Insurance with minimum limits of $2,000,000 per occurrence/annual aggregate. The policy shall not have a deductible greater than $50,000.00. Coverage shall be maintained in effect continuously for a period of at least six (6) years from the date of Final Payment by Owner to Respondent.

Severability: The provisions of the Professional Services Contract shall be severable. If any provision is found by a court to be invalid, the remaining provisions shall remain fully effective.

Amendments: The Professional Services Contract may only be amended by the written consent of the Town of MBTS.

Selection Criteria

The Town of MBTS is using the procedures governing the selection of designers for any municipality or local public agency building project as detailed in the state’s designer selection law, M.G.L. c. 7C, §§ 44-58. Expanded local MBTS specific forms and requirements governing the procurement and execution of services have been included herein. All proposers will receive consideration without regard to race, color, creed, age, sex, religion, or national origin.

Proposals will be scored on the following general scale of qualifications. Each scale will be multiplied by the weighted scaling factor of the scoring category.

- "Highly Advantageous" (10 points x scaling factor) = response excels on the specific criterion,
- "Somewhat Advantageous" (6 points x scaling factor) = response meets evaluation standard for the criterion,
- "Not Advantageous" (2 points x scaling factor) = response does not fully meet the evaluation criterion or leaves a question or issue not fully addressed, or
- "Unacceptable" (0 points) = response does not address the elements of this criterion.

In addition, references beyond those included in the RFQ Response may be checked. A short list of Respondents may be interviewed during the selection process and feedback on the interview will be included in the determination of scores.

1: Overall Qualifications (3X weighted, 30 points max)

Overall qualifications, experience and expertise of the Firm, its Subconsultants, and applicable key staff. Factors for scoring include the quality and applicability of prior similar experience. Reference check feedback is a factor in this category.

Points	Rating	Description
10	**Highly Advantageous**	The RFQ Response indicates evidence that the firm has substantial in-house experience and expertise in the specific disciplines of the project, relevant staff skill sets or subcontractor team members are included for which in-house services are unavailable. Positive feedback from all references. Demonstrated financial stability of the prime firm.
6	**Advantageous**	The RFQ Response indicates evidence that the firm has notable in-house experience and expertise in the specific disciplines of the project, relevant staff skill sets, or subcontractor team members are included for which in-house services are unavailable. Positive feedback from a majority of references. Demonstrated financial stability of the prime firm.
2	**Not Advantageous**	The RFQ Response indicates little or unclear evidence that the firm has in-house experience and expertise or displays limited relevant staff skills or limited subcontractor team members. Positive feedback from a minority of references. Limited documents regarding financial stability of the prime firm.
0	**Unacceptable**	The RFQ Response does not competently communicate any reliable or verifiable evidence that the firm has in-house experience and expertise relevant to the project. Negative feedback from two or more of the references. No inclusion of documents demonstrating the financial stability of the prime firm.

2: Project Approach (2x weighted, 20 points max)

Respondent's proposed Project Approach is customized to the Town of MBTS WWTP Upgrades, and concisely details an understanding of the project. Demonstrates the

methods to communicate, coordinate, and deliver the expected technical services, while maintaining quality, cohesion, and timeline.

Points	Rating	Description
10	**Highly Advantageous**	Project Approach is customized to MBTS WWTP Upgrades project with a demonstrated awareness of the Town and the project elements, Compelling methods for QA/QC, communications, and coordination. Strong plan to drive timeline.
6	**Advantageous**	Project Approach references general MBTS WWTP Upgrades project elements with a general awareness of the Town and the project needs. General content on methods for QA/QC, communications, and coordination. General plan regarding timeline.
2	**Not Advantageous**	Project Approach is generic with little or no MBTS WWTP Upgrades project specific elements. Little to no specific references to QA/QC, timelines, or coordination.
0	**Unacceptable**	Project approach is vague or omitted

3: Proposed Scope of Work (3x weighted, 30 points max)

Demonstrated knowledge and understanding of all elements of an expected Scope of Work and clear, concise phases and tasks to drive design, efficient bidding cycle, and effective construction phase, including content on the design phases, public bidding phase, and construction phase of services.

Points	Rating	Description
10	**Highly Advantageous**	Scope of Work is customized to MBTS WWTP Upgrades project with logical and efficient phases and tasks that are relevant to the project. Scope addresses all expected project elements, and incorporates milestones for QA/QC, routine communications, and feedback. Scope tasks are relevant to timeline expectations. Applicable and well-thought-out technical content and graphics included.
6	**Advantageous**	Scope of Work is generally referenced to MBTS WWTP Upgrades project with typical phases and tasks that are relevant to the project. Scope addresses most expected project elements, and incorporates some milestones for QA/QC, communications, and feedback. Scope references timeline expectations. Applicable technical content and graphics included.
2	**Not Advantageous**	Scope of Work is generic and not customized to MBTS WWTP Upgrades project, vague phases and/or task descriptions, no reference to timeline, generic content on QA/QC, communications, and client feedback. General technical content or limited graphics included.
0	**Unacceptable**	Totally generic or omitted Scope of Work, irrelevant phases or tasks, little to no useful content for a future contract. No technical content or graphics included.

4: Quality of Written RFQ Response (1x weighted, 10 points max)

Quality of RFQ Response in format and presentation. Strong written communication and presentation skills; ability to explain and interpret technical information to a non-technical audience. Inclusion of all required forms and documentation. This category will also

demonstrate the Respondents' quality of work, QA/QC system and thorough attention to detail.

Points	Rating	Description
10	**Highly Advantageous**	The written response submitted by the firm is clear and complete, fully covers the relevant subject matter, and excels with respect to graphics, formats, and/or writing style. All forms and documentation are completed and included.
6	**Advantageous**	The written response submitted by the firm is clear and complete, and fully covers the relevant subject matter. All forms and documentation are completed and included.
2	**Not Advantageous**	The written response submitted by the firm is either unclear or incomplete; one or two of the non-statutorily required forms and/or documentation was not included.
0	**Unacceptable**	The written response submitted by the firm is both unclear and incomplete; majority of the non-statutorily required forms and/or documentation was not included.

5: Any other relevant input into scoring (up to 10 points)

The Selection Committee will consider any other appropriate proposal content, ideas, or possibilities as value-added criteria which the Town of MBTS may deem relevant for the review and scoring of firms. These points must be aligned with M.G.L. c. 7C, §§ 44-58 and be in the best interest of the Town of MBTS to award.

Forms & Documents

The following pages are the statutorily required forms, Town of MBTS bid forms, and suggested Reference and Price Proposal forms for the Respondent use. As a M.G.L. c. 7C solicitation, the Massachusetts' Standard Designer Application Form for Municipalities and Public Agencies not within DSB Jurisdiction is required.

Appendices

Appendix A – Authorization to Discharge Pollutants (MA Small WWTF GP Modification)
Appendix B – 2024 Basis of Design Report by Tata and Howard
Appendix C – September 30, 2024 Letter to DEP/EPA Status Report Relative to TRC

This RFP/Q and any additional documents that may be available, including answers to questions will be posted here: https://manchester.ma.us/629/Bids-Quotes-and-Proposals

The Town of Manchester by the Sea, Massachusetts, reserves the right to reject any or all proposals/quotations and to waive any informality in the selection process. Submission of a proposal/quotation indicates acceptance of the terms and conditions outlined in this RFP/Q.

Charles Dam P.E. – Director of Public Works
Nathan Desrosiers P.E. – Town Engineer

"Architect or Engineer Services" RFQ
Town of Manchester by the Sea, Massachusetts

PRICE PROPOSAL FORM
Provided in a separate, sealed envelope

RFQ DUE: Wednesday December 18, 2024 at the time stated in the advertisement.

Town of Manchester by the Sea
Town Hall – DPW Room 6
10 Central St
MBTS, MA 01944
Attention: DPW, Nathan Desrosiers, PE

BIDDER

Receipt of Addendum No. _____ Acknowledged by: _____
Company Name: _____

Bid Signed By: _____

Title: _____

Date: _____

Address: _____

Telephone #: _____

Email: _____

If you have received this RFQ from either the Town of Manchester by the Sea website or through an email it is your responsibility to check for addenda (https://www.manchester.ma.us/629/Bids-Quotes-and-Proposals) before you turn in your bid/ proposal. Town of Manchester by the Sea will not be responsible any bids received omitting addenda acknowledgement.

We submit for your consideration our RFQ Response for architectural / engineering services. We have read the RFQ documents and are submitting our RFQ Response in full compliance with all terms and conditions. We acknowledge receipt of all addendums to the RFQ documents and assume full responsibility to access those addendums from the Town's website as applicable.

FEE PROPOSAL FORM CONTINUED

We agree to perform the work described in the RFQ based upon the for the following hourly rates. Complete only applicable labor categories. This sheet may be substituted with a company created labor rate sheet.

ONLY complete rates that apply

Design Positions:	**Hourly Rate**	**Estimated Hours**
Principal Architect/Engineer	_____	_____
Principal Project Manager	_____	_____
Project Manager	_____	_____
Project Architect	_____	_____
Project Engineers		
Civil	_____	_____
Geotechnical	_____	_____
Environmental	_____	_____
Mechanical	_____	_____
Electrical	_____	_____
Structural	_____	_____
Assistant Architect	_____	_____
Junior Engineer	_____	_____
Technician	_____	_____
Draftsperson	_____	_____
Clerical	_____	_____

Construction Admin Positions:	**Hourly Rate**	**Estimated Hours**
Construction Manager	_____	_____
Assistant Manager	_____	_____
Clerk of the Works	_____	_____
Resident Engineer	_____	_____
Resident Project Representative	_____	_____
Field Inspector	_____	_____
Draftsperson	_____	_____
Clerical	_____	_____

Survey Positions:	**Hourly Rate**	**Estimated Hours**
Project Manager	_____	_____
Licensed Land Surveyor	_____	_____
Two-man Survey Crew	_____	_____
Three-man Survey Crew	_____	_____

CADD Services Positions:	**Hourly Rate**	**Estimated Hours**
CADD Engineers	_____	_____
CADD Operator/Technician	_____	_____
CADD Manager	_____	_____

Company Name: _____

Date: _____

“Architect or Engineer Services” RFQ

Town of Manchester by the Sea, Massachusetts

REFERENCE FORM

List the names of five (5) municipal clients that you have provided services to within the last three (3) years. This form may be substituted for pre-existing corporate marketing reference sheet so long as all data exists.

Municipality/District: _____

Contact Name: _____ Phone: _____

Email Address: _____

Project(s)_____

Municipality/District: _____

Contact Name: _____ Phone: _____

Email Address: _____

Project(s)_____

Municipality/District: _____

Contact Name: _____ Phone: _____

Email Address: _____

Project(s)_____

Municipality/District: _____

Contact Name: _____ Phone: _____

Email Address: _____

Project(s)_____

Municipality/District: _____

Contact Name: _____ Phone: _____

Email Address: _____

Project(s)_____

Commonwealth of Massachusetts

Standard Designer Application Form for Municipalities and Public Agencies not within DSB Jurisdiction (Updated July 2016)

1. Project Name/Location For Which Firm Is Filing:

2. Project #

This space for use by Awarding Authority only.

3a. **Firm (Or Joint-Venture) - Name and Address Of Primary Office To Perform The Work:**

3. Name Of Proposed Project Manager:
For Study: (if applicable)
For Design: (if applicable)

3b. Date Present and Predecessor Firms Were Established:

3f. Name and Address Of Other Participating Offices Of The Prime Applicant, If Different From Item 3a Above:

3c. Federal ID #:

3g. Name and Address Of Parent Company, If Any:

3d. Name and Title Of Principal-In-Charge Of The Project (MA Registration Required):

Email Address:

Telephone No: Fax No.:

3. Check Below If Your Firm Is Either:

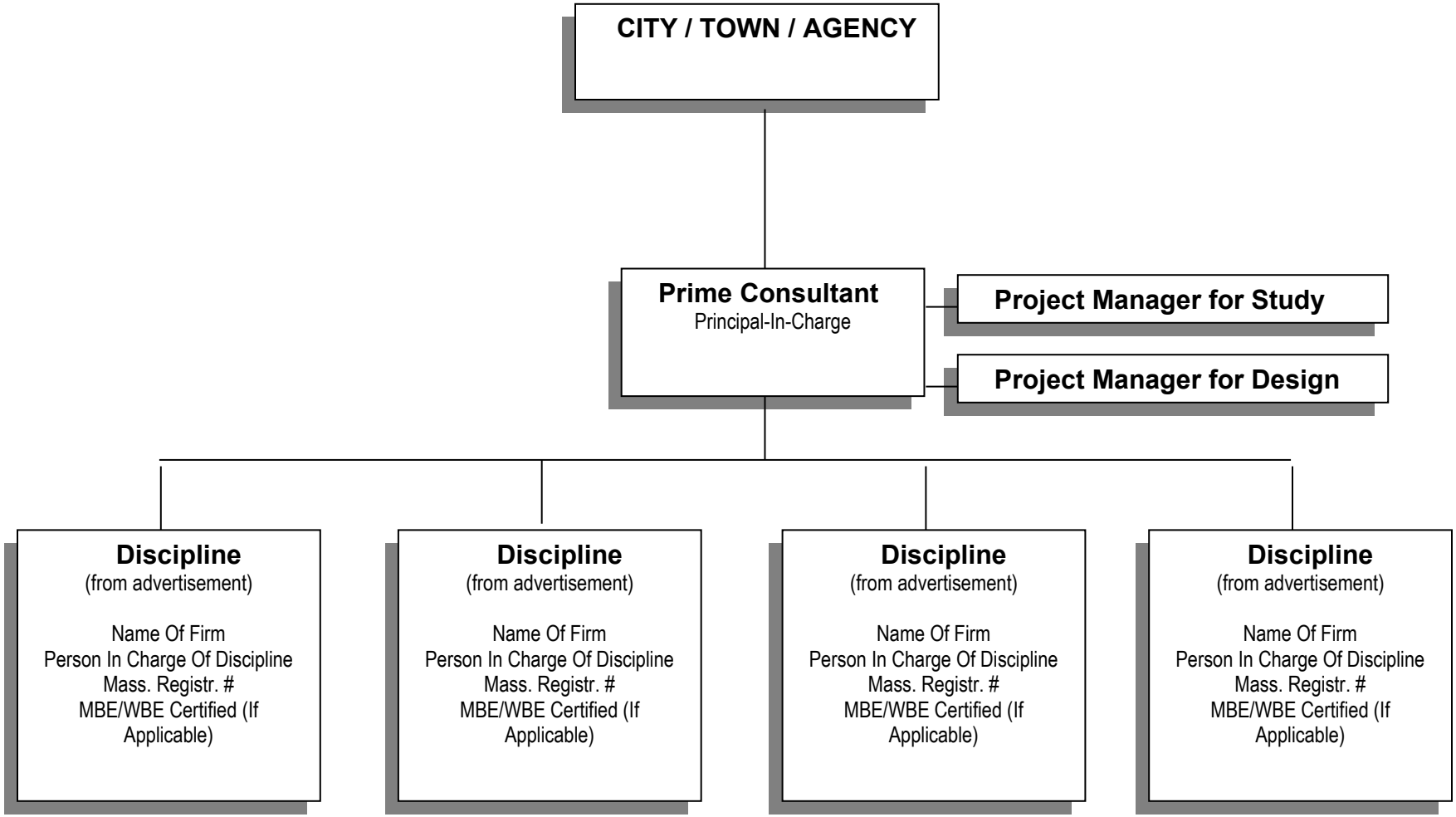
(1) SDO Certified Minority Business Enterprise (MBE) ❑
(2) SDO Certified Woman Business Enterprise (WBE) ❑
(3) SDO Certified Minority Woman Business Enterprise (M/WBE) ❑
(4) SDO Certified Service Disabled Veteran Owned Business Enterprise (SDVOBE) ❑
(5) SDO Certified Veteran Owned Business Enterprise (VBE) ❑

4. **Personnel From Prime Firm Included In Question #3a Above** By Discipline (List Each Person Only Once, By Primary Function -- Average Number Employed Throughout The Preceding 6 Month Period. Indicate Both The Total Number In Each Discipline And, Within Brackets, The Total Number Holding Massachusetts Registrations):

Admin. Personnel	____	(____)	Ecologists	____	(____)	Licensed Site Profs.	____	(____)	Other	____	(____)
Architects	____	(____)	Electrical Engrs.	____	(____)	Mechanical Engrs.	____	(____)		____	(____)
Acoustical Engrs.	____	(____)	Environmental	____	(____)	Planners: Urban./Reg.	____	(____)		____	(____)
Civil Engrs.	____	(____)	Fire Protection	____	(____)	Specification Writers	____	(____)		____	(____)
Code Specialists	____	(____)	Geotech. Engrs.	____	(____)	Structural Engrs.	____	(____)		____	(____)
Construction Inspectors	____	(____)	Industrial	____	(____)	Surveyors	____	(____)		____	(____)
Cost Estimators	____	(____)	Interior Designers	____	(____)		____	(____)		____	(____)
Drafters	____	(____)	Landscape	____	(____)		____	(____)	Total	____	(____)

5. Has this Joint-Venture previously worked together? ❑ Yes ❑ No

6. List **ONLY** Those Prime And Sub-Consultant Personnel Specifically Requested In The Advertisement. This Information Should Be Presented Below In The Form Of An Organizational Chart. Include Name Of Firm And Name Of The One Person In Charge Of The Discipline, With Mass. Registration Number, As Well As MBE/WBE Status, If Applicable:



7.	Brief Resume of ONLY those Prime Applicant and Sub-Consultant personnel requested in the Advertisement. Include Resumes of Project Managers. Resumes should be consistent with the persons listed on the Organizational Chart in Question # 6. Additional sheets should be provided only as required for the number of Key Personnel requested in the Advertisement and they must be in the format provided. By including a Firm as a Sub-Consultant, the Prime Applicant certifies that the listed Firm has agreed to work on this Project, should the team be selected.	
a.	Name and Title Within Firm:	a. Name and Title Within Firm:
b.	Project Assignment:	b. Project Assignment:
c.	Name and Address Of Office In Which Individual Identified In 7a Resides: MBE ❑ WBE ❑ SDVOBE ❑ VBE ❑	c. Name and Address Of Office In Which Individual Identified In 7a Resides: MBE ❑ WBE ❑ SDVOBE ❑ VBE ❑
d.	Years Experience: With This Firm: _____ With Other Firms: _____	d. Years Experience: With This Firm: _____ With Other Firms: _____
e.	Education: Degree(s) /Year/Specialization	e. Education: Degree(s) /Year/Specialization
f.	Active Registration: Year First Registered/Discipline/Mass Registration Number	f. Active Registration: Year First Registered/Discipline/Mass Registration Number
g.	Current Work Assignments and Availability For This Project:	g. Current Work Assignments and Availability For This Project:
h.	Other Experience and Qualifications Relevant To The Proposed Project: (Identify Firm By Which Employed, If Not Current Firm):	h. Other Experience and Qualifications Relevant To The Proposed Project: (Identify Firm By Which Employed, If Not Current Firm):

8a. Current and Relevant Work By Prime Applicant Or Joint-Venture Members. Include **ONLY** Work Which Best Illustrates Current Qualifications In The Areas Listed In The Advertisement (List Up To But Not More Than 5 Projects).					
a. Project Name And Location Principal-In-Charge	b. Brief Description Of Project And Services (Include Reference To Relevant Experience)	C. Client's Name, Address And Phone Number (Include Name Of Contact Person)	d. Completion Date (Actual Or Estimated)	e. Project Cost (In Thousands)	
				Construction Costs (Actual, Or Estimated If Not Completed)	Fee for Work for Which Firm Was Responsible
(1)					
(2)					
(3)					
(4)					
(5)					

8b. List Current and Relevant Work By Sub-Consultants Which Best Illustrates Current Qualifications In The Areas Listed In The Advertisement (Up To But Not More Than 5 Projects For Each Sub-Consultant). Use Additional Sheets Only As Required For The Number Of Sub-Consultants Requested In The Advertisement.					
Sub-Consultant Name:					
a. Project Name and Location Principal-In-Charge	b. Brief Description Of Project and Services (Include Reference To Relevant Experience	c. Client's Name, Address And Phone Number. Include Name Of Contact Person	d. Completion Date (Actual Or Estimated)	e. Project Cost (In Thousands)	
				Construction Costs (Actual, Or Estimated If Not Completed)	Fee For Work For Which Firm Was/Is Responsible
(1)					
(2)					
(3)					
(4)					
(5)					

9. List All Projects Within The Past 5 Years For Which Prime Applicant Has Performed, Or Has Entered Into A Contract To Perform, Any Design Services For All Public Agencies Within The Commonwealth.

# of Total Projects:	**# of Active Projects:**	**Total Construction Cost (In Thousands) of Active Projects (excluding studies):**

Role P, C, JV *	Phases St., Sch., D.D., C.D.,A.C.*	Project Name, Location and Principal-In-Charge	Awarding Authority (Include Contact Name and Phone Number)	Construction Costs (In Thousands) (Actual, Or Estimated If Not	Completion Date (Actual or Estimated) (R)Renovation or (N)New
		1.			
		2.			
		3.			
		4.			
		5.			
		6.			
		7.			
		8.			
		9.			
		10.			
		11.			
		12.			

* P = Principal; C = Consultant; JV = Joint Venture; St. = Study; Sch. = Schematic; D.D. = Design Development; C.D. = Construction Documents; A.C. = Administration of Contract

10. Use This Space To Provide Any Additional Information Or Description Of Resources Supporting The Qualifications Of Your Firm And That Of Your Sub-Consultants For The Proposed Project. If Needed, Up To Three, Double-Sided 8 ½" X 11" Supplementary Sheets Will Be Accepted. **APPLICANTS ARE ENCOURAGED TO RESPOND SPECIFICALLY IN THIS SECTION TO THE AREAS OF EXPERIENCE REQUESTED IN THE ADVERTISEMENT**.

Be Specific – No Boiler Plate

11. Professional Liability Insurance:

Name of Company	Aggregate Amount	Policy Number	Expiration Date

12. Have monies been paid by you, or on your behalf, as a result of Professional Liability Claims (in any jurisdiction) occurring within the last 5 years and in excess of $50,000 per incident? Answer **YES** or **NO**. If YES, please include the name(s) of the Project(s) and Client(s), and an explanation (attach separate sheet if necessary).

13. Name Of Sole Proprietor Or Names Of All Firm Partners and Officers:

Name	Title	MA Reg #	Status/Discipline	Name	Title	MA Reg #	Status/Discipline
a.				d.			
b.				e.			
c.				f.			

14. If Corporation, Provide Names Of All Members Of The Board Of Directors:

Name	Title	MA Reg #	Status/Discipline	Name	Title	MA Reg #	Status/Discipline
a.				d.			
b.				e.			
c.				f.			

15. Names Of All Owners (Stocks Or Other Ownership):

Name And Title	% Ownership	MA. Reg.#	Status/Discipline	Name And Title	% Ownership	MA. Reg.#	Status/Discipline
a.				d.			
b.				e.			
c.				f.			

16. I hereby certify that the undersigned is an Authorized Signatory of Firm and is a Principal or Officer of Firm. I further certify that this firm is a "Designer", as that term is defined in Chapter 7C, Section 44 of the General Laws, or that the services required are limited to construction management or the preparation of master plans, studies, surveys, soil tests, cost estimates or programs. The information contained in this application is true, accurate and sworn to by the undersigned under the pains and penalties of perjury.

Submitted by (Signature) _____ Printed Name and Title _____ Date _____

CERTIFICATE OF NON-COLLUSION

The undersigned certified under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the work person shall mean any natural person, business, partnership, corporation, union committee, club, or other organization, entity, or group of individuals.

_____

(Name of person signing bid or proposal)
(Please Print)

_____

(Signature Required)

_____

(Name of Business)

NON-COLLUSION AFFIDAVIT

State of: Massachusetts.

County of _____.

Being first duly sworn deposes and says that:

A. He/She is _____ of _____, the Bidder that has submitted the attached Bid or Proposal;

B. He/She is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such bid;

C. Such Bid is genuine and is not a collusive or sham Bid;

D. Neither the said Bidder nor any of its officers, partners, agents, representatives, employees or parties of interest, including this affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner, or any person interested in the proposed Contract; and

E. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its officers, partners, agents, representatives, employees or parties of interest, including this affidavit.

F. The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

_____
Signature

_____
Title

Subscribed and sworn to before me, this _____ day of _____, 2024

_____.

My Commission Expires: _____

TAX COMPLIANCE CERTIFICATE

MASS. GENERAL LAWS, CH. 62C, S:49A(b)

I hereby certify that I have complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding of child support.

Signed under the pains and penalties of perjury.

(1) Individual Contractor _____

(Contractor's Name and Signature)

Social Security Number _____

(2)Corporation, Associated

or Partnership _____

(Contractor's Name)

Federal Tax ID Number, or

Social Security Number _____

By: _____

(Authorized Signature)

CHAPTER 62C. ADMINISTRATIVE PROVISIONS RELATIVE TO STATE TAXATION

Chapter 62C: Section 49A Certification of compliance with tax laws as prerequisite to obtaining license or governmental contract

Section 49A. (a) Any person applying to any department, board, commission, division, authority, district or other agency of the commonwealth or any subdivision of the commonwealth, including a city, town or district, for a right or license to conduct a profession, trade or business, or for the renewal of such right or license, shall certify upon such application, under penalties of perjury, that he has complied with all laws of the commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support. Such right or license shall not be issued or renewed unless such certification is made.

(b) No contract or other agreement for the purposes of providing goods, services or real estate space to any of the foregoing agencies shall be entered into, renewed or extended with any person unless such person certifies in writing, under penalties of perjury, that he had complied with all laws of the commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

(c) Any such agency, which has been notified by the commissioner pursuant to section forty-seven A that a person who holds a license or certificate of authority issued by such agency or who has agreed to furnish goods, services or real estate space to such agency has neglected or refused to file any returns or to pay any tax required under this chapter and that such person has not filed in good faith a pending application for abatement of such tax or a pending petition before the appellate tax board contesting such tax or has been penalized pursuant to section 9 of chapter 62E for failure to comply with the provisions under said chapter 62E relating to reporting of employees and contractors, or has been penalized pursuant to paragraph (3) of subsection (f) of section 12 of chapter 119A for failure to comply with the provisions under said chapter 119A relating to withholding and remitting child support, shall refuse to reissue, renew or extend such license, certificate of authority, contract or agreement until the agency receives a certificate issued by the commissioner that the person is in good standing with respect to any and all returns due and taxes payable to the commissioner as of the date of issuance of said certificate, including all returns and taxes referenced in the initial notification or, if the licensee has been penalized for failure to comply with the provisions relating to reporting of employees and contractors under chapter 62E or withholding and remitting child support under chapter 119A, a certificate issued by the commissioner that the licensee is in compliance with said provisions.

(d) Any person who owns or leases a motor vehicle or trailer that is required to be registered in the commonwealth under chapter 90 and improperly registers the motor vehicle or trailer in another state or misrepresents the place of garaging of the motor vehicle or trailer in another city or town, shall be considered in violation of laws of the commonwealth relating to taxes under chapter 60A, chapter 64H or chapter 64I. The right, license or contract provided for in subsections (a) and (b) shall not be issued or renewed until the person or business entity has paid all taxes due at the time of application for such right, license or contract.

(e) Any person who, for the purpose of evading payment of a tax pursuant to chapters 59 to 64J, inclusive, willfully makes and subscribes any return, form, statement or other document pursuant to subsection (a), (b) or (d) that contains or is verified by a written declaration that is made under the penalties of perjury, and that contains information that he does not believe to be true and correct as to every matter material to his compliance with all laws of the commonwealth relating to taxes, shall be subject to section 73.

INDEMNITY AGREEMENT

In Consideration of the award of Contract No. _____ by the Town of Manchester by the Sea, hereinafter referred to as INDEMNITEE, to the CONTRACTOR/BIDDER:_____
hereinafter referred to as INDEMNITOR, and for other good and valuable consideration, said INDEMNITOR agrees to hold INDEMNITEE, Town of Manchester by the Sea, and its various departments and employees harmless from any and all liability, loss or damage that INDEMNITEE may suffer as the results of claims, demands, costs, including attorneys fees, or judgement or other actions against it by reason of any and all work done by or on behalf of the INDEMNITOR in connection with the above referenced contract.

INDEMNITOR,

_____

By Duly Authorized Agent

Date:_____

CERTIFICATE OF AUTHORITY

At a duly authorized meeting of the Board of Directors of the _____
(Name of Corporation)
held on _____ Directors were present or waived notice, it was voted that
(Date)
_____ of this company, be and hereby is authorized to execute
(Officer and Title)
contracts and bonds in the name and behalf of said company, and affix its Corporate Seal thereto, and such

execution of any contract or bond of obligation in this company's name on its behalf of such

_____ under seal of the company shall be valid and binding upon this company.
(Officer)

A TRUE COPY,

ATTEST:

_____
Place of Business:

_____

_____

I hereby certify that I am the _____ of the _____
(Title) (Name of Corporation)
that _____ is the duly elected _____
(Name of Officer) (Title)

of said company, and the above vote has not been amended or rescinded and remains in full force and effect as of the date of this contract.

Signature: _____

Name/Title: _____

Date: _____
(Corporate Seal)

COMMONWEALTH OF MASSACHUSETTS

_____ _____
COUNTY, SS. DATE

Then personally appeared the above named _____ and acknowledged the foregoing instrument to be his/her free act and deed before me.

_____ _____
Notary Public My commission expires

Appendix A
Authorization to Discharge Pollutants (MA Small WWTF GP Modification)

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM SMALL WASTEWATER TREATMENT FACILITY GENERAL PERMIT

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

Town of Manchester-by-the-Sea, Massachusetts

is authorized to discharge from the facility located at

Manchester-by-the-Sea Wastewater Treatment Plant
12 Church Street
Manchester-by-the-Sea, MA 01944

to receiving water named

Manchester Bay
Salem Sound

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this authorization and the Small WWTF GP (General Permit No. MAG580000).

This authorization shall become effective on September 1, 2023.

For applicable attachments see the complete version of the Small WWTF General Permit[1]:

Part VIII – Standard Conditions
Attachment A – Freshwater Acute Toxicity Test Procedure and Protocol, February 2011
Attachment B – Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013
Attachment C – Marine Acute Toxicity Test Procedure and Protocol, July 2012
Attachment D – Marine Chronic Toxicity Test Procedure and Protocol, November 2013

I. Applicability and Coverage of the WWTF GP

Supplementary information provided in the complete version of the Small WWTF GP.

[1] https://www.epa.gov/npdes-permits/region-1-final-small-wastewater-treatment-facilities-general-permit

II. Massachusetts General Permit, Permit No. MAG580000

A. Effluent Limitations and Monitoring Requirements

During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated effluent through Outfall Serial Number 001 to Manchester Bay. The discharge shall be limited and monitored as specified below at the end of all treatment processes, including disinfection or dechlorination, or at an alternative representative location approved by EPA and the Massachusetts Department of Environmental Protection (MassDEP), that provides a representative sample of the effluent. The receiving water and the influent shall be monitored as specified below.

Table 1. Effluent Limitations and Monitoring Requirements

Effluent Characteristic	**Discharge Limitation[13]**			**Monitoring Requirement[1,2]**	
Parameter	**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[3]**
Rolling Average Effluent Flow[4]	0.67 MGD	---	---	Continuous	Recorder
Effluent Flow[4]	Report MGD	---	Report MGD	Continuous	Recorder
BOD_5	30 mg/L 165 lb/day	45 mg/L 252 lb/day	Report mg/L	1/Week	Composite
BOD_5 Removal	≥ 85 %	---	---	1/Month	Calculate
TSS	30 mg/L 165 lb/day	45 mg/L 252 lb/day	Report mg/L	1/Week	Composite
TSS Removal	≥ 85 %	---	---	1/Month	Calculate
pH Range[7]	6.5-8.5 S.U.			5/Week	Grab
Enterococci[8]	35 colonies/ 100 mL	---	104 colonies/100 mL	1/Week	Grab
Fecal Coliform Bacteria[8]	14 organisms/ 100 mL	---	28 organisms/100 mL	1/Week	Grab
Total Residual Chlorine[9]	Report mg/L	---	1.0 mg/L	5/Week	Grab
Total Recoverable Copper[10]	3.7 µg/L	---	5.8 µg/L	2/Month	Composite
Total Nitrogen[11]	Report mg/L Report lb/day	---	Report mg/L Report lb/day	1/Month	Composite
Total Kjeldahl Nitrogen[11]	Report mg/L	---	Report mg/L	1/Month	Composite

Effluent Characteristic	**Discharge Limitation[13]**			**Monitoring Requirement[1,2]**	
Parameter	**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[3]**
Nitrate + Nitrite[11]	Report mg/L	---	Report mg/L	1/Month	Composite
Perfluorohexanesulfonic acid (PFHxS)[12]	---	---	Report ng/L	2/Year	Composite
Perfluoroheptanoic acid (PFHpA)[12]	---	---	Report ng/L	2/Year	Composite
Perfluorononanoic acid (PFNA)[12]	---	---	Report ng/L	2/Year	Composite
Perfluorooctanesulfonic acid (PFOS)[12]	---	---	Report ng/L	2/Year	Composite
Perfluorooctanoic acid (PFOA)[12]	---	---	Report ng/L	2/Year	Composite
Perfluorodecanoic acid (PFDA)[12]	---	---	Report ng/L	2/Year	Composite
Whole Effluent Toxicity (WET) Testing[14,15]					
Acute (LC_{50}) (*Menidia beryllina*)	---	---	≥ 100%	2/Year	Composite
Hardness (as $CaCo_3$)	---	---	Report mg/L	Same as WET Measurement Frequency and Sample Type	
Ammonia Nitrogen	---	---	Report mg/L		
Total Cadmium	---	---	Report mg/L		
Total Copper	---	---	Report mg/L		
Total Lead	---	---	Report mg/L		
Total Nickel	---	---	Report mg/L		
Total Zinc	---	---	Report mg/L		
Total Organic Carbon	---	---	Report mg/L		

Ambient Characteristic[16]	**Reporting Requirements**		**Monitoring Requirements[1,2,3]**		
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Salinity	---	---	Report ppt	Same as WET Measurement Frequency	Grab
Ammonia Nitrogen	---	---	Report mg/L		Grab
Total Cadmium	---	---	Report mg/L		Grab
Total Copper	---	---	Report mg/L		Grab
Total Nickel	---	---	Report mg/L		Grab
Total Lead	---	---	Report mg/L		Grab
Total Zinc	---	---	Report mg/L		Grab

Total Organic Carbon	---	---	Report mg/L		Grab
pH[18]	---	---	Report S.U.		Grab
Temperature[18]	---	---	Report °C		Grab

Influent Characteristic	**Reporting Requirements**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
BOD_5	Report mg/L	---	---	2/Month	Composite
TSS	Report mg/L	---	---	2/Month	Composite
Perfluorohexanesulfonic acid (PFHxS)[12]	---	---	Report ng/L	2/Year	Composite
Perfluoroheptanoic acid (PFHpA)[12]	---	---	Report ng/L	2/Year	Composite
Perfluorononanoic acid (PFNA)[12]	---	---	Report ng/L	2/Year	Composite
Perfluorooctanesulfonic acid (PFOS)[12]	---	---	Report ng/L	2/Year	Composite
Perfluorooctanoic acid (PFOA)[12]	---	---	Report ng/L	2/Year	Composite
Perfluorodecanoic acid (PFDA)[12]	---	---	Report ng/L	2/Year	Composite

Sludge Characteristic	**Reporting Requirements**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Perfluorohexanesulfonic acid (PFHxS)[20]	---	---	Report ng/g	2/Year	Grab/Composite[21]
Perfluoroheptanoic acid (PFHpA)[20]	---	---	Report ng/g	2/Year	Grab/Composite[21]
Perfluorononanoic acid (PFNA)[20]	---	---	Report ng/g	2/Year	Grab/Composite[21]
Perfluorooctanesulfonic acid (PFOS)[20]	---	---	Report ng/g	2/Year	Grab/Composite[21]
Perfluorooctanoic acid (PFOA)[20]	---	---	Report ng/g	2/Year	Grab/Composite[21]
Perfluorodecanoic acid (PFDA)[20]	---	---	Report ng/g	2/Year	Grab/Composite[21]

Footnotes to Part II.A. Table 1:

1. All samples shall be collected in a manner to yield representative data. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented as an electronic attachment to the applicable discharge monitoring report. The Permittee shall report the results to the Environmental Protection Agency Region 1 (EPA) and the State of any additional testing above that required herein, if testing is in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

   When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" to all non-detects for that reporting period and report the average of all the results.

3. A "grab" sample is an individual sample collected in a period of less than 15 minutes.

   A "composite" sample is a composite of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

   All references to "composite" will be changed to "grab" in the authorization to discharge for any facilities utilizing sand filters or lagoons.

4. The limit is a rolling annual average, reported in million gallons per day (MGD), which will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months. Also report monthly average and maximum daily flow in MGD.

5. N/A

6. N/A

7. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.).

8. Bacteria monitoring shall be conducted concurrently with TRC monitoring, if TRC monitoring is required.

   For samples tested using the Most Probable Number (MPN) method, the units may be expressed as MPN. The units may also be expressed as colony forming units (cfu) when using the Membrane Filtration method.

9. For total residual chlorine (TRC) related requirements, see Part II.B.9 of this authorization.

10. See Part IV.E below for compliance schedules applicable to the total recoverable copper monthly average and daily max limits.

11. Total Kjeldahl nitrogen and nitrate + nitrite samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen, as follows.

    Total Nitrogen (mg/L) = Total Kjeldahl Nitrogen (mg/L) + Nitrate + Nitrite (mg/L)

    Total Nitrogen (lbs/day) = [(average monthly Total Nitrogen (mg/L) * total monthly effluent flow (Millions of Gallons (MG)) / # of days in the month] * 8.34

12. Report in nanograms per liter (ng/L). Monitoring and reporting shall be done twice per year, once in each 3rd calendar quarter and once in each 4th calendar quarter. This reporting requirement for the listed PFAS parameters takes effect the first full 3rd or 4th calendar quarter following 6 months after EPA notifies the permittee that an EPA multi-lab validated method for wastewater is available.

13. N/A

14. The Permittee shall conduct acute toxicity tests (LC50) in accordance with test procedures and protocols specified in **Attachments C and D** of this permit. LC50 is defined in Part VIII.E. of this permit. The Permittee shall test the inland silverside (*Menidia beryllina*). Toxicity test samples shall be collected during the same weeks each time of calendar quarters ending June 30th and September 30th. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal which includes the results for that toxicity test.

15. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachments C and D**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachments C and D**, Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachments C and D**, Part VI. CHEMICAL ANALYSIS.

16. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachments C and D**, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately outside of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachments C and D**. Minimum levels and test methods are specified in **Attachments C and D**, Part VI. CHEMICAL ANALYSIS.

17. Monitoring and reporting for dissolved organic carbon (DOC) are not requirements of the Whole Effluent Toxicity (WET) tests but are additional requirements. The Permittee may analyze the WET samples for DOC or may collect separate samples for DOC concurrently with WET sampling.

18. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

19. N/A

20. Report in nanograms per gram (ng/g).

    Monitoring and reporting for PFAS in the sludge of non-lagoon facilities shall be done twice per year, once in each 3rd calendar quarter and once in each 4th calendar quarter. This reporting requirement for the listed PFAS parameters takes effect the first full 3rd or 4th calendar quarter following 6 months after EPA notifies the Permittee that an EPA multi-lab validated method for sludge is available.

21. Sludge sampling shall be as representative as possible based on guidance found at https://www.epa.gov/sites/production/files/2018-11/documents/potw-sludge-sampling-guidance-document.pdf.

B. Other Requirements for Massachusetts Facilities

1. The discharge shall not cause a violation of the water quality standards of the receiving water.

2. The discharge shall be free from pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

3. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

4. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

5. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

6. The discharge shall be free from oil and grease and petrochemicals.

7. The Permittee must provide adequate notice to EPA-Region 1 and the State of the following:

    a. Any new introduction of pollutants into the facility from an indirect discharger which would be subject to Part 301 or Part 306 of the Clean Water Act if it were directly discharging those pollutants or in a primary industry category (see 40 CFR Part 122 Appendix A as amended) discharging process water; and

    b. Any substantial change in the volume or character of pollutants being introduced into that facility by a source introducing pollutants into the facility at the time of issuance of the permit.

    c. For purposes of this paragraph, adequate notice shall include information on:

        (1) The quantity and quality of effluent introduced into the facility; and

        (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the facility.

8. Pollutants introduced into the facility by a non-domestic source (user) shall not pass through the POTW or facility or interfere with the operation or performance of the works.

9. Total Residual Chlorine (TRC) limitations and related requirements are specified below:

    a. N/A

    b. The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Monitoring for total residual chlorine (TRC) is only required for discharges which have been previously chlorinated or which contain residual chlorine.

c. Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

d. Permittees authorized to conduct disinfection using an alternative to chlorine as the disinfectant are subject to the TRC limitations and monitoring requirements whenever chlorine is added to the treatment process for disinfection or for other purpose. For the months in which chlorine is not added to the treatment process, the Permittee shall indicate "no discharge" on DMRs using the "NODI" code C.

C. Unauthorized Discharges

1. This permit authorizes discharges only from the outfall(s) listed in the authorization to discharge from EPA in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit in accordance with Part VIII.D.1.e.(1) (24-hour reporting). See Part VI below for reporting requirements.

2. The Permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge, except SSOs that do not impact a surface water or the public, on a publicly available website, and it shall remain on the website for a minimum of 12 months. Such notification shall include the location and description of the discharge; estimated volume; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue.

3. Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at https://www.mass.gov/how-to/sanitary-sewer-overflowbypassbackup-notification.

D. Notification Requirements

The Permittee shall notify all downstream community water systems (if any) of any emergency condition, plant upset, bypass, or other system failure which has the potential to impact the quality of the water to be withdrawn by that community for drinking water purposes. This notification should be made as soon as possible but within four (4) hours, and in the anticipation of such an event, if feasible, without taking away from any response time necessary to alleviate the situation. The Permittee shall follow up with written notification within five (5) days. This notification shall include the reason for the emergency, any sampling information, any visual data recorded, a description of how the situation was handled, and when it would be considered to no longer be an emergency.

E. Additional Requirements for Facilities Discharging to Marine Waters

The requirements below apply to facilities that discharge to marine waters.

1. The Permittee shall operate the effluent diffuser according to the best management practices below:

   a. The effluent diffuser shall be maintained to ensure proper operation. Proper operation means that the outfall pipe be intact, operating as designed, and have unobstructed flow. Maintenance may include dredging in the vicinity of the diffuser, removal of solids/debris in the diffuser header pipe, and repair/replacement.

   b. To determine if maintenance will be required, the Permittee shall inspect and videotape the operation of the diffuser either remotely or using a qualified diver or marine contractor. The inspections and videotaping shall be performed every five years with the first inspection occurring within twelve (12) months of the effective date of the permit. EPA and MassDEP shall be contacted at least seven days prior to a dive inspection.

   c. Any necessary maintenance dredging must be performed only during the marine construction season authorized by the Massachusetts Department of Marine Fisheries and only after receiving all necessary permits from the Massachusetts Department of Environmental Protection, U.S. Coast Guard, U.S. Army Corps of Engineers, and other appropriate agencies.

   d. Copies of reports summarizing the results of each diffuser inspection shall be submitted to EPA and MassDEP within 60 days of each inspection. Where it is determined that maintenance will be necessary, the Permittee shall provide the proposed schedule for the maintenance. The Permittee may request an extension of up to 60 additional days to submit this report.

2. The Permittee shall verbally notify the Massachusetts Division of Marine Fisheries within 4 hours of any emergency condition, plant upset, bypass, SSO discharges or other system failure which has the potential to violate bacteria permit limits. Within 24 hours a notification of a permit excursion or plant failure shall be sent to the following address:

   Division of Marine Fisheries
   Shellfish Management Program
   30 Emerson Avenue
   Gloucester, MA 01930
   (978) 282-0308

3. Pursuant to 40 CFR § 125.123(d)(4), this permit shall be modified or revoked at any time if, on the basis of any new data, the director determines that continued discharges may cause unreasonable degradation of the marine environment.

F. State 401 Certification Conditions

This Permit has received state water quality certification issued by the State under § 401(a) of the CWA and 40 CFR § 124.53. EPA incorporates the following state water quality certification requirements into the Final Permit:

1. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, beginning the first full third (July through September) or fourth (October through December) calendar quarter after the permittee has been notified by EPA of a multi-lab validated method for wastewater, or by the dates set forth in Appendix A of the draft Massachusetts Small Wastewater Treatment Facilities General Permit Modification, whichever is earlier, the permittee shall conduct monitoring of the influent, effluent, and sludge for PFAS compounds as detailed in the tables below. If EPA's multi-lab validated method is not available by four (4) months prior to the dates set for each in Appendix A of the draft Massachusetts Small Wastewater Treatment Facilities General Permit Modification, the permittee shall contact MassDEP (massdep.npdes@mass.gov) for guidance on an appropriate analytical method. Influent, effluent, and sludge samples shall be sampled twice yearly in the third and fourth quarters, with the exception of facilities that dispose of sludge in onsite lagoons. Facilities that dispose of sludge in onsite lagoons shall conduct a one time characterization of the PFAS content in the sludge during the first full third quarter following notification from EPA that a multi-lab validated method is available. Notwithstanding any other provision of the 2023 Federal NPDES Permit Modification to the contrary, monitoring results shall be reported to MassDEP electronically, at massdep.npdes@mass.gov, or as otherwise specified, within 30 days after they are received. If the permittee is located upstream of the drinking water intake of one or more communities, the permittee shall commence this monitoring beginning in the first full third or fourth quarter following 180 days after the effective date of the permittee's authorization and shall contact MassDEP (massdep.npdes@mass.gov) 90 days prior to starting monitoring for guidance on the appropriate analytical method: Battle Road Farm; Wayland WWMD; MCI Concord; Middlesex School; MCI-Bridgewater and Oak Point Homes. The following small wastewater treatment facility permittees with design flow less than 0.1 MGD that discharge to marine waters are exempt from all PFAS monitoring requirements: Shore Cliff Maintenance Trust and United States Coast Guard Light Station Boston.

Influent and Effluent

Parameter	Units	Measurement Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	ng/L	Twice Annually[2]	24-hour Composite
Perfluoroheptanoic acid (PFHpA)	ng/L	Twice Annually	24-hour Composite
Perfluorononanoic acid (PFNA)	ng/L	Twice Annually	24-hour Composite
Perfluorooctanesulfonic acid (PFOS)	ng/L	Twice Annually	24-hour Composite
Perfluorooctanoic acid (PFOA)	ng/L	Twice Annually	24-hour Composite
Perfluorodecanoic acid (PFDA)	ng/L	Twice Annually	24-hour Composite

Sludge

Parameter	Units	Measurement Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	ng/L	Twice Annually	24-hour Composite
Perfluoroheptanoic acid (PFHpA)	ng/L	Twice Annually	24-hour Composite
Perfluorononanoic acid (PFNA)	ng/L	Twice Annually	24-hour Composite
Perfluorooctanesulfonic acid (PFOS)	ng/L	Twice Annually	24-hour Composite
Perfluorooctanoic acid (PFOA)	ng/L	Twice Annually	24-hour Composite
Perfluorodecanoic acid (PFDA)	ng/L	Twice Annually	24-hour Composite

2. The requirements of this paragraph apply solely to municipal and regional wastewater treatment facilities and not to privately owned sanitary wastewater treatment facilities. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, beginning six (6) months after the permittee has been notified by EPA of a multi-lab validated method for wastewater, or by the dates set forth in Appendix A of the draft Massachusetts Wastewater Treatment Facilities General Permit Modification, whichever is earlier, the permittee shall commence annual monitoring of all Significant Industrial Users[3,4] discharging into the POTW. Monitoring shall

[2] Twice annually is defined as once during the third calendar quarter (July through September) and once during the fourth calendar quarter (October through December).

[3] Significant Industrial User (SIU) is defined at 40 CFR part 403: All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subpart N; **and** any other industrial user that: discharges an average of 25,000 GPD or more of process wastewater to the POTW, contributes a process wastestream that makes up 5% or more of the average dry weather hydraulic or organic capacity of the POTW, or designated as such by the POTW on the basis that the industrial users has a reasonable potential for adversely affecting the POTW's operation or for violating any Pretreatment Standards or requirement.

[4] This requirement applies to all Significant Industrial Users and not just those within the sectors identified by EPA in the NPDES permit.

be in accordance with the table below. If EPA's multi-lab validated method is not available by twenty (20) months after the effective date permittee's authorization under the 2023 Federal NPDES General Permit Modification, the permittee shall contact MassDEP (massdep.npdes@mass.gov) for guidance on an appropriate analytical method. Notwithstanding any other provision of the 2023 Federal NPDES Small Wastewater Treatment Facility General Permit Modification to the contrary, monitoring results shall be reported to MassDEP electronically at massdep.npdes@mass.gov within 30 days after they are received. If the permittee is the following facility, the permittee shall commence this monitoring beginning one (1) year after the effective date of the permittee's authorization under the 2023 Federal NPDES General Permit Modification and shall contact MassDEP (massdep.npdes@mass.gov) 90 days prior to starting monitoring for guidance on the appropriate analytical method: Wayland WWMDC.

Parameter	Units	Measurement Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	ng/L	Twice Annually	24-hour Composite
Perfluoroheptanoic acid (PFHpA)	ng/L	Twice Annually	24-hour Composite
Perfluorononanoic acid (PFNA)	ng/L	Twice Annually	24-hour Composite
Perfluorooctanesulfonic acid (PFOS)	ng/L	Twice Annually	24-hour Composite
Perfluorooctanoic acid (PFOA)	ng/L	Twice Annually	24-hour Composite
Perfluorodecanoic acid (PFDA)	ng/L	Twice Annually	24-hour Composite

III. New Hampshire General Permit, Permit No. NHG580000

N/A

IV. Additional Limitations, Conditions, and Requirements

A. Operation and Maintenance of the Sewer System

Operation and maintenance (O&M) of the sewer system shall be in compliance with the Standard Conditions of Part II and the following terms and conditions. The Permittee shall complete the following activities for the collection system which it owns:

1. Maintenance Staff

   The Permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Provisions to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section IV.A.5. below.

2. Preventive Maintenance Program

   The Permittee shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The

program shall include an inspection program designed to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section IV.A.5. below.

3. Infiltration/Inflow

   The Permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant's effluent limitations. Plans and programs to control I/I shall be described in the Collection System O&M Plan required pursuant to Section IV.A.5. below.

4. Collection System Mapping

   The Permittee shall continue to maintain a map of the sewer collection system it owns. The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

   a. All sanitary sewer lines and related manholes;

   b. All combined sewer lines, related manholes, and catch basins;

   c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combination manholes);

   d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;

   e. All pump stations and force mains;

   f. The wastewater treatment facility(ies);

   g. All surface waters (labeled);

   h. Other major appurtenances such as inverted siphons and air release valves;

   i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

   j. The scale and a north arrow; and

   k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System O&M Plan

a. N/A
b. N/A

The Permittee shall update and implement the Collection System O&M Plan it has previously submitted to EPA and the State in accordance with Part (c) below. The plan shall be available for review by federal, state, and local agencies upon request.

c. The Plan shall include:

(1) A description of the collection system management goals, staffing, information management, and legal authorities;
(2) A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities;
(3) A preventive maintenance and monitoring program for the collection system;
(4) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;
(5) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;
(6) Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;
(7) A description of the Permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts;
(8) An educational public outreach program for all aspects of I/I control, particularly private inflow; and
(9) An Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The Permittee shall submit a summary report of activities related to the implementation of its Collection System O&M Plan during the previous calendar year. The report shall be submitted to EPA and the State annually by March 31. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit; and

f. In Massachusetts, if the average annual flow in the previous calendar year exceeded 80 percent of the facility's design flow, or there have been capacity-related overflows, the report shall include items in (1) and (2) below.

(1) Plans for further potential flow increases describing how the Permittee will maintain compliance with the flow limit and all other effluent limitations and conditions; and
(2) A calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year.

B. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the Permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works it owns and operates, as defined in Part VIII.E.1 of this permit.

C. Industrial Users

1. The Permittee shall submit to EPA and the State the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR chapter I, subchapter N (Parts 405-415, 417-430, 432, 447, 449-451, 454, 455, 457-461, 463-469, and 471 as amended) who commences discharge to the facility after the effective date of this permit.

   This reporting requirement also applies to any other IU who is classified as a Significant Industrial User which discharges an average of 25,000 gallons per day or more of process wastewater into the facility (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastewater which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the facility; or is designated as such by the Control Authority as defined in 40 CFR § 403.3(f) on the basis that the industrial user has a reasonable potential to adversely affect the wastewater treatment facility's operation, or for violating any pretreatment standard or requirement (in accordance with 40 CFR § 403.8(f)(6)).

2. In the event that the Permittee receives originals of reports (baseline monitoring reports, 90-day compliance reports, periodic reports on continued compliance, etc.) from industrial users subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR chapter I, subchapter N (Parts 405-415, 417-430, 432-447, 449-451, 454, 455, 457-461, 463-469, and 471 as amended), or from a Significant Industrial User, the Permittee shall forward the originals of these reports within ninety (90) days of their receipt to EPA, and copy the State in accordance with Part VI.2 below.

3. Beginning the first full calendar quarter following 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater is available, the Permittee shall commence annual sampling of the following types of industrial discharges into the POTW:

   - Commercial Car Washes
   - Platers/Metal Finishers
   - Paper and Packaging Manufacturers
   - Tanneries and Leather/Fabric/Carpet Treaters
   - Manufacturers of Parts with Polytetrafluoroethylene (PTFE) or teflon type coatings (i.e. bearings)
   - Landfill Leachate
   - Centralized Waste Treaters
   - Contaminated Sites
   - Fire Fighting Training Facilities
   - Airports
   - Any Other Known or Expected Sources of PFAS

   For dischargers in Massachusetts, sampling shall be for the following PFAS chemicals:

Industrial User Effluent Characteristic	**Maximum Daily**	**Monitoring Requirements**	
		Frequency	**Sample Type**
Perfluorohexanesulfonic acid (PFHxS)	Report ng/L	1/year	Composite
Perfluoroheptanoic acid (PFHpA)	Report ng/L	1/year	Composite
Perfluorononanoic acid (PFNA)	Report ng/L	1/year	Composite
Perfluorooctanesulfonic acid (PFOS)	Report ng/L	1/year	Composite
Perfluorooctanoic acid (PFOA)	Report ng/L	1/year	Composite
Perfluorodecanoic acid (PFDA)	Report ng/L	1/year	Composite

   The industrial discharges sampled and the sampling results shall be summarized and submitted to EPA and copy the state as an electronic attachment to the March discharge monitoring report due April 15th of the calendar year following the testing.

D. Sludge Conditions

1. The Permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR Part 503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to § 405(d) of the CWA, 33 U.S.C. § 1345(d).

2. If both state and federal requirements apply to the Permittee's sludge use and/or disposal practices, the Permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices:

a. Land application - the use of sewage sludge to condition or fertilize the soil
b. Surface disposal - the placement of sewage sludge in a sludge only landfill
c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR Part 503 requirements include the following elements:

- General requirements
- Pollutant limitations
- Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
- Management practices
- Record keeping
- Monitoring
- Reporting

Which of the 40 CFR Part 503 requirements apply to the Permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the Permittee to assist it in determining the applicable requirements.[5]

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year, as follows:

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR § 503.8.

7. Under 40 CFR § 503.9(r), the Permittee is a "person who prepares sewage sludge" because it

[5] This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf

"is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the Permittee contracts with *another* "person who prepares sewage sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the Permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the Permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the Permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR § 503 Subpart B.

E. Schedules of Compliance

1. The Permittee will have a schedule of compliance of 18 months for the total recoverable copper monthly average and daily max limits. During the compliance schedule, the Permittee shall monitor at the frequency specified in Table 1 and report monitoring results for total recoverable copper.

2. Within twelve (12) months of the authorization to discharge under the General Permit, the Permittee shall submit to EPA and the State a status report relative to the process improvements necessary to achieve the permit limit.

F. Additional Requirements for Facilities Discharging to Long Island Sound Watershed

N/A

V. Obtaining Authorization to Discharge

N/A

VI. Monitoring, Record-Keeping, and Reporting Requirements

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

   The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State no later than the 15th day of the month electronically using NetDMR. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA (and MassDEP for dischargers in Massachusetts) as NetDMR attachments rather than as hard copies. For dischargers in New Hampshire, this includes the NHDES Monthly Operating

Reports (MORs). See Part VI.5 for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Requests and Reports to EPA Water Division (WD)

   a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA Water Division (WD):

      (1) Transfer of permit notice;
      (2) Request for changes in sampling location;
      (3) Request for reduction in testing frequency;
      (4) Request for change in WET testing requirement; and
      (5) Report on unacceptable dilution water / request for alternative dilution water for WET testing.
      (6) Report of new industrial user commencing discharge
      (7) Report received from existing industrial user
      (8) Request for extension of compliance schedule

   b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

4. Submittal of Reports to EPA Enforcement and Compliance Assurance Division (ECAD) in Hard Copy form

   a. The following notifications and reports shall be signed and dated originals, submitted as hard copy, with a cover letter describing the submission:

      (1) Written notifications required under Part VIII.B.4.c, for bypasses, and Part VIII.D.1.e, for sanitary sewer overflows (SSOs). Starting on 21 December 2025, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

   b. This information shall be submitted to EPA ECAD at the following address:

      U.S. Environmental Protection Agency
      Enforcement and Compliance Assurance Division
      Water Compliance Section
      5 Post Office Square, Suite 100 (04-SMR)
      Boston, MA 02109-3912

5. State Reporting

For dischargers in MA only: Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management
8 New Bond Street
Worcester, Massachusetts 01606

6. Verbal Reports and Verbal Notifications

   a. Any verbal reports or verbal notifications, if required in Parts I through VIII of this permit, shall be made to both EPA and to the State. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part VIII.B.4.c.(2), Part VIII.B.5.c.(3), and Part VIII.D.1.e).

   b. Verbal reports and verbal notifications shall be made to:

EPA ECAD at 617-918-1510
and
MassDEP's Emergency Response at 888-304-1133
or
NHDES Assigned NPDES Inspector listed below:
Central/South NH: 603-271-2985
North/West NH: 603-271-1494
NH Seacoast: 603-271-1493

VII. Administrative Requirements

A. Notice of Termination (NOT) of Discharge or Change of Owner/Operator

Permittees shall notify EPA and the appropriate State agency in writing upon the termination of any discharge(s) authorized by the Small WWTF GP. The NOT shall include the name, mailing address, phone number, and the location of the facility for which the notification is being submitted, the NPDES permit number of the discharge identified by the notice, and an indication of whether the discharge has been eliminated or if the owner/operator of the discharge has changed. The NOT shall be signed in accordance with the signatory requirements of 40 CFR § 122.22. Completed and signed NOTs shall be submitted to EPA and the appropriate State agency at the addresses provided in Part VI above.

B. Continuation of this General Permit After Expiration

If this General Permit is not reissued prior to its expiration date, it will be administratively continued in accordance with the Administrative Procedures Act (5 U.S.C. 558(c)) and 40 CFR §

122.6 and remain in full force and in effect for discharges covered prior to its expiration. The permit application requirement under 40 CFR § 122.6 and Part VIII.A.7 of this permit has been waived for this permit term.

Coverage under this permit will not be available to any facility that is not authorized to discharge under the General Permit before the expiration date.

Any permittee whose authorization to discharge under this General Permit was administratively continued will automatically remain covered by the continued General Permit until the earlier of:

1. Authorization to discharge under a reissued permit or a replacement of this permit; or

2. The Permittee's submittal of a Notice of Termination; or

3. Issuance of an individual permit for the Permittee's discharge; or

4. A formal permit decision by EPA not to reissue this General Permit, at which time EPA will identify a reasonable time period for covered dischargers to seek coverage under an alternative general permit or an individual permit. Coverage under this permit will cease at the end of this time period.

Appendix B
2024 Basis of Design Report by Tata and Howard

MANCHESTER-BY-THE-SEA WASTEWATER TREATMENT PLANT BASIS OF DESIGN MEMO | OCTOBER 2024

Manchester by the Sea, Massachusetts

TATA & HOWARD

Wastewater Treatment Plant Basis of Design Memo
Manchester by the Sea, Massachusetts

October 2024

Prepared by

TATA & HOWARD

TATA & HOWARD

October 8, 2024

Mr. Charles J. Dam, P.E.
DPW Director
Town of Manchester by the Sea
10 Central Street
Manchester by the Sea, MA 01944

Subject: Basis of Design Memo
Manchester by the Sea, Massachusetts

Dear Mr. Dam,

Tata & Howard (T&H) is pleased to provide this updated basis of design memo for the proposed wastewater treatment plant upgrades. This letter report is intended to review and update the recommendations made in the *Manchester-by-the-Sea Wastewater Treatment Plant Evaluation* by T&H in March 2018 in a simplified, concise format. More detailed analysis of the WWTP can be found in the original 2018 report.

The report prepared by Tata & Howard in October 2023, highlighted the Town of Manchester-By-the-Sea's objective to address the Town's WWTP aging infrastructure and ensure operational reliability and redundancy. As the WWTP currently operates without significant mechanical, electrical, or control deficiencies, the recommended upgrades focus on systems' assets that are approaching the end of their useful life or exhibiting declining reliability. This report also includes the evaluation of opportunities for plant hardening upgrades at the plant to protect new equipment from potential flooding.

The purpose of this memo is to address the outstanding needs of the Manchester-By-the-Sea Wastewater Treatment Plant (WWTP) based on feedback provided by the facility operators and workers. Additionally, the recommendations list was updated based on recent work completed at the WWTP and those upgrades have been reflected in this report.

This report has been updated based on additional feedback received from Manchester-By-the-Sea in a document named "July 2024 Staff Clarifications and Comments Pertaining to Tata & Howard's 10/5/2023 Basis of Design Memo for Manchester-By-The-Sea, MA WWTP" received on July 30, 2024.

Tata & Howard
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Other Offices
MA | NH | CT | AZ

Basis of Design

The basis of design of the Wastewater Treatment Plant (WWTP) is based on the NPDES effluent permit limits seen below in Table No. 1-1. In Table No. 1-2 below, the influent and effluent characteristics can be found for January – December 2022.

Table No. 1-1
Effluent Limitations and Monitoring Requirements

Effluent Characteristic	Discharge Limit			Monitoring Requirement	
Parameter	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Rolling Average Effluent Flow	0.67 MGD	---	---	Continuous	Recorder
Effluent Flow	Report MGD	---	Report MGD	Continuous	Recorder
BOD5	30 mg/L 165 lb/day	45 mg/L 252 lb/day	Report mg/L	1/Week*	Composite
BOD5 Removal	≥ 85 %	---	---	1/Month*	Calculate*
TSS	30 mg/L 165 lb/day	45 mg/L 252 lb/day	Report mg/L	1/Week*	Composite
TSS Removal	≥ 85 %	---	---	1/Month*	Calculate*
pH Range	6.5-8.5 S.U.			5/Week*	Grab
Enterococci	35 colonies/ 100 mL	---	104 colonies/ 100 mL	1/Week	Grab
Fecal Coliform Bacteria	14 organisms/ 100 mL	---	28 organisms/ 100 mL	1/Week	Grab
Total Residual Chlorine	Report mg/L	---	1.0 mg/L	5/Week*	Grab
Total Recoverable Copper*	3.7 µg/L*	---	5.8 µg/L*	2/Month*	Composite*
*Denotes change since last NPDES permit					

Table No. 1-2
2022 Influent and Effluent Design Characteristics

Parameter	Influent	Effluent
BOD5	209.4 mg/L	3.8 mg/L
TSS	199.6 mg/L	4.4 mg/L
pH	7.7	7.0
Enterococci	-	3.8 colonies/ 100 mL
Fecal Coliform Bacteria	-	2.7 organisms/ 100 mL
Total Residual Chlorine	-	0.5 mg/L

Summary of Findings

T&H had a meeting with the plant operators and Sewer Department staff to discuss operational challenges, evaluate the condition of equipment and facilities, and identify any priority upgrades that need to be made. Following the meeting, a tour of the wastewater treatment plant was taken on January 5, 2023.

Additional feedback was provided by Manchester-By-the-Sea in a document named "July 2024 Staff Clarifications and Comments Pertaining to Tata & Howard's 10/5/2023 Basis of Design Memo for Manchester-By-The-Sea, MA WWTP" received on July 30, 2024.

Condition

Headworks and Influent Pumping

The 2018 report conducted an in-depth assessment of the facility, highlighting key findings that have informed subsequent actions. These findings served as the basis for the recent upgrades and changes made to the facility; key observations include the following:

- The current assessment indicates that the headworks and influent piping remain in satisfactory condition based on visual inspections and operational evaluations.
- The functionality of these components appears to be consistent with previous assessments, with no immediate concerns raised regarding their performance or structural integrity. Recent upgrades, specifically the installation of a new grit classifier and the replacement of influent pumps, have not directly impacted the headworks and influent piping systems. These systems continue to operate within acceptable parameters, contributing to the overall efficiency of the wastewater treatment facility.
- Improvements have been directed towards other "high priority" components, such as the mechanical screens and the electrical room, as highlighted in the recommendations section.

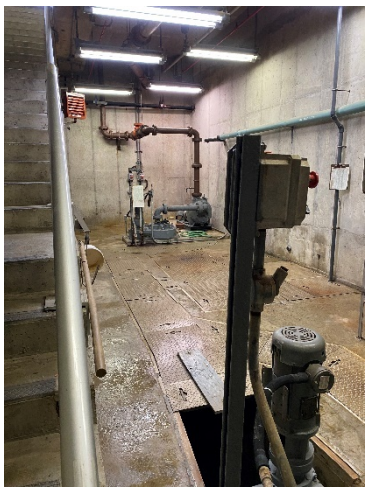
Grit Classifier and Influent Pumps

The recent upgrades to the wastewater treatment facility included the installation of a new grit classifier and the replacement of influent pumps.

The performance evaluation of the new grit classifier has improved the efficiency of the preliminary treatment process and has positively impacted downstream unit operations at the facility.

The influent pumps are original to the plant. The rehabilitation of the influent pump rotating assemblies has resulted in increased reliability and operational stability. As documented in the 2018 report, the Gorman-Rupp influent pumps have experienced continuous issues with impeller damage because they are oversized. Each pump is designed for 2.6 MGD; however, the dry weather ADF is considerably lower. The issues the operators describe are consistent with cavitation, which can occur when pumps operate at flows lower than the design point causing areas of low pressure at the impeller of the pump. Cavitation can cause accelerated wearing of impellers, bearing and seals. In addition, since the pumps are typically operating well below the design point, the pumps are likely operating at an efficiency of 30% to 40% rather than the design efficiency of 63%. In the short term, modifications should be made

to the pump operation to avoid cavitation, such as setting the minimum speed of the pumps above the flow rate where cavitation is anticipated. Long term, there is an opportunity to improve efficiency by replacing one or two of the larger pumps with two pumps each with half of the design capacity of the original pumps.



Thickening Sludge Pump

The existing thickened sludge pump at the facility is currently experiencing issues related to ragging, indicating a need for immediate attention. This can cause an accumulation of debris and materials around the pump impeller, leading to operational inefficiencies and potential equipment damage if not addressed. To mitigate this issue effectively, the installation of new mechanical screens is recommended.

Mechanical Screens

By implementing new mechanical screens, the facility can significantly reduce the risk of ragging in the thickened sludge pump, thereby improving overall operational reliability and efficiency.

Addressing the ragging issue through the installation of mechanical screens will allow the facility to maintain operational standards and comply with regulatory requirements.

Headworks Building

- The headworks roof is currently in poor condition and will need to be replaced.
- Thermostats are missing from the headworks building and should be added.

Aeration Tanks

The condition of the aeration system observed in 2023 had notably declined since the last assessment in 2018. While the visible concrete structure appeared sound, operational challenges have increased. Specifically, foam generation has become more problematic, and the blowers, which are aging, show significant wear, with one unit currently leaking oil.

The WWTP has recently completed improvements at the WWTP to improve energy efficiency including upgrades to the aeration system. The improvements included installation of control valves, DO probes and SCADA upgrades to allow for higher efficiency aeration for energy savings as well as process control and performance. There are still elements that must be addressed as part of future upgrades.

Key observations include the following:

- **Concrete Structure:** Visual inspections indicate that the concrete components remain structurally sound, with no significant visible deterioration.
- **Foam Generation:** Increased foaming has emerged as a substantial operational concern, affecting system efficiency and performance.
- **Blowers:** The condition of the blowers has progressively declined, with one unit currently experiencing an oil leak. These blowers are crucial for maintaining proper aeration and their deterioration could significantly impact treatment efficacy. Although rebuilding the blowers is an option, long-term, the blowers should be replaced new high efficiency blowers designed for the new operating parameters of the aeration system bringing the entire system up to date. Additionally, consider incentives for installing modern, high efficiency blowers.
- **Piping & Gates:** The condition of the RAS piping entering the aeration basins and influent splitter box are deteriorating and require replacement.
- **New air flow control valves** have been installed. Investigate "tuning" to improve accuracy of auto adjust to hit DO setpoint and improve energy efficiency and process performance.
- **Dissolved Oxygen (DO) & SCADA Probes:** New DO probes and SCADA controls are complete

The WWTP staff has implemented an interim control strategy using a foam spray system; however, a more permanent solution is recommended. Additionally, ongoing energy efficiency upgrades to the aeration system include the installation of automated Dissolved Oxygen (DO) probes and SCADA controls. However, the current project scope does not address blower or air piping replacement. To optimize performance, consider including air control valves as part of the blower replacement initiative.

Clarification System

The clarification system has also experienced deterioration since the 2018 assessment. Comprehensive inspections revealed the need for the replacement of motors and drives, all below-water metal components, weirs, arms, and float trees. Level sensors also require upgrades, and concrete surfaces need cleaning and spot repairs.

An evaluation of the clarifiers indicates the need for comprehensive upgrades, including:

- Replacement of motors and drives
- Complete replacement of below-water metal components
- Installation of new weirs, arms, sweeps, and float trees
- Upgrading level sensors
- Cleaning and spot repairs of concrete surfaces
- Scum well pumping issues appear to be resolved via control of filaments in process

Disinfection & Effluent Pump Station

Current Condition

The disinfection system is overall in good condition, and key components have been replaced for improved performance:

- **Chlorine Pumps:** These have been replaced successfully, enhancing the system's reliability.
- **Effluent Pumps:** These pumps were replaced in 2016. The current operators have not observed signed of oversized pumps, such as constant cycling, that were noted in 2018.

Sludge Handling and Septage Disposal

Since the 2018 report, the RAS pumps, piping, and valves have been replaced. The thickened sludge pump has also been replaced. The sludge handling and septage disposal conditions have not changed significantly. The RAS pump room continues to have issue with corrosion and deterioration. Several pipes and valves require replacement. The stairs are currently made of wood and due to the dampness of the room, they have the potential to deteriorate. Metal stairs would be more sturdy and longer lasting. The thickened sludge pump currently has a ragging issue. Additional screening in the headworks could prevent downstream ragging.

Other items that were noted during observation include the following:

- Relocate the new HMI panel to be mounted high on wall just to the right of the thickened sludge discharge valve. The current panel location is too high and too close to the discharge for operators to safely and/or comfortably operate. A sludge transfer pump e-stop squash button should also be mounted either just inside the door entrance to pump gallery or outside away from potential sludge spray should something go wrong (for operator or truck driver use).
- Provide a sludge transfer pump emergency stop switch button mounted near the truck.
- Replace the septage tank drain line in the pump gallery and the pinch valve and actuator located under the south stairwell.
- Address the anchoring of the copper heating line pipes at the south end of the pump gallery to prevent potential issues.
- The thickened sludge pump (trailer loading pump) has been replaced with a Penn Valley duplex pump that is currently operating and working well.

These proposed upgrades aim to streamline sludge handling processes, enhance system reliability, and ensure compliance with operational standards. By addressing these specific areas of improvement, the wastewater treatment plant in Manchester by the Sea can optimize its sludge handling operations for long-term efficiency and effectiveness.

Odor Control

Odor control at the WWTP has not changed and the equipment remains in good condition. The media is scheduled to be replaced every three to five years. In the spring of 2023, a condensate drain line was clogged which prevented the system to draw any air. The odor control sensors will be tied in to the SCADA system. The stairs leading to the top of the media need to be replaced. Also, operators have indicated that having a spare exhaust fan, motor and bearings would provide resiliency.

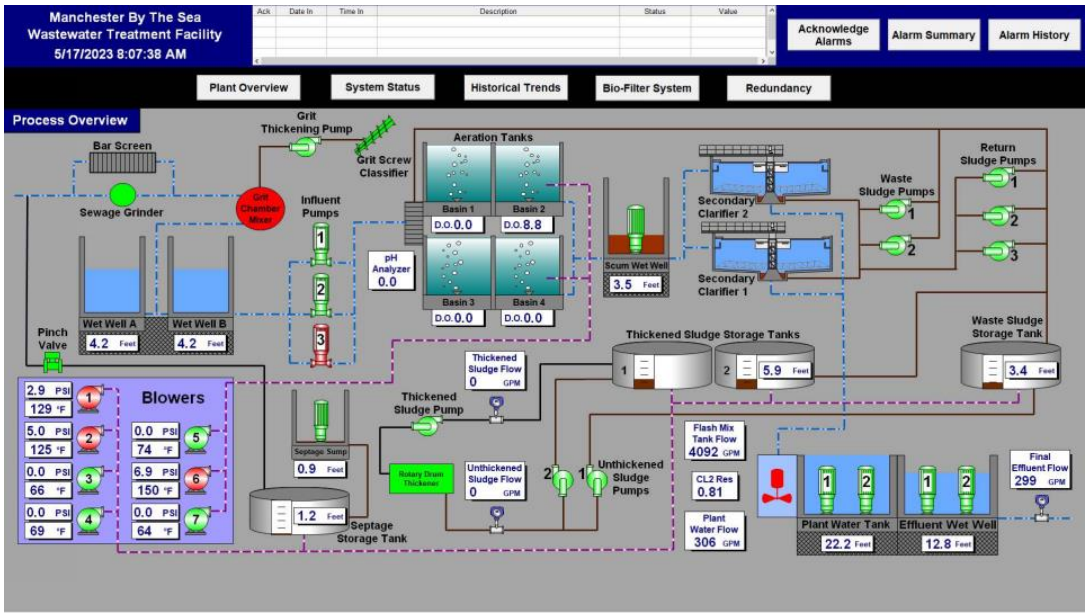
The odor control measures at the wastewater treatment plant (WWTP) have been maintained in good condition, with scheduled media replacements every three to five years. In the spring of 2023, a clogged condensate drain line hindered the system's air intake, prompting the need for system adjustments. To enhance monitoring capabilities, it is recommended to integrate odor control sensors with the SCADA system for improved oversight and timely response to any deviations.

Furthermore, the physical infrastructure supporting odor control requires attention. The stairs leading to the top of the media need replacement to ensure safe access for maintenance personnel. Additionally, to bolster operational resilience, it is advisable to procure spare parts such as an exhaust fan, motor, and bearings. These spare components can serve as backups in case of unexpected failures, minimizing downtime and ensuring continuous odor control functionality.

Addressing these recommendations will not only sustain the effectiveness of the odor control system but also contribute to a more robust and reliable wastewater treatment plant operation. The integration of odor control sensors with the SCADA system and the provision of essential spare parts aligns with the plant's commitment to maintaining high operational standards and environmental compliance.

SCADA (Control) Systems

The SCADA system was previously run, maintained, and recorded manually by the operators. Since the 2018 report, the SCADA system has been replaced by Wilson Controls in 2022 and 2023. A more in-depth review of monitoring and control can be found in later in this report.



Ancillary System General Observations

The overall condition of the WWTP site and grounds have not changed significantly. Since the 2018 report, the plant's heating system has been replaced in 2021. The air conditioning in the Headworks building is not currently working and temperatures reach above 100˚F during the summer months. The HVAC system remains a high priority and the town plans to address the heating and colling issues with new AC units/heat pumps.

The plant's fire alarm system requires upgrades and should be included as part of improvement projects located in the main building. The exterior of the building needs pressure washing and many of the structures require structural rehabilitation. The control building, headworks building, pump room, and Biofilter room require roof repairs. Building foundations and process tanks require cracks to be repaired and expansion joints should be replaced.

The driveways and walkways should be graded and paved. While the whole driveway should eventually be paved, the areas around the Biofilter and drainage structures should be prioritize to prevent puddling.

There are also flooding issues at the WWTP that can be addressed using plant hardening techniques that can be found in Section 3.0 later in this report.

The generator is original and is approaching the end of its anticipated useful life. The generator should continue to be serviced and tested. Replacement is not urgent but should be considered as part of larger electrical upgrades recommended.

The plant water system within the WWTP is inoperable and represents a significant operational challenge. Replacement of the plant water system is a high priority. Design of the new plant water system will include consideration of water use needs and availability.

Additional Notes:

- MBTS will determine if the Fire Alarm system work will proceed within this project or in a separate project.
- Air conditioning in the control building will be resolved with new AC units or heat pumps.
- Yard lighting has recently been improved.
- Plant water system -focus on improved efficiency in water use -especially at aeration tank foam spray system. Fear is that Plant Water System use may exceed water volume in the wetwell causing system to malfunction, such as when filling upstream tanks or during very low flow periods. Perhaps a split water system such as plant effluent supplied to aeration tank spray system and yard hydrants and clean Town water supplied to seal water and polymer makeup system.

Miscellaneous Electrical Items

In addition to electrical items that have been mentioned above, there are additional items that need improvement. All electrical gear, MCCs, panels, etc. need new lightning protection systems and grounding connections. The main switch gear needs a new surge protection device. Alarms throughout the system are currently not working and need to be fixed. The main computer in the admin building office is the only indicator of an alarm which poses a problem if someone is not monitoring the computer regularly. There is also below ground electrical conduit and junction boxes prone to flooding that need to be relocated. The emergency generator has also had issues with flooding.

<u>Electrical Room</u>

The electrical room at the facility houses equipment that is crucial for the operation of various processes. The current assessment reveals that the equipment in the electrical room is approximately 20 years old. While visually the equipment appears to be in good condition, it is approaching the end of its useful life.

Given the high priority of electrical components at the WWTP, the facility should prioritize upgrades and replacements in this area. The aging equipment poses a risk of failure, which could lead to operational disruptions and potential safety hazards.

To maintain the reliability and efficiency of the facility, it is recommended to conduct a detailed evaluation of the electrical components in the room. This assessment should identify high-priority items for replacement or upgrades to mitigate the risk of unexpected failures and ensure compliance with safety standards.

Health and Safety
There are several improvements required to improve the safety for workers and the public at the WTTP. There are several areas of the WWTF where environmental improvements with improve the safety of workers. Some of these improvements include improving ventilation of headworks building, the sludge pump room and soda ash system. NFPA Class 1 Division 1 areas should have all electrical system updated to be explosion proof.

Fall protection should be provided for all elevated work areas including on the sludge tank roof deck and deck access ladder.

Improve chemical addition and lab areas to provide eyewash and showers with tempered water. The soda ash system should be relocated out of the maintenance area or additional protection such as splash shields should be provided.

Also, an electrical arc flash study should be completed in conjunction with the proposed upgrade project.

2.2 Performance

Based on data collected in 2022 and the first two months of 2023, the calculated 12-month rolling average daily flow rate is less than the permit limit of 0.67 million gallons per day (MGD). The following is a summary of the removal rates and the effluent compared to the current permit limits:

- BOD effluent remained less than the permit limit of a monthly average of 30 mg/L. There was a 97% removal rate of BOD from influent to effluent.
- The TSS effluent remained less than the permit limit of a monthly average of 30 mg/L. There was a 97% removal rate of TSS which falls within the permit limit of having an 85% removal rate or higher.
- The weekly and monthly samples of Enterococci fell within permit limits.
- The weekly and monthly samples of fecal coliform bacteria fell within permit limits.
- The maximum day chlorine residual fell within the maximum daily chlorine residual permit limit of 1.0 mg/L.
- The influent and effluent pH fell within the range of 6.5 to 8.5.

A detailed review of the influent and effluent characteristics can be found in Appendix A. The plant is consistently meeting its permit limitations which indicates that overall the plant is operating well.

The WWTP is generally operating well under the NPDES permit limits. Although extensive sampling was not completed for copper levels, the limited sampling that was complete indicates that the plant could be challenged in meeting the average monthly limit of 3.7 µg/L, and the maximum daily limit of 5.8 µg/L. A copper evaluation including a copper sampling plan and jar testing program is recommended to determine the portion of copper that is dissolved and to determine what removal strategies would be the most cost effective for meeting the new permit limits.

2.3 Operation and Maintenance

Based on our observations and discussions with the operator, there were several O&M related improvements that could be made to improve the overall operation and maintenance of the plant. A summary of those is presented below:

- The plant water system within the WWTP is inoperable and makes it difficult when water is needed.
- The clarifier tanks need to be drained, cleaned, and spot repaired.
- Many of the tanks throughout the WWTP need to be cleaned to improve efficiency.
- The soda ash system area needs to be cleaned to remove accumulated deposits and moisture. The concrete and CMU should be repaired, and the containment membrane should be replaced.
- A cleaning schedule for the ragging and grit should be implemented.
- Currently, there are several door handles that are broken throughout the WWTP. This poses a usability and security issue for the staff. Doors are often propped open for easier access.

In addition to reviewing known O&M issues at the plant, we reviewed the WWTP's O&M manuals, plant performance indicators such as influent and effluent parameters, and the plant's operational data.

As discussed in the previous performance section, the plant is currently performing well compared to the effluent limits, and typically removal rates. The 2018 WWTP compared the design of each process to 10 State Standards and TR-16 standards, and a review of that analysis under this scope similarly found that the processes and equipment in place are correctly sized and designed, with some equipment potentially being oversized for ADF conditions.

The operational parameters of the biological process were also reviewed. The aeration system was designed to operate in one of three modes: Conventional mix, extended aeration or contact stabilization. As discussed in the 2018 WWTP evaluation, the plant operates in extended aeration mode. Analysis showed this configuration was effective and could gain efficiency with upgrades to the blowers and automating aeration based on D.O. The analysis also showed the potential for further efficiency by running the activated sludge process in contact stabilization mode with only one train in service. At this time, we would recommend progressing with the improvements underway before looking into changing the operation mode of the process.

The design intent for the aeration system included the following parameters:

- MLSS mg/L
  - Average dry season: 2940
  - Average wet season: 2810
- Sludge Age
  - Average dry season: 10
  - Average wet season: 10

Tata & Howard compared the 2022 operator logs to compare operations at the plant to these design parameters. The MLSS in the aeration basins ranged from 2,540 to 6,030 mg/L, with an average value of 4,560 mg/L. This translates to an average sludge age of 15 days. While these values are higher than

the values stated in the plant's original design criteria, these values are still within the typical range of an extended aeration process. Further, the plant has historically operated at this higher MLSS concentrations to provide resilience to the biological treatment due to upsets caused by external forces such as salt water intrusion which can disrupt the biological treatment processes.

Due to operational challenges caused by scum, we also reviewed the design criteria and operational parameter of the clarifiers. This review determined that the existing clarifiers are adequately sized, and the sludge blanket depth (ranged from 1.5-3 feet with an avg 2.0) is appropriate.

The most typical causes for scum issues at a WWTP are FOG or suspended sludge. FOG is best mitigated in the collection system; however, there are biological additives that can be added at the WWTP to help breakdown grease build up. Sludge can also float adding to the scum issues at the plant. This can occur due to FOG being entrapped with the floc, denitrification occurring in the secondary clarifiers, or the presence of bulking bacteria. FOG management is discussed above, but the later two issues are typically managed through managing sludge age and blanket depths.

Following the upgrade and optimization of the aeration system, the operators should consider making slow and methodical adjustments to their sludge inventories to determine if the plant can be operated at a lower sludge age.

If the scum issue is not easily resolved using operation adjustments, there are other approaches to improving scum handling through upgrades to the scum handling system as noted above.

2.4 SCADA System

The SCADA system has been upgraded through 2022 and 2023. The upgrades have included software and hardware improvements as well as adding new functionality to the monitoring and control of the processes. The current SCADA screens that show the equipment that is active at the WWTP can be found in Appendix B. An inventory of monitored and controlled components in the SCADA system can be found in Table No. 2-1 below.

Table No. 2.4-1
SCADA Components

	Monitored	Controlled
Influent Pumps	X	Auto
Headworks grinder		
Grit Classifier/Chamber	X	Auto
pH	X	
Aeration Tank Blowers	X	Auto
Return Sludge Pumps	X	Auto
Secondary Clarifiers	X	Run/off
Scum Pump	X	Auto
Chlorine Residual	X	Auto
Effluent Pumps	X	Auto
Flash Mixer	X	Run/off
Storage Tank Blowers	X	Auto
WAS Storage Tank Active Setpoints	X	
Pinch Valve	X	Auto
Rotary Drum Thickener and Polymer	X	
Septage Pumps	X	Auto
Thickened Sludge Pumps	X	
Unthickened Sludge Pumps	X	Auto
Waste Sludge Pumps	X	Auto
Bio-Filters	X	Run/off

Following the recent upgrades, all of the existing processes are now present in the SCADA system and all process critical processes include recommended control capabilities. The items that are currently monitored, but not controlled are related to the sludge thickening system and pH adjustments system. The sludge thickening system is not a critical treatment process, and automation of this process beyond safety measures to prevent spills is typically not needed. The pH adjustment system as installed requires manual preparation of the solution. Automation would require system replacement consisting of a dry batch system or conversion to liquid chemical addition. This would not be a high priority improvement for a plant of this size.

The improved SCADA system also includes adequate recording of equipment run times and trending of plant data to facilitate O&M of the facility.

As WWTP improvements are conducted any new equipment provided will require integration into the SCADA system.

3.0 Updated List of Recommendations

The updated list of recommendations can be found in Appendix C. This list has been updated to remove items of work completed since the 2018 report and add new items identified during the 2023 meeting and tour. All new items on the list of recommendations were given a priority rating ranging from low to high consistent with the original report. Costs were estimated for the new work and prices from the previous study were adjusted for inflation and the current bidding environment.

The priority improvements identified for the wastewater treatment plant include the replacement of the chlorine analyzer, motors, aeration blower, and wiring. These upgrades are crucial for maintaining the efficiency and effectiveness of the plant's operations. By addressing these priority items promptly, we can ensure continued compliance with regulatory standards and optimize the treatment process. Consistent with the approach from the 2018 report, all recommended improvements were prioritized from high to low.

The highest priority improvements include the following (refer to Appendix D for additional information):

- Replacing motors in the classified area
- Aeration blower and piping replacement
- Wiring in headworks building
- Wiring in sludge thickening room
- Clarifier replacement
- Scum pit replacement
- Gas detection and Fire Alarm
- Electrical manholes and conduits
- Aeration piping and gate replacement
- Gas detection
- Influent Pump Replacement
- Influent pump room Improvements
- Float trees & level sensors in the clarifiers
- Fire Alarms
- Purchase Effluent Pump
- Disinfection Improvements
- RAS pump room replace corroded elements
- Odor Control Upgrades
- SCADA and control panels upgrade
- New plant water
- Replace roofs
- Misc. Structural Repairs
- Soda Ash Improvements
- All electrical rooms/control building HVAC

In addition to the priority improvements outlined in the report, further recommendations have been identified to enhance the efficiency and overall performance of the wastewater treatment plant. These

additional recommendations aim to address specific operational aspects and contribute to the long-term sustainability and effectiveness of the wastewater treatment plant.

Additional Recommendations:

Headworks and Influent Pumping

- Replumb the grit concentrator drain line to allow for diversion of flow to the bar rack during weekly servicing of the rock box and while conducting influent sampling OR install PVC conduit through which the influent suction line can be dropped with suction screen landing in influent channel upstream of grit concentrator drain line.
- Replace I-beam stand under grit pump.
- Provide refrigerated composite sampler in the influent pump room.
- Install a rag removal system in place of the channel monster. While this has the potential to be a much-needed improvement, there are issues with available space and the need wash and move the captured material to ground level for disposal. If these issues can be overcome, then this could move from low to high priority. (eliminate channel monster in the process?)

Aeration Tanks:

- Blower Replacement: Immediate replacement of the aging blowers is recommended to restore operational efficiency and prevent further degradation of the aeration system. Prioritize the replacement of the blowers.
- Aeration Piping Replacement: To complement the blower upgrades and ensure optimal aeration system performance.
- Foam Control Systems: Although a temporary foam spray system has been implemented, a permanent foam management solution should be explored. Options may include advanced anti-foaming agents or mechanical foam removal systems.
- Energy Efficiency Upgrades: The plant is undertaking energy efficiency upgrades, including the integration of automated Dissolved Oxygen (DO) probes and SCADA controls. However, it is critical to include the blower and air piping replacement in these upgrades to optimize energy consumption and operational efficiency.
- Air Control Valves: Inclusion of air control valves in the blower replacement project should be considered to enhance control over airflow and improve aeration efficiency.
- RAS Inlet Pipes: replace corroded RAS inlet pipes from discharge point in aeration tank (AT)1 and AT3 back into pump gallery if pipe structural needs require.
- Recondition or replace stop 4 ea. stop gates on influent splitter box.
- Water Spray System: replace existing water spray system with a more permanent, weather-proof system with lower flow nozzles. Consider the use of a timer on this spray system.
- Mounting Pads: replace badly corroded lower (below water line) aluminum mounting pads under catwalks on walls between AT 1&3 and between AT 2&4.
- Instrumentation: demo all obsolete instrumentation j-boxes, displays, power runs on catwalk and railings at aeration tanks.
- Tank Repair: clean, inspect and spot repair tank concrete cracks and/or spalling.

- Low: repair/replace/decommission 2 stop gates that divert influent flow to AT2 and AT4 (contact stabilization lines).

Scum Handing:

- Existing Systems Renovation: Renovation of the current scum handling systems, including the replacement of pumps and consideration of mixing, chlorine spray, or cationic polymer addition to reduce foam.
- System Configuration: Explore alternative configurations to connect double disc pumps directly to the scum box, which would enable more efficient scum removal and reduce potential damage to the pumps.

Clarification System:

- Mixer: Installation of a mixer in the scum well may be beneficial should filaments re-establish. Mixing hypo into the scum well should aid filament control.
- Clarifier Drain Valves:
- Influent Spitter Box:
- Scum Well Float Tree: Replace scum well float tree with new equipment.
- Scum Well Mixer:
- Clarifier Drain Valves: Replace clarifier drain valves.

Disinfection & Effluent Pump Station:

- Effluent Pump: While the condition of the effluent pumps remains stable, it was previously noted by operators that pumps were oversized and cycling constantly. More recent observations in 2024 by current operations have not experienced these issues and indicate that replacement is a low priority. Potential wear from oversizing should be monitored closely.
- Building: Replace I beam support over the effluent pumps and replace V-notch weir plate between flash mixer well and effluent wetwell and plant water well.
- Water Pump Skid: Install new plant water pump skid to feed into WWTF existing plant water plumbing.
- Hypo

Sludge Handling & Septage Disposal:

- HMI Panel: relocate new outside HMI panel mounted high on wall just to the right of the thickened sludge discharge valve. The current panel location is too high and too close to the discharge for operators to safely/comfortably operate. A sludge transfer pump e-stop squash button should also be mounted either just inside the door entrance to pump gallery or outside away from potential sludge spray should something go wrong (for operator or truck driver use).
- Drain Line: replace septage tank drain line in pump gallery east floor trough, as well as defunct pinch valve and actuator located under south stairwell. Approximately 45 feet 8-inch DI pipe that serves as septage tank drain is badly corroded on side facing trough floor.
- Stairs: Replace wooden staircase in south end of pump gallery used to access yard and sludge trailer loading.

- Piping: copper heating line pipes at south end of pump gallery should be re-anchored to wall.

Odor Control:

- Odor Control Sensors: To enhance monitoring capabilities, it is recommended to integrate odor control sensors with the SCADA system for improved oversight and timely response to any deviations.

Miscellaneous Electrical Items:

- Electrical Conduit: Some below-ground electrical conduits and junction boxes are prone to flooding and should be relocated. The emergency generator has also experienced flooding issues, and protective measures should be considered.

SCADA Control System:

- Annunciator/Beacons: Install one or more annunciator/beacons inside and outside to alert staff of critical SCADA alarm conditions.
- Alarm Auto Dialer: Install backup alarm call out system, including auto dialer with timer.
- Cyber Security System: Install cyber security system to protect access to SCADA from outside intrusion.

Ancillary Systems:

- Plant Water System: Install new plant water system to provide clean Town water to critical systems such as pump seal water and polymer makeup.
- Air Conditioning Unit: Replace Control Building (administration area of building) with new air conditioning (AC) system that may include heat pumps to augment boiler heat.
- Thermostats: Install programmable thermostats throughout facility.
- Circulator Pumps: Replace boiler room hot water circulator pumps and adjoining valves.
- Piping: Remount hot water pipes adjacent pipe gallery rear staircase.
- Structural: Replace influent pump room fan support stand that is corroded and replace or reinstall overhead garage door spring tension bar, located in Maintenance Shop. The anchors have been pulled out of the wall.
- Boiler: Replace boiler (possible downsizing with install of heat pumps, as mentioned above)
- Sinks: Install deep sink adjacent to washer/dryer in pump gallery, with hot/cold water from Town water system. Additionally, reset and reseal laboratory sink in countertop and reseal backsplash to sink countertop. Replace failed shelving under lab sink.

Buildings / Structures:

- Repair and/or replace roofs: Control Building, Headworks Building, Pump Room and Biofilter Room.
- Replace seals on sludge storage tanks aluminum roof panels.
- Seal cracks in foundations/floors/walls such as crack seeping water up through the floor adjacent laundry facilities in pump gallery.
- Fill structural cracks and spalling that may be allowing water to seep in/out of structures or compromising structural integrity.

- Replace failing expansion joint caulking on facility buildings.
- Install a new containment membrane in the soda ash makeup tank containment. This will include cleaning deposits and moisture in this area and restoring corroded concrete and cinder blocks.
- Repair sidewalk outside grit room entrance.
- Regrade pavement around driveway storm drains to eliminate big puddles that form and ice up in winter. Raise grade around bulkhead door to biofilter blower room to eliminate puddling.
- Replace effluent sampler shed and replace equipment storage shed adjacent aeration tanks.
- Provide refrigerated composite samplers for both influent and effluent.
- Repave driveway

Plant Hardening Measures:

A review of plant hardening measures has been conducted, and additional recommendations have been included to protect the facility from stormwater flooding, coastal storm surge, and sea level rise. These measures are designed to enhance the plant's resilience in flood-prone areas, ensuring the protection of newly installed equipment. Table No. 3-1 outlines plant hardening opportunities aimed at improving flood resilience.

Long-term mitigation strategies remain a key focus for the Town and will continue to be pursued outside of the scope of this report.

By addressing the priority improvements and implementing these additional recommendations, the wastewater treatment plant can enhance its operational efficiency, ensure compliance with regulations, and improve long-term sustainability.

For detailed costs, priorities, and additional recommendations, please refer to Appendix C.

Table No. 3-1
Plant Hardening Opportunities

Location	Plant Hardening Technique
All Buildings	Watertight/waterproof doors
Miscellaneous	Flood barrier around the individual pieces of equipment
Admin/Control Building	All data systems should be above the flood zone level
Site/Grounds	Stormwater outfalls
Site/Grounds	Decrease surcharge risk by providing temporary overflow storage
Site/Grounds	Flood wall
Admin/Control Building	Emergency Response Plan
Site/Grounds	Floodproof electrical duct banks, hand hold and manholes

Watertight doors on all buildings would prevent flooding in the WWTP. Flood barriers around the individual pieces of equipment would provide protection from coastal flooding, storm events, and impacts from a large influx of precipitation. All data systems should be above the flood zone level. This will prevent any possible flood damage due to coastal flooding or flooding caused by high precipitation. Stormwater outfalls could collect surface water and reduce flooding around the WWTP. Temporary overflow storage could help decrease surcharge risk in the WWTP as well as divert extra water away from the site of the plant. A flood wall would help to restrict the extra water from entering the WWTP. This would be a more permanent solution but take longer to implement. The emergency response planning is also an important component of plant hardening. This would outline different strategies and procedures to follow if there was a man-made and/or weather-related incident in the WWTP.

4.0 Probable Construction Cost

The probable Construction Cost estimate can be found in Table No. 4-1 below. A detailed cost breakdown can be found in Appendix D. Many of the improvement costs were established in 2018 as part of the previous study and updated in the 2023 report. The costs included in the 2024 report update were further escalated to represent 2024 costs.

Table No. 4-1
Construction Cost Estimate

Priority Level	Concern	Cost
High	Motors in classified area	$71,900.00
High	Aeration blower replacement	$14,400.00
High	Wiring in headworks building	$77,700.00
High	Wiring in sludge thickening room	$77,700.00
High	Scum pit improvements	$36,000.00
High	Clarifier replacement	$230,000.00
High	Electrical manholes and conduits	$28,800.00
High	Aeration piping and gate replacement	$57,500.00
High	Gas detection	$23,000.00
High	Fire Alarms	$32,400.00
High	Influent Pump Replacement	$126,500.00
High	Influent pump room Improvements	$15,000.00
High	Float trees & level sensors in the clarifiers	$14,400.00
High	Disinfection Improvements	$18,000.00
High	RAS pump room replace corroded elements	$62,600.00
High	SCADA/ Alarm Improvements	$30,000.00
High	HVAC and Ancillary Systems	$225,900.00
High	Replace roofs	$100,700.00
	Total High Priority Cost:	**$1,242,500.00**
	Total High Priority Cost with 15% Engineering and 20% Contingency:	**$1,677,375.00**

Table No. 4-1 (continued)
Construction Cost Estimate

Priority Level	Concern	Cost
Medium	Influent wet well mixers	$86,300.00
Medium	Refrigerated samplers	$7,200.00
Medium	Boiler room chimney and valves	$32,400.00
Medium	Cleaning of tanks	$48,600.00
Medium	New mechanically cleaned screen	$287,500.00
Medium	Sodium Hypochlorite level transducers	$10,800.00
Medium	Sludge disposal improvements	$14,400.00
Medium	Rotary drum thickener	$143,800.00
Medium	Valve replacement	$32,400.00
Medium	VFDs in electrical room	$143,800.00
Medium	Lab equipment	$3,600.00
Medium	New plant water	$63,300.00
Medium	Main switch gear	$14,400.00
Medium	Lightning protection system	$28,800.00
Medium	Grounding connections/systems	$23,000.00
Medium	Alarms throughout system	$46,800.00
Medium	Valve replacement	$32,400.00
Medium	Replumb Grit drain line	$10,000.00
	Total Medium Priority Cost:	**$1,019,500.00**
	Total Medium Priority Cost with 15% Engineering and 20% Contingency:	**$1,376,325.00**

Table No. 4-1 (continued)
Construction Cost Estimate

Priority Level	Concern	Cost
Low	Soda ash motor and second pump	$18,000.00
Low	Spare parts for polymer	$7,200.00
Low	Sampling shed	$8,000.00
Low	Electrical room with electrical gear/MCC	$100,700.00
Low	Biofilter room drain	$15,100.00
Low	Sodium Hypochlorite eye wash station	$5,800.00
Low	Security system	$14,400.00
Low	Lighting	$71,900.00
Low	Door handles	$10,800.00
Low	Flood Barriers	$157,200.00
Low	Yard Lighting	$23,000.00
Low	Building exterior pressure wash	$27,000.00
Low	Stormwater rebuild	$172,800.00
Low	Upgrade froth spray and chlorine pumping system	$71,900.00
Low	Drain in WAS and TS tanks to storm drain	$71,900.00
Low	Float trees in TS and WAS tanks	$21,600.00
Low	Gate between TS tank sides	$28,800.00
Low	Conduits and electrical device supports	$14,400.00
Low	Main switch gear	$71,900.00
Low	Outdoor 500KW standby generator	$230,000.00
Low	Main building roof	$50,400.00
Low	Pipe gallery floor concrete condition	$17,300.00
Low	Effluent pump replacement	$94,900.00
Low	Waterproof Doors	$27,000.00
	Total Low Priority Cost:	**$1,332,000.00**
	Total Low Priority Cost with 15% Engineering and 20% Contingency:	**$1,798,200.00**
	Grand Total with 15% Engineering and 20% Contingency:	**$4,851,900.00**

Based on the available funding it may be necessary to construct the recommended improvements in phases. To phase the improvements, it is recommended to prioritize the high and medium priority projects; however, it may be beneficial to include lower priority improvement associated with or located near planned improvement to increase cost efficiency. Alternatively, an annual budget allocation dedicated to equipment replacement could be used to shift recommended improvements that the operators could complete themselves from the larger construction project.

We appreciate the opportunity to work with you on this important project. Should you have any questions or comments, please do not hesitate to contact our office.

Sincerely,
TATA & HOWARD, INC.

James V. Hoyt, P.E.
Senior Project Manager

Appendix A

TATA & HOWARD

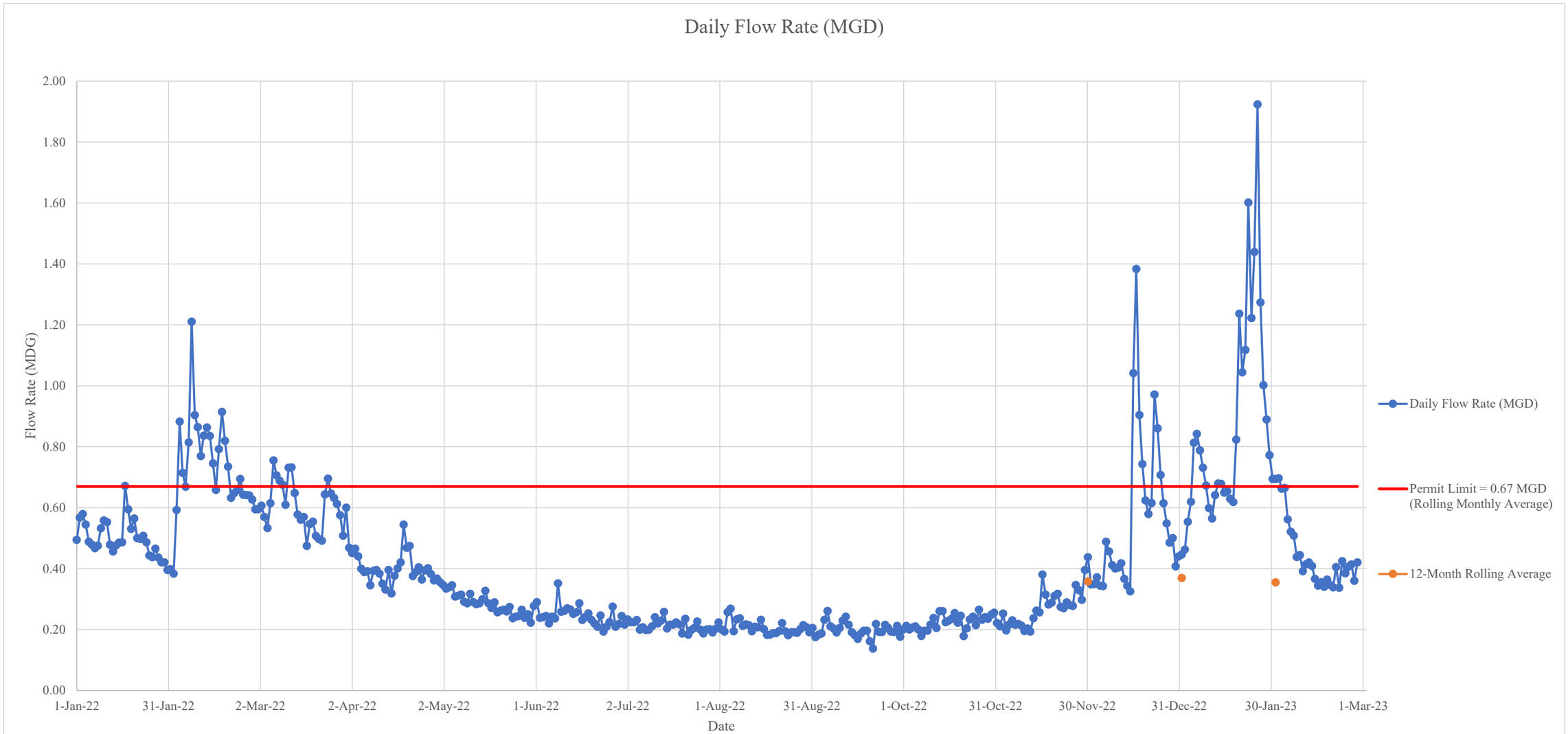


Figure A-1: Daily Flow Rate at Manchester-by-the-Sea Wastewater Treatment Plant

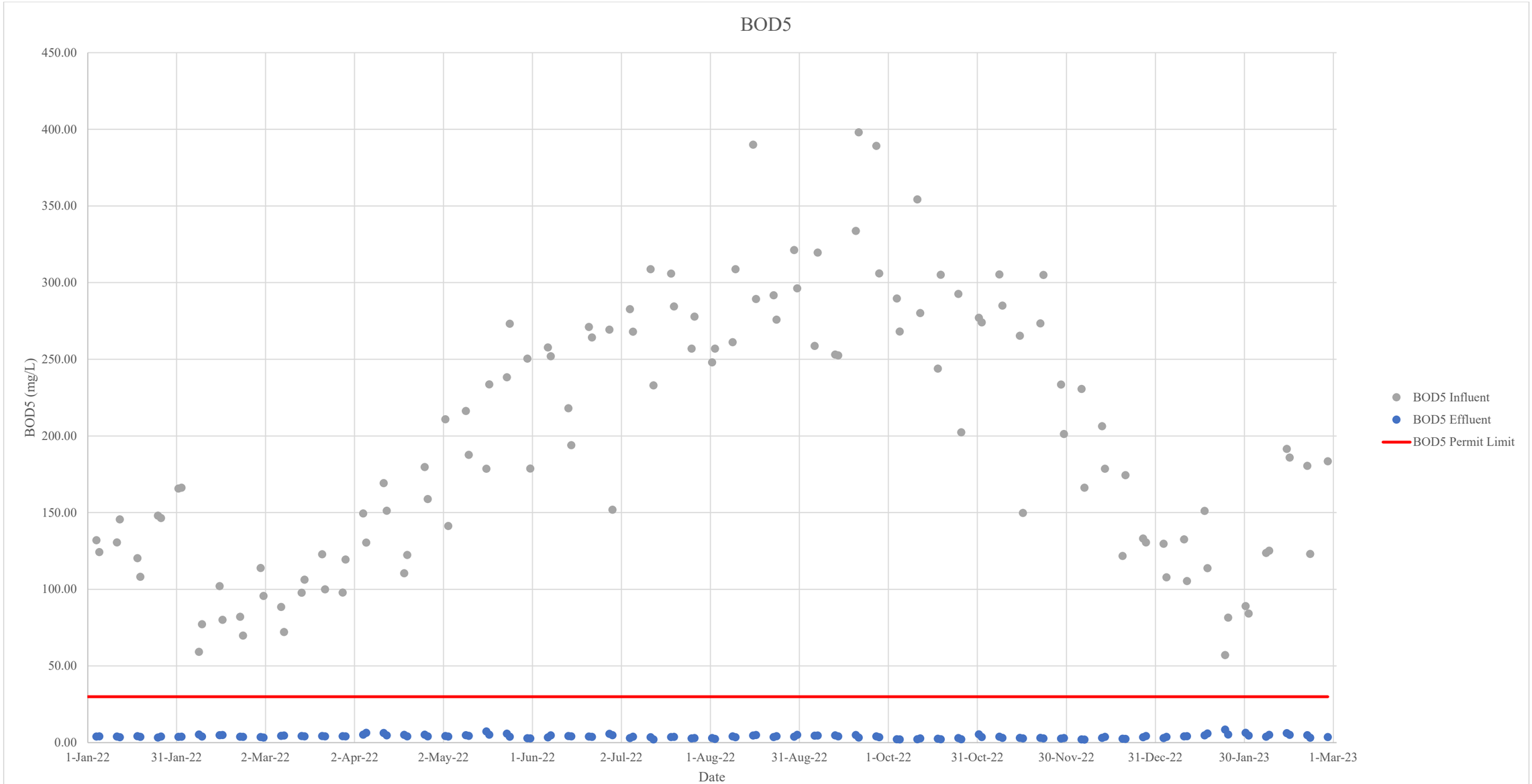


Figure A-2: BOD5 at Manchester-by-the-Sea Wastewater Treatment Plant

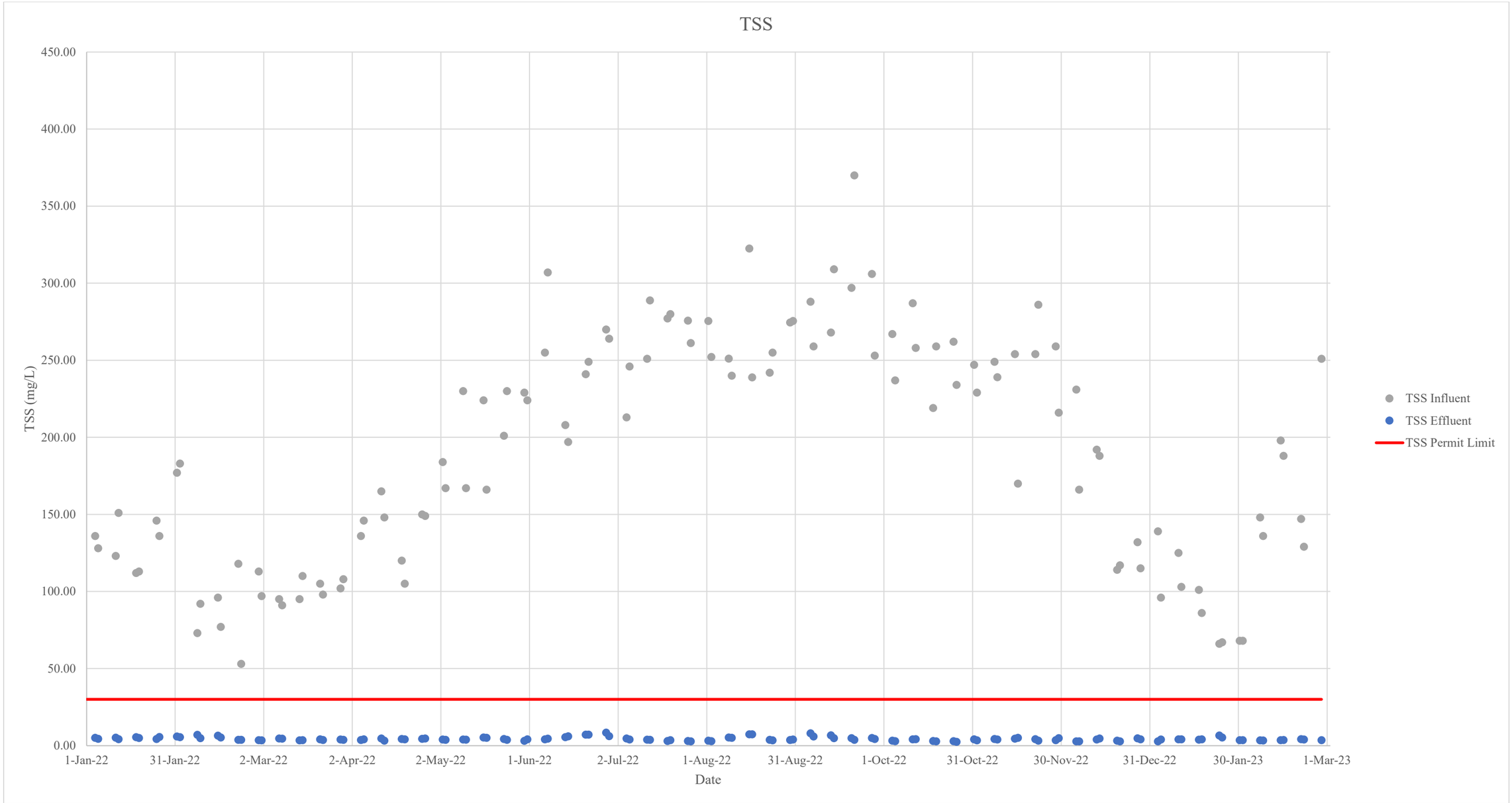


Figure A-3: Total Suspended Solids (TSS) at Manchester-by-the-Sea Wastewater Treatment Plant

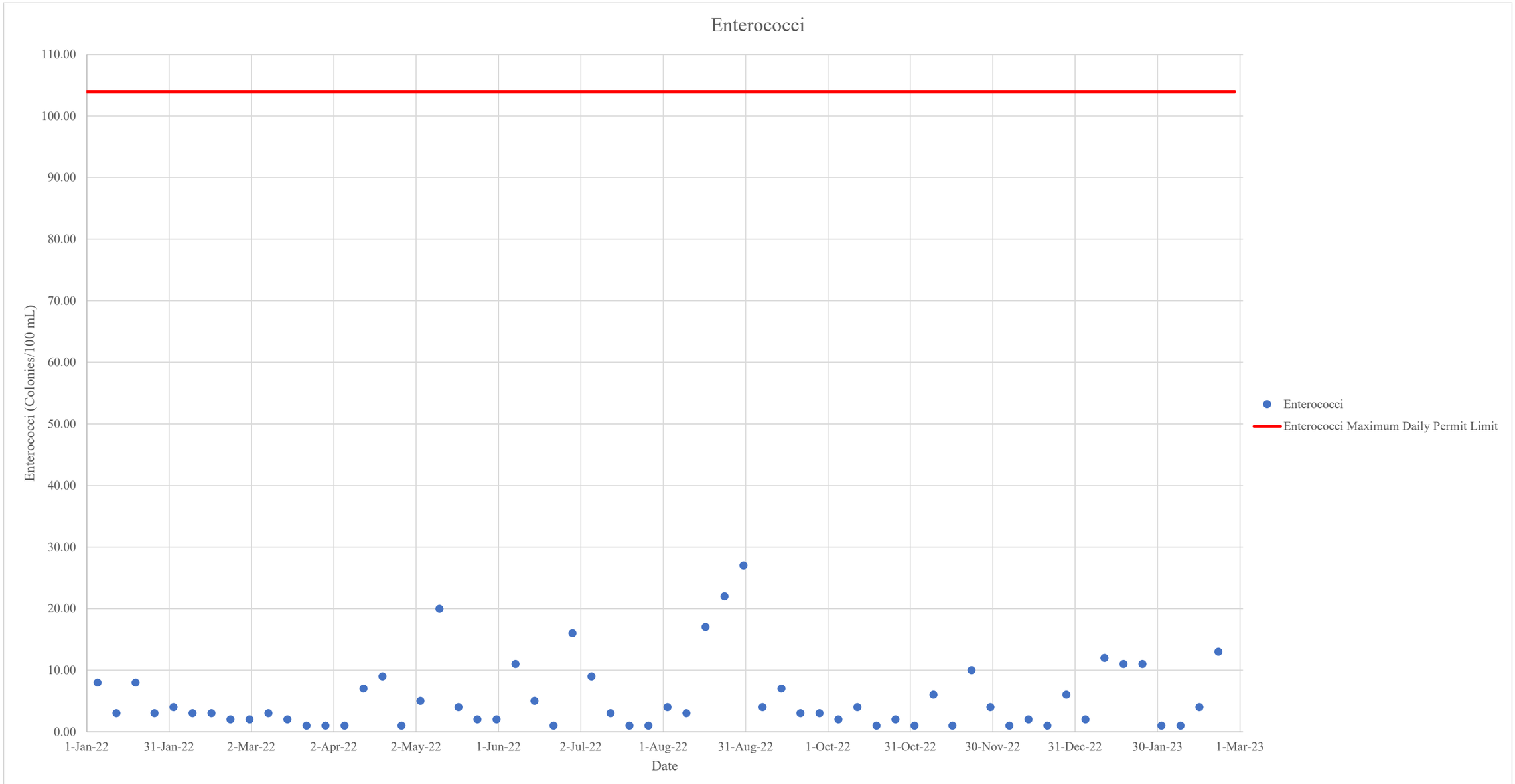


Figure A-4: Enterococci at Manchester-by-the-Sea Wastewater Treatment Plant

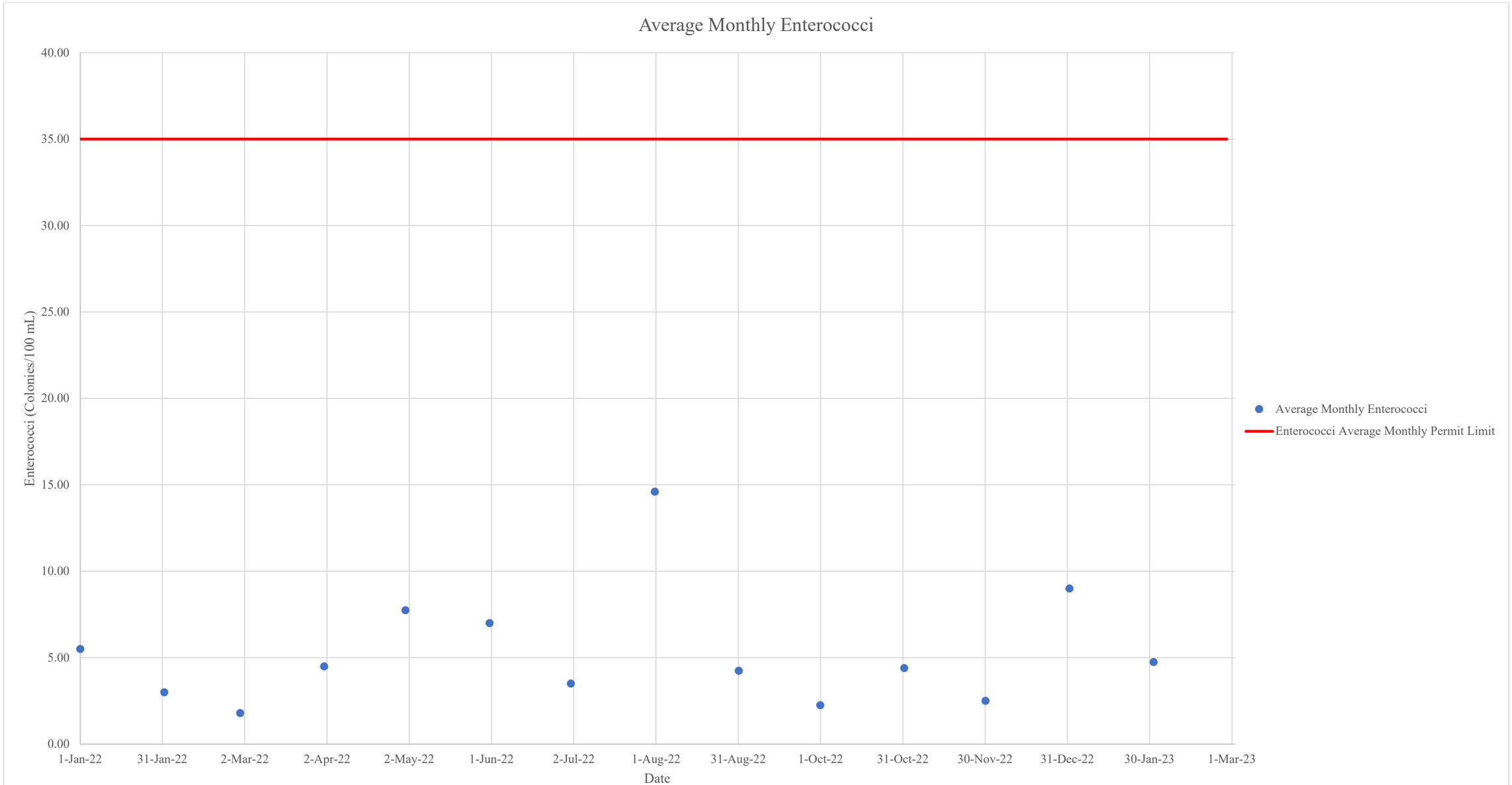


Figure A-5: Average Monthly Enterococci at Manchester-by-the-Sea Wastewater Treatment Plant

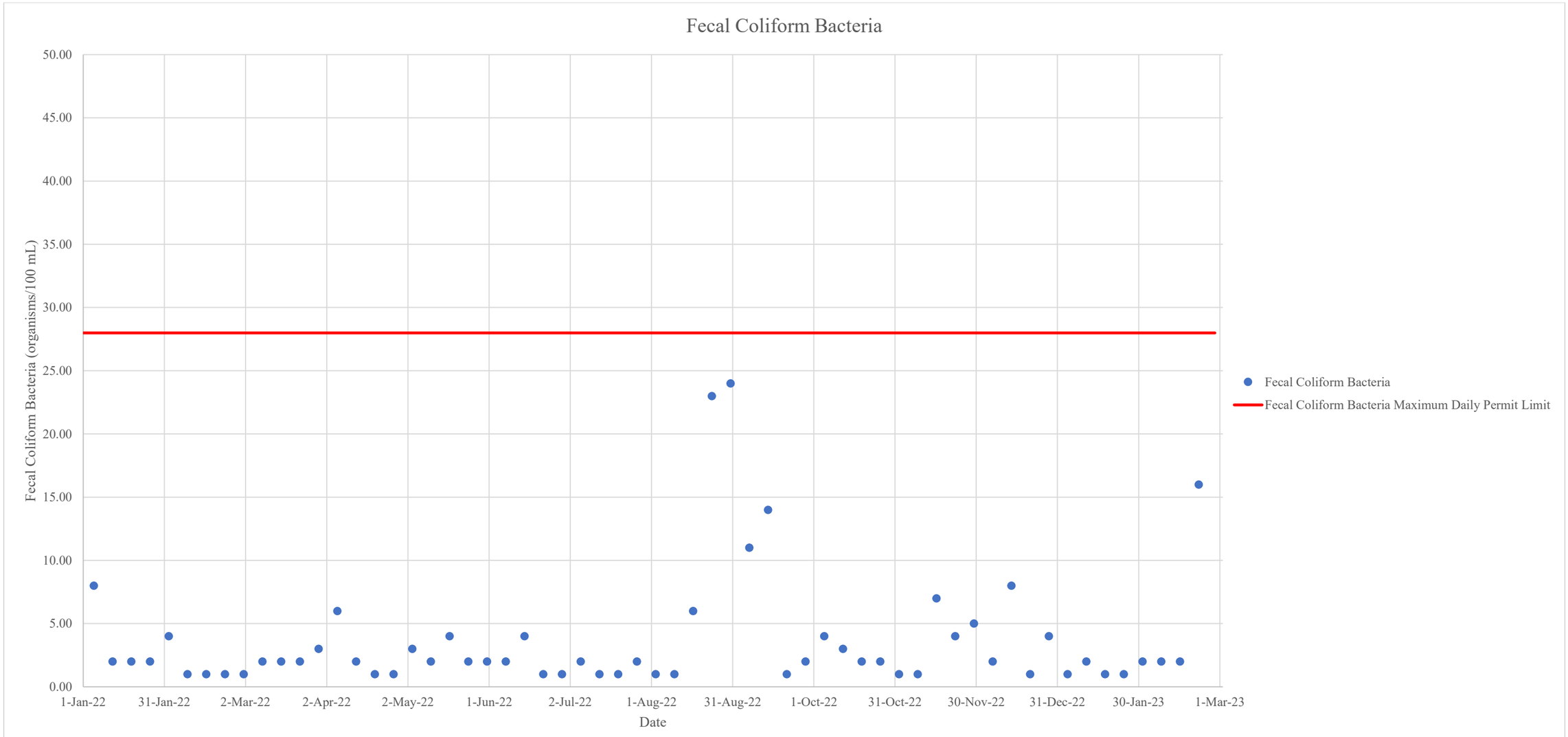


Figure A-6: Fecal Coliform Bacteria at Manchester-by-the-Sea Wastewater Treatment Plant

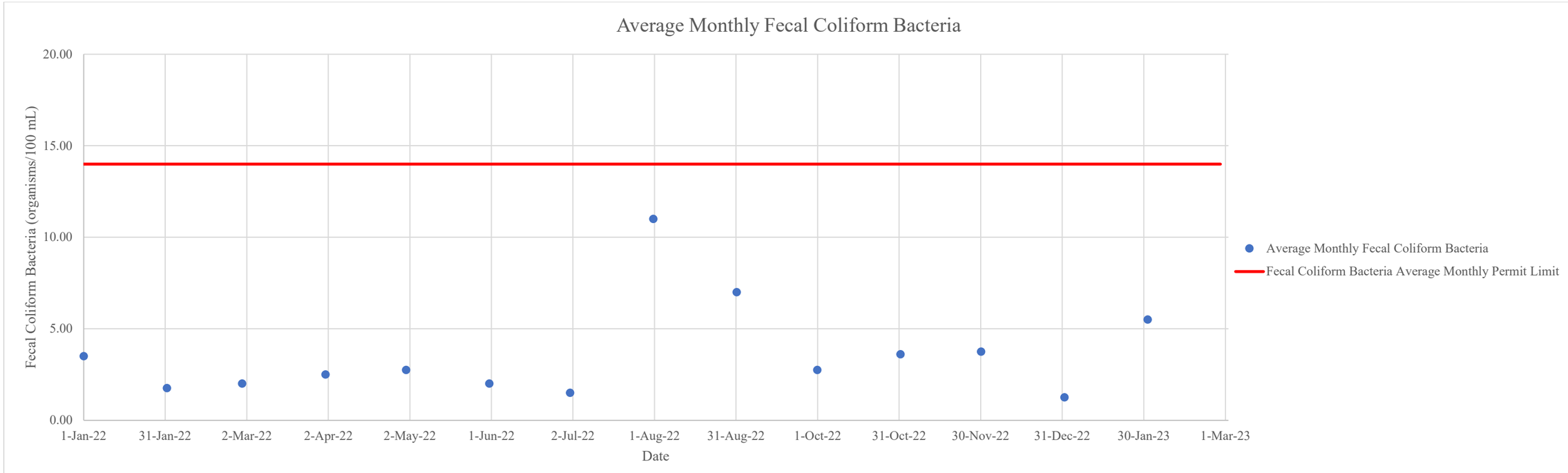


Figure A-7: Average Monthly Fecal Coliform Bacteria at Manchester-by-the-Sea Wastewater Treatment Plant

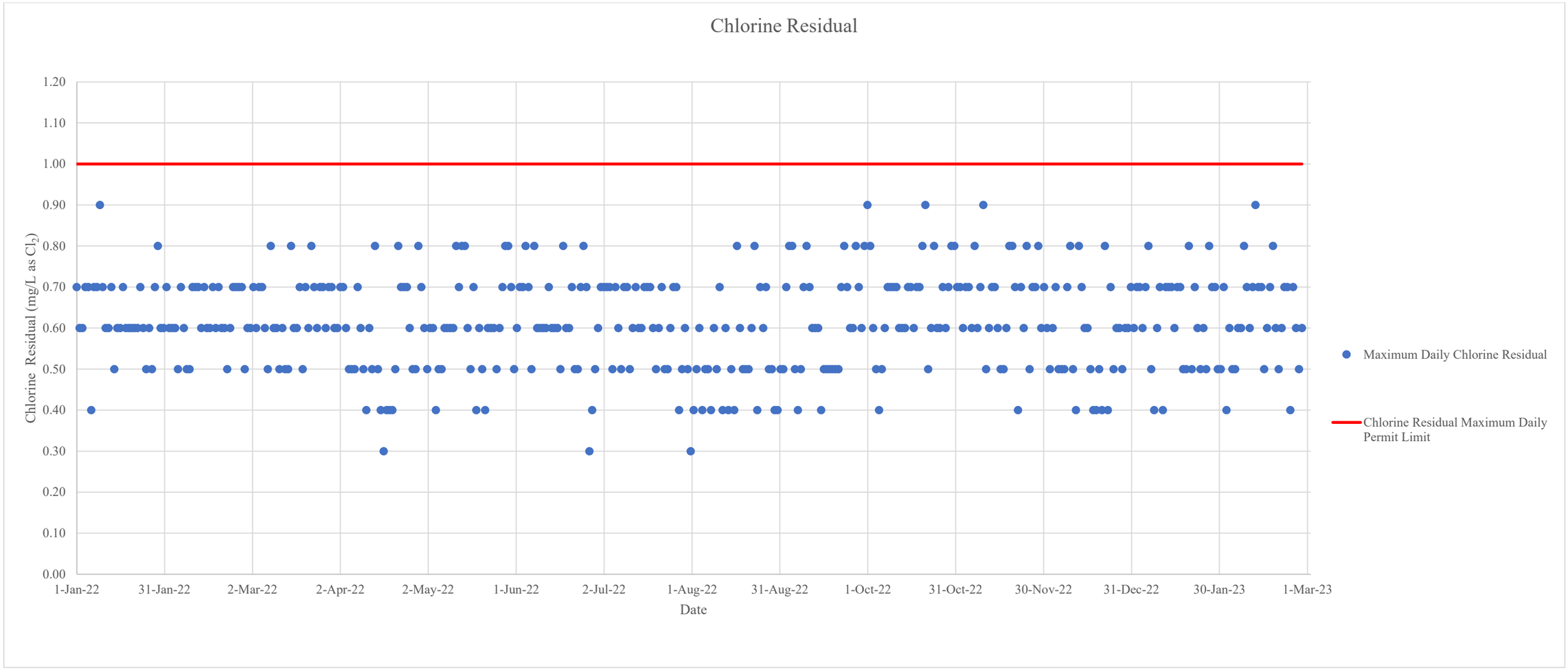


Figure A-8: Chlorine Residual at Manchester-by-the-Sea Wastewater Treatment Plant

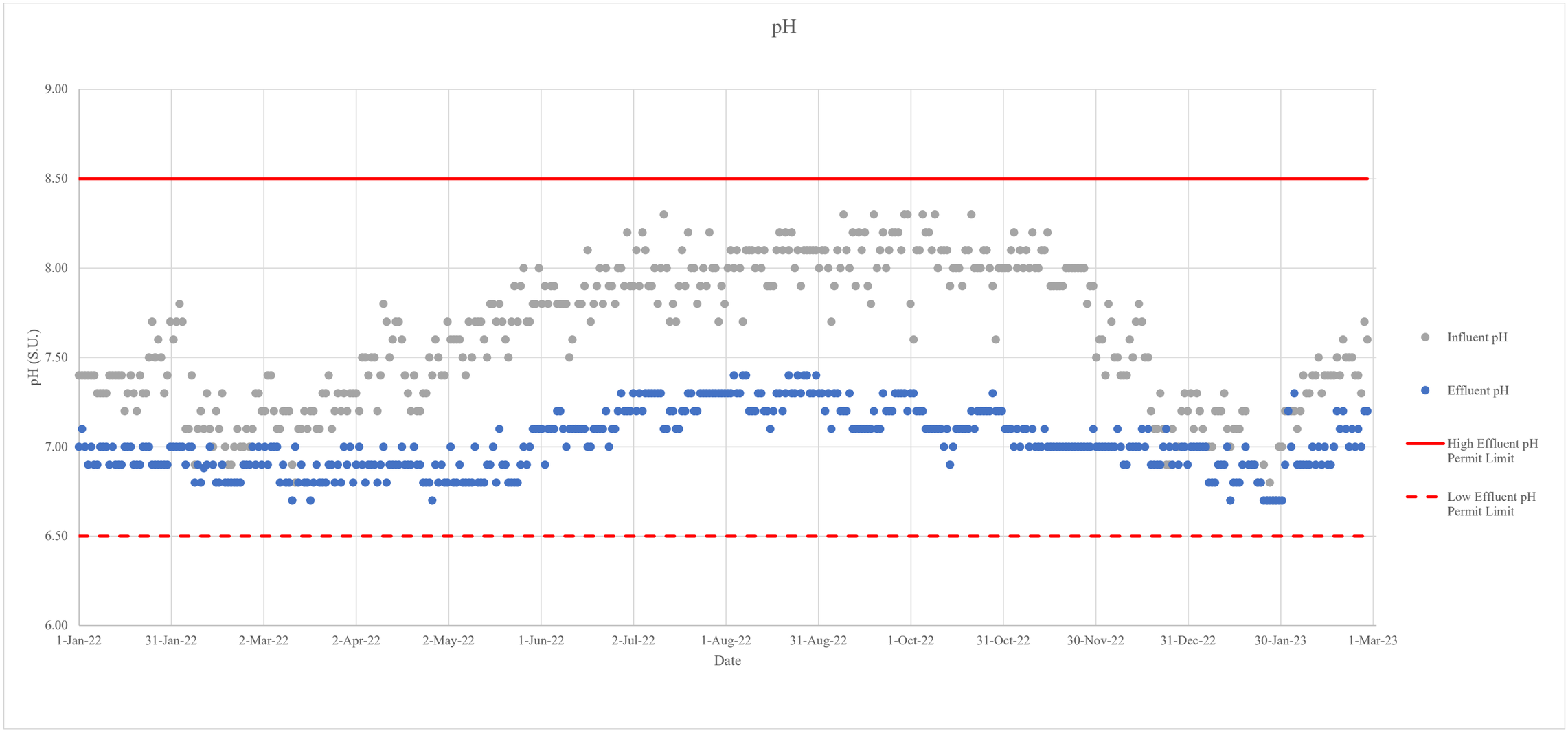


Figure A-9: pH at Manchester-by-the-Sea Wastewater Treatment Plant

Appendix B

TATA & HOWARD

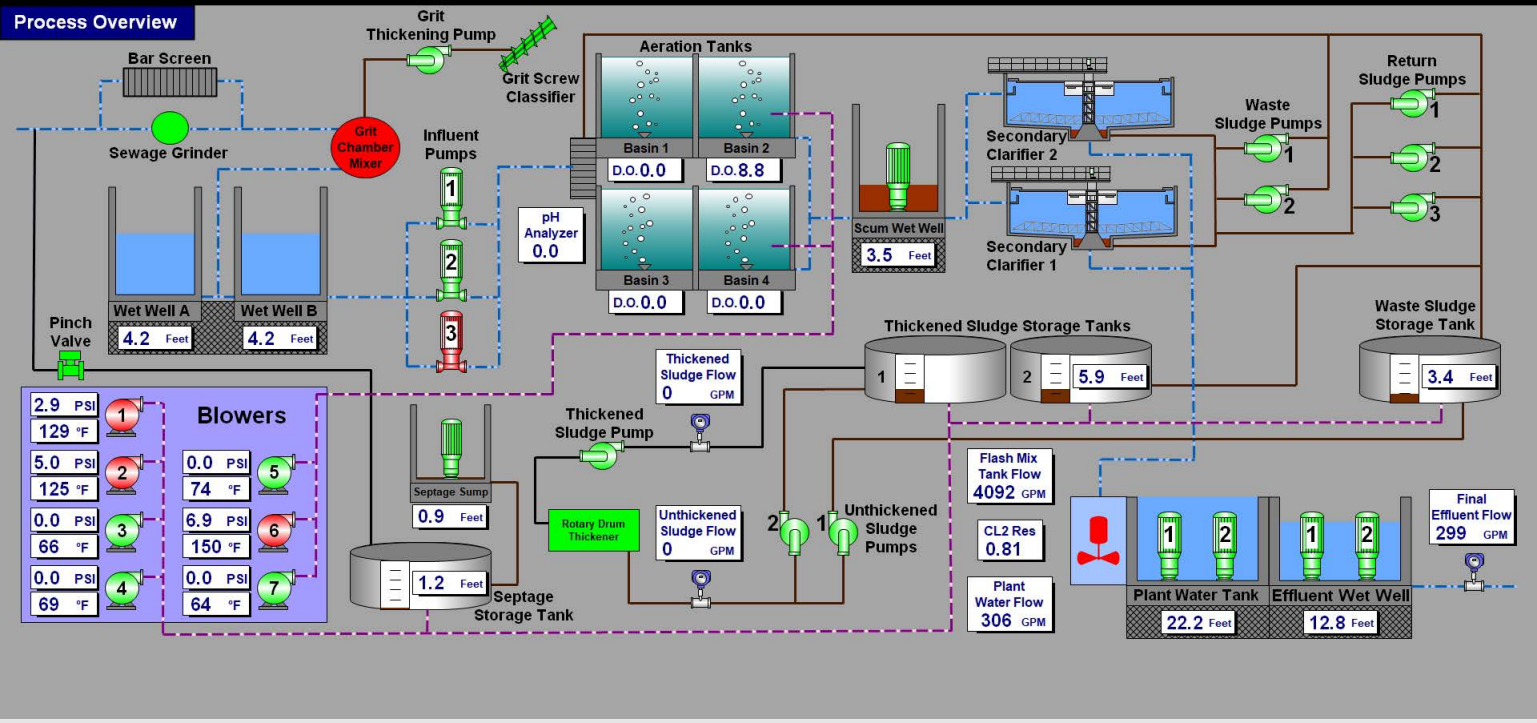
Manchester By The Sea
Wastewater Treatment Facility
5/17/2023 8:07:38 AM

Ack	Date In	Time In	Description	Status	Value

Acknowledge Alarms | Alarm Summary | Alarm History

Plant Overview | System Status | Historical Trends | Bio-Filter System | Redundancy

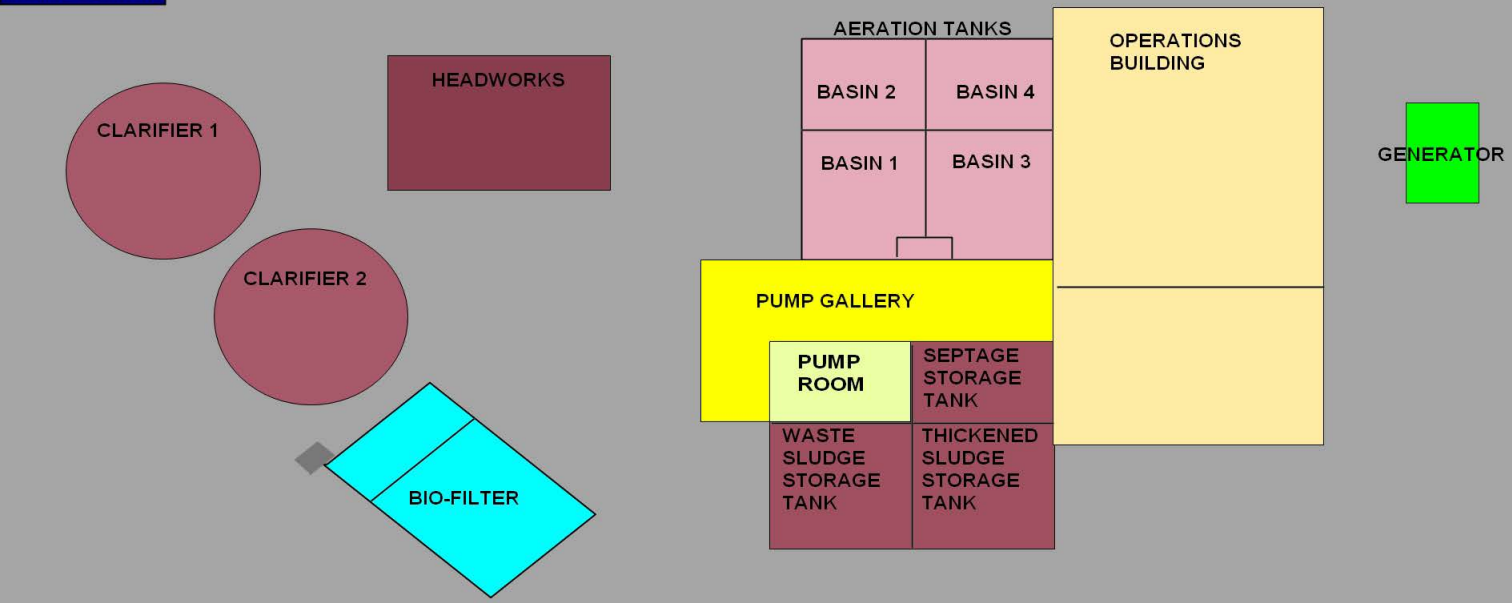
Process Overview



Manchester By The Sea
Wastewater Treatment Facility

5/17/2023 8:08:28 AM

Plant Overview



Manchester By The Sea
Wastewater Treatment Facility

5/17/2023 8:07:56 AM

Alarm Summary

Acknowledge Alarms

Alarm History

Ack	Date In	Time In	Description	Status	Value

Manchester By The Sea
Wastewater Treatment Facility

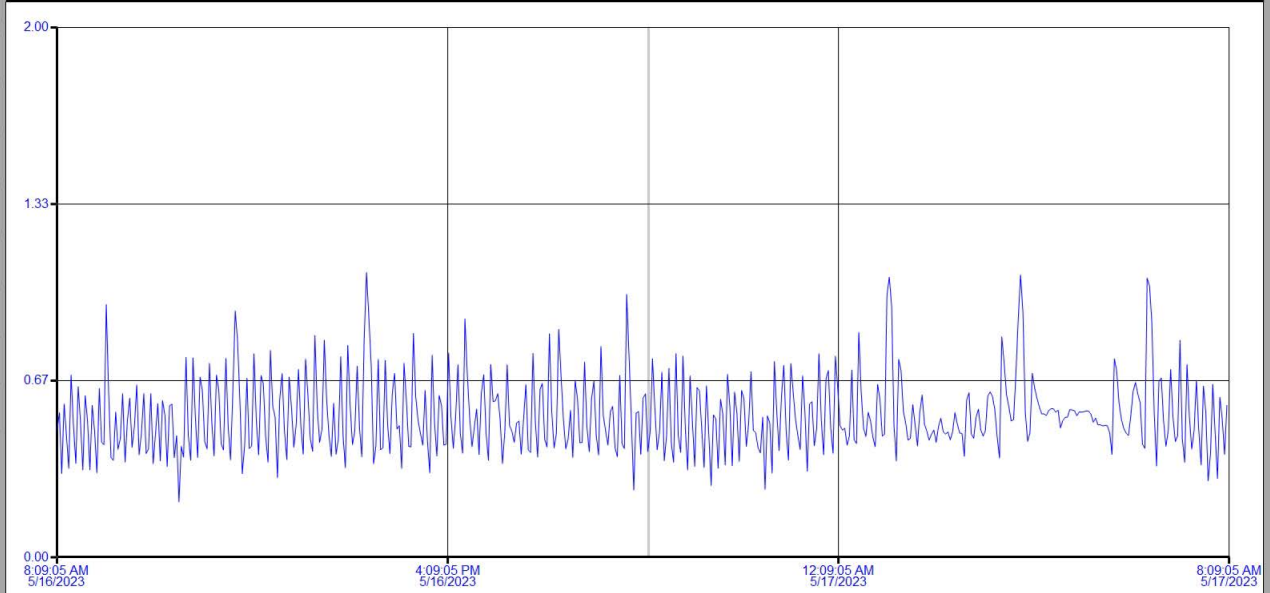
5/17/2023 8:09:10 AM

Historical Trends

Configure Trend Groups

- Blower Runtime Hours
- Blower Speed
- Blower Temps
- CL2
- Chlorine Residual
- Chlorine Res. and Flows
- D.O.
- Effluent Flow Totals
- Effluent Wetwell
- Influent WW Level and Speed
- Grit Mixer
- Influent Wetwells
- Influent WW Lvl and Pump Stat
- Scum Pit
- Return Activated Sludge
- Waste Sludge
- T.S.

◀◀ ◀ 1 Month | 1 Week | 4 Days | 2 Days | 1 Day | 12 Hours | 8 Hours | 4 Hours | 2 Hours | 1 Hour | 30 Min | ▶ ▶▶ Current Time



CHLORINE RESIDUAL LEVEL PPM (F_CV)	0.42		0.00	2.00
SCADA.CL2_P1_SPD_AB.F_CV	0.01	%	0.00	100.00
SCADA.CL2_P2_SPD_AB.F_CV	0.00	%	0.00	100.00

8:00 AM | Reset Zoom

Manchester By The Sea
Wastewater Treatment Facility

5/17/2023 8:09:32 AM

Redundancy

LOGICAL Node Name:
SCADA

Primary:	
Node Name:	SCADA1
Primary IP Address:	3.0.0.155
Backup IP Address:	

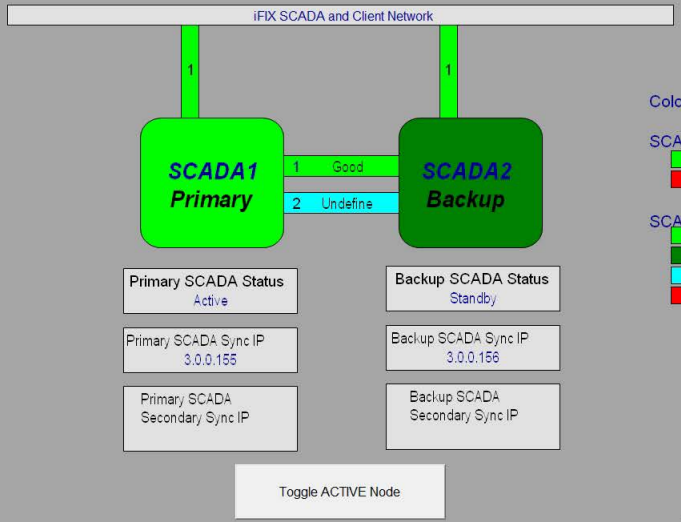
Backup:	
Node Name:	SCADA2
Primary IP Address:	3.0.0.156
Backup IP Address:	

PDB Sync:	
Duration:	11.327
Update Count:	51,520
PDB Tag Count:	2,074

Client Connection to SCADA:

Toggle Auto Failover

Toggle Current SCADA



Color Key:

SCADA Sync Link:
- OK
- (blinking) Failed or low reliability

SCADA Nodes
- OK - Active
- OK - OK Standby
- Maintenance Mode (Primary ONLY)
- Lost iFIX Client/Server Communications

Open SCADASyncMonitor

Manchester By The Sea
Wastewater Treatment Facility

5/17/2023 8:08:39 AM

System Status

Flow Item	Flow GPM	Runtime HRS		Flow Totals Today	Yesterday	Total x1000
Effluent Flow	293	86.346	R	0.032	5.452	
Flash Mix Tank Flow	4092					32767
Plant Water Flow	306					20505
Return Sludge Flow	3					685
Thickened Sludge Flow	0					25475
Unthickened Sludge Flow	0					23169
Waste Sludge Flow	0					30672

Blower	Speed RPM	Runtime HRS		Temp °F	Pressure PSI
Sludge Blower 1	1235	839	R	128.7	2.9
Sludge Blower 2	1051	840	R	124.9	5.0
Sludge Blower 3	3	268	R	65.9	0.0
Sludge Blower 4	4	162	R	69.0	0.0
Aeration Blower 5	0	26	R	74.0	0.0
Aeration Blower 6	47	65	R	150.3	6.9
Aeration Blower 7	0	1021	R	64.4	0.0

Level Item	Level Feet
Influent Wetwell A Level	4.2
Influent Wetwell B Level	4.3
Scum Wetwell Level	3.5
Septage Sump Level	0.9
Septage Storage Level	1.2
Thickened Sludge Tank Level	5.8
Waste Sludge Tank Level	3.4

D.O. Tanks	Level PPM
Dissolved Oxygen 1	0.0
Dissolven Oxygen 2	8.9
Dissolved Oxygen 3	0.0
Dissolved Oxygen 4	0.0

Item Description	RPM %	Runtime HRS	
CL2 Pump 1	0	8192	R
CL2 Pump 2	0	8192	R
Effluent Pump 1	306	2307	R
Effluent Pump2	3	5877	R
Grit Thickening Pump		1491	R
Influent Pump 1	0	311	R
Influent Pump 2	0	8192	R
Influent Pump 3	57	326	R
Plant Water Pump 1		0	R
Plant Water Pump 2		0	R
Return Sludge Pump 1	0	8192	
Return Sludge Pump 2	0	8192	
Return Sludge Pump 3	0	8192	
Scum Pump 1		664	R
Septage Sump Pump 1	0	291	
Thickened Sludge Pump		0	
USL Pump 1		1428	R
USL Pump 2		1393	R
Waste Sludge Pump 1	0	22	R
Waste Sludge Pump 2	0	36	R
Air Handling Unit 2		19625	R
Air Handling Unit 3		22609	R
Air Handling Unit 4		22103	R
Biofilter Blower	83	12341	R
Exhaust Fan		30942	R
Flash Mixer		0	R
Generator		870	R
Grit Chamber Mixer	41	8192	R
Grit Screw Classifier	0	8192	R
Polymer System		8051	R
Rotary Drum Thickener		0	R
Sec. Clarifier 1		10056	R
Sec. Clarifier 2		17172	R

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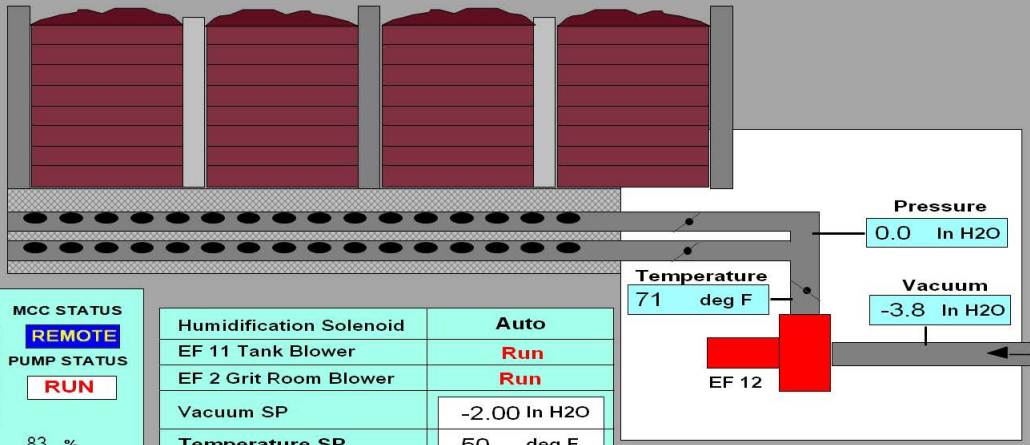
5/17/2023 8:09:21 AM

Bio-Filter System



EF- 12

MCC STATUS: REMOTE

RUN

PUMP STATUS: RUN

OFF

SPEED 83 %

RUNTIME 12341 HRS

FAIL DELAY (SECS) 90

Humidification Solenoid	Auto
EF 11 Tank Blower	Run
EF 2 Grit Room Blower	Run
Vacuum SP	-2.00 In H2O
Temperature SP	50 deg F

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5/17/2023 8:10:08 AM

Storage Tank Blower Control

BLOWER 1	BLOWER 2	BLOWER 3	BLOWER 4
MCC Status: LOCAL	MCC Status: LOCAL	MCC Status: LOCAL	MCC Status: LOCAL
Pump Status: RUNNING, M1	Pump Status: RUNNING, M1, THK	Pump Status: OFF, SEP	Pump Status: OFF, M1, WST
Hand / Off / Auto	Hand / Off / Auto	Hand / Off / Auto	Hand / Off / Auto
Mode Select: M1 M2 M3	Mode Select: M1 M2 M3	Mode Select: M1 M2 M3	Mode Select: M1 M2 M3
Runtime: 839 HRS	Runtime: 840 HRS	Runtime: 268 HRS	Runtime: 162 HRS
Air Flow: 220 ICFM	Air Flow: 322 ICFM	Air Flow: 0 ICFM	Air Flow: 1 ICFM
VFD Output: 1235 RPM	VFD Output: 1051 RPM	VFD Output: 3 RPM	VFD Output: 4 RPM
Speed Select	Speed Select	Speed Select	Speed Select
Auto: 60 %	Auto: 60 %	Auto: 0 %	Auto: 0 %
Manual: 60 %	Manual: 60 %	Manual: 60 %	Manual: 0 %

Blower Setup

	Blower 1	Blower 2	Blower 3	Blower 4
HI Temp SP	200 °F	200 °F	200 °F	200 °F
Air Temp	129 °F	125 °F	66 °F	69 °F

Waste Sludge Tank	Thickened Sludge Tank	Septage Storage Tank
Level (Feet)	Level (Feet)	Level (Feet)
3.41	5.84	1.11
CFM per1000 CuFt	CFM per1000 CuFt	CFM per1000 CuFt
5	5	5

Tank Control

TOD Control

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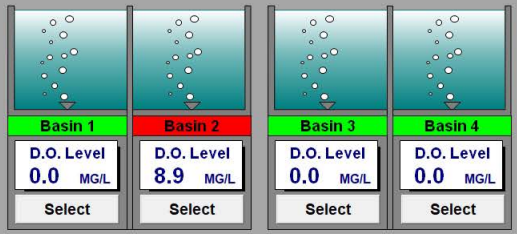
Wastewater Treatment Facility

5/17/2023 8:10:15 AM

Aeration Tank Blower Control

	BLOWER 5	BLOWER 6	BLOWER 7
P7 SW Status	REMOTE	REMOTE	REMOTE
Pump Status	OFF	RUNNING	OFF
		LEAD	
Hand			
Off			
Auto			
			LAG
	STANDBY		
Runtime	26 HRS	65 HRS	1021 HRS
Air Pressure	0.0 PSI	6.9 PSI	0.0 PSI
Air Temp	74 °F	150 °F	64 °F
HI Temp SP	200 °F	200 °F	200 °F
Mode Select	LEAD / LAG / STDBY	LEAD / LAG / STDBY	LEAD / LAG / STDBY
Speed Select			
Auto	50.0 %	50.0 %	50.0 %
Manual	50.0 %	50.0 %	50.0 %
Speed %	0 %	47 %	0 %

ALARM RESET



D.O. Level Setpoint	4.0
LO D.O. Alarm Setpoint	0.0

Blower Cycle Timer

OnTime Minutes		Off Time Minutes	
SP Minutes	ACC	SP Minutes	ACC
45	55	15	11

Time of Day Control Overrides Cycle Timer

PLC Clock	TOD Control	STOP	START	STOP	START
1931	Blowers 5,6,7	1200	1400	1500	1700

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5/17/2023 8:10:26 AM

Storage Tank Active Setpoints

Waste Sludge Tank	Thick Sludge Tank	Septage Storage	Septage Pump
HIGH Alarm 12.0	HIGH Alarm 12.0	HIGH Alarm 10.0	
High Level Deactivate R 12.0	High Level Deactivate R 12.0	High Level Deactivate R 9.0	
Reactivate F 10.0	Reactivate F 10.0	Reactivate F 4.0	Reactivate R 1.0
Reactivate R 3.0	Reactivate R 3.0	Reactivate R 1.0	Deactivate F 0.8
Low Level Deactivate F 2.5	Low Level Deactivate F 1.0	Low Level Deactivate F 1.0	LOW Alarm Reset 0.9
LOW Alarm 0.0	LOW Alarm 0.0	LOW Alarm 0.5	LOW Alarm 0.3
17.0 FT	17.0 FT	17.0 FT	18.0 FT

EXIT

= Tank Active
= Not Active

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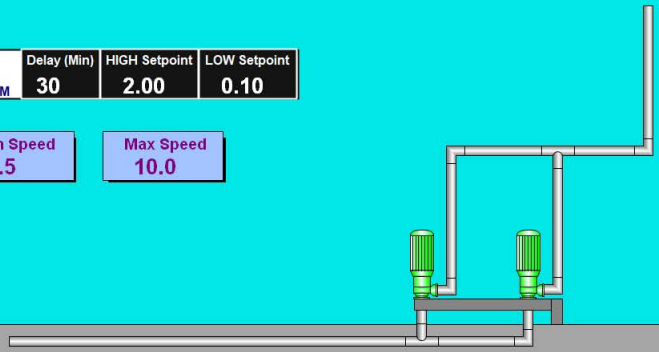
5/17/2023 8:11:17 AM

Chlorine Residual

Chlorine Alarms	Delay (Min)	HIGH Setpoint	LOW Setpoint
CL2 Residual 0.46 PPM	30	2.00	0.10

Level Setpoint	Min Speed	Max Speed
0.45	0.5	10.0



PID Loop

Pacing Speed
0.5 %

CL2 Res P1	CL2 Res P2
8192 HRS	8192 HRS

Pump #1	Pump #2
Speed 0 %	Speed 0 %
Runtime 0 HRS	Runtime 0 HRS

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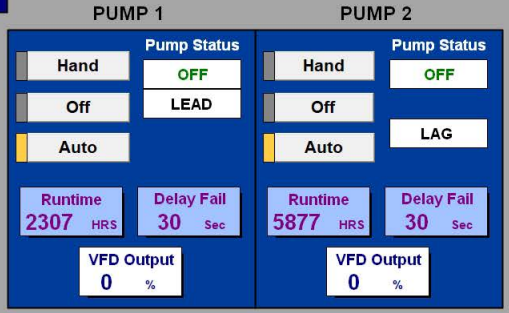
Effluent Pump Control



Lead Pump Not Required

Auto Alternation Selected

Auto/Manual Alternate

Lead Select

IF WETWELL GOES INTO HIGH OR LOW ALARM
THE ON/OFF CONTROL IS SWITCHED FROM THE
ULTRASONIC LEVEL TO THE FLOAT LEVEL CONTROL.
THE PUMPS WILL CONTINUE TO CONTOL BASED ON FLOATS
UNTIL THE OPERATOR SELECTS AUTO/ULTRASONIC CONTROL.
BOTH EFFLUENT PUMPS WILL BE REQUIRED TO RUN WHEN THE HIGH FLOAT IS TRIPPED
BYPASSING THE AUTOMATIC PUMP ALTERNATOR

Pump Activation

HIGH Alarm
12.0

Lead Start
12.0

Pumps Stop
10.0

LOW Alarm
3.0

Wet Well Level
14.33 Feet

Wet Well Level Setpoint
11.00

Effluent Flow
291 GPM

VFD Min Speed
45

VFD Max Speed
90

Alarm Reset

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5/17/2023 8:11:27 AM

Flash Mixer Control

FLASH MIXER

Hand	Mixer Status
Off	Running

Mix Tank Flow	Runtime
311 GPM	8192 HRS

Wet Well Level
14.29 Feet

Effluent Flow
311 GPM

High Flow Alarm

Effluent Flow 311 GPM

Delay (Sec)	HIGH SP	Reset	Enable
900	1750.		

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5/17/2023 8:09:48 AM

Grit Chamber Control

GRIT PUMP

Hand
Off
Auto

Pump Status: OFF

Runtime: 1491 HRS

Delay Fail: 60 Sec

GRIT CLASSIFIER

Hand
Off
Auto

Classifier Status: OFF

Runtime: 8192 HRS

Delay Fail: 60 Sec

Off Delay: 4 Sec

GRIT CHAMBER MIXER

Hand
Off

Chamber Status: RUNNING

Runtime: 8192 HRS

Speed %: 41 %

Delay Fail: 60 Sec

Grit Pump GT-1 Activation

On Time Seconds		Off Time Seconds	
SP Seconds	ACC	SP Seconds	ACC
240	0	30	9

Effluent Flow
293 GPM

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Wastewater Treatment Facility

5/17/2023 8:09:59 AM

Influent Pumps Control

IP- 1	WW-B	IP- 2	WW-A	IP- 3	WW-A
RUN	MCC STATUS: REMOTE	RUN	MCC STATUS: REMOTE	RUN	MCC STATUS: REMOTE
OFF	PUMP STATUS: STDBY	OFF	PUMP STATUS: LAG	OFF	PUMP STATUS: LEAD
ACTIVE	OFF	ACTIVE	OFF	ACTIVE	ON
RUNTIME HRS 311		RUNTIME HRS 8192		RUNTIME HRS 326	
VFD OUTPUT 0 %		VFD OUTPUT 0 %		VFD OUTPUT 57 %	
FAIL DLY (SEC) 60		FAIL DLY (SEC) 60		FAIL DLY (SEC) 60	
PUMP 1 LEAD SELECT		PUMP 2 LEAD SELECT		PUMP 3 LEAD SELECT	
PUMP 1 LAG SELECT		PUMP 2 LAG SELECT		PUMP 3 LAG SELECT	
PUMP 1 STANDBY SELECT		PUMP 2 STANDBY SELECT		PUMP 3 STANDBY SELECT	

LEAD PUMP REQUIRED

IN MANUAL ALTERNATE

MANUAL ALTERNATION SELECT

AUTO ALTERNATION SELECT

LAG PUMP NOT REQUIRED

VFD MIN SPEED	VFD MAX SPEED
45	100

PUMP ACTIVATION

	WW A	WW B
HIGH ALARM	6.0	6.0
LAG START	5.0	5.0
LEAD START	3.5	3.5
LAG STOP	4.5	4.5
LEAD STOP	3.0	3.0
LOW ALARM	2.5	2.5

CONTROLLING WETWELL

WETWELL A

WETWELL B

WETWELL LVL SETPOINT: 4.20

WETWELL A LEVEL	WETWELL B LEVEL
4.20	4.23

GRINDER RUNNING

ALARM RESET

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Wastewater Treatment Facility

5/17/2023 8:12:37 AM

Pinch Valve Control

PINCH VALVE

MCC Status	Valve Status
LOCAL	CLOSE

Open
Close
Auto

Remote Operation of Pinch Valve

	Start Times	Close By Volume	Duration Open
1	100	5 X100 Gals	10 Mins
2	200	5 X100 Gals	
3	300	5 X100 Gals	
4	400	5 X100 Gals	
5	500	5 X100 Gals	

PLC Clock
1934

Septage Storage Level	Septage Storage Volume at Start
1.11 Feet	570 X100 Gals

Septage Sump Level	Septage Storage Volume Released
0.84 Feet	0 X100 Gals

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Wastewater Treatment Facility

5/17/2023 8:11:48 AM

Return Sludge Pump Control

PUMP 1

MCC Status: LOCAL
Pump Status: OFF
Hand
Off
Auto
Delay Fail: 75 Sec
Runtime: 8192 HRS
VFD Output: 0 %

Speed Select

A/M Speed	67	%
Flushing Speed	95	%
Flushing Period	150	Min
Flushing Duration	10	Min
Accumulator	0	Min

Flush On

IN FLUSH

PUMP 2

MCC Status: LOCAL
Pump Status: OFF
Hand
Off
Auto
Delay Fail: 75 Sec
Runtime: 8192 HRS
VFD Output: 0 %

Speed Select

A/M Speed	67	%
Flushing Speed	95	%
Flushing Period	150	Min
Flushing Duration	10	Min
Accumulator	0	Min

Flush On

IN FLUSH

PUMP 3

MCC Status: LOCAL
Pump Status: OFF
Hand
Off
Auto
Delay Fail: 75 Sec
Runtime: 8192 HRS
VFD Output: 0 %

Speed Select

A/M Speed	65	%
Flushing Speed	95	%
Flushing Period	150	Min
Flushing Duration	10	Min
Accumulator	0	Min

Flush On

IN FLUSH

Return Sludge Flow
0 GPM

Waste Storage Level
3.42 Feet

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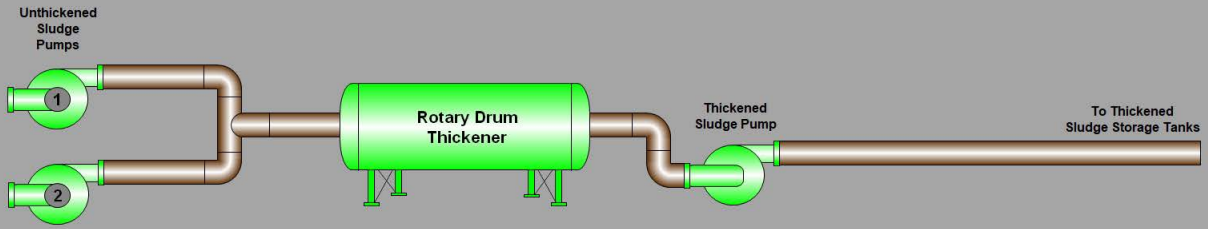
Rotary Drum Thickener



XFER Pump On Delay	140 SEC
Poly & USL On Delay	40 SEC
XFER Pump Off Delay	140 SEC
Washdown Cycle Delay	10 MIN

Thickened Sludge Flow (FE-1005)	Unthickened Sludge Flow (FE-1006)
0.00	1.17

Waste Storage Level	Thickened Sludge Storage Level
3.40	5.84

Septage Storage Level	Septage Sump Level
1.20	0.92

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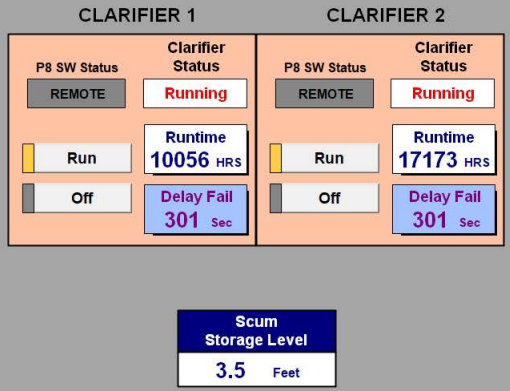
Secondary Clarifier Control



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Septage Pump Control

PUMP 1

Hand
Off
Auto

Pump Status: OFF

Runtime: 291 HRS

VFD Output: 0 %

Delay Fail: 60 Sec

Waste Storage Level	Thickened Sludge Storage Level
3.41 Feet	5.74 Feet

Septage Storage Level	Septage Sump Level
1.12 Feet	0.92 Feet

Thickened Sludge Flow (FE-1005)	Unthickened Sludge Flow (FE-1006)
0.00 GPM	2.27 GPM

Waste Sludge Tank	Thick Sludge Tank	Septage Storage Tank	Septage Sump
HIGH Alarm Deactivate 15.0	HIGH Alarm Deactivate 17.0	HIGH Alarm 16.3	HIGH Alarm 16.4
HIGH Reactivate 10.0	HIGH Reactivate 10.0		
LOW Reactivate 3.0	LOW Reactivate 3.0		
LOW Alarm Deactivate 2.5	LOW Alarm Deactivate 2.5	LOW Alarm 1.0	LOW Alarm 0.2
3.5 FT	5.8 FT	1.1 FT	0.9 FT

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5/17/2023 8:12:08 AM

Scum Pump Control

SCUM PUMP

MCC Status: LOCAL

Pump Status: OFF

Hand

Off

Auto

Runtime: 664 HRS

Delay Fail: -268 Sec

Scum Tank	Waste Sludge Tank
HIGH Alarm: 15.0	HIGH Alarm Deactivate: 10.0
Activate Level: 10.0	Reactivate: 12.0
Deactivate: 1.0	
LOW Alarm Deactivate: 3.6	

Scum Storage Level	Waste Storage Level
3.49	3.38

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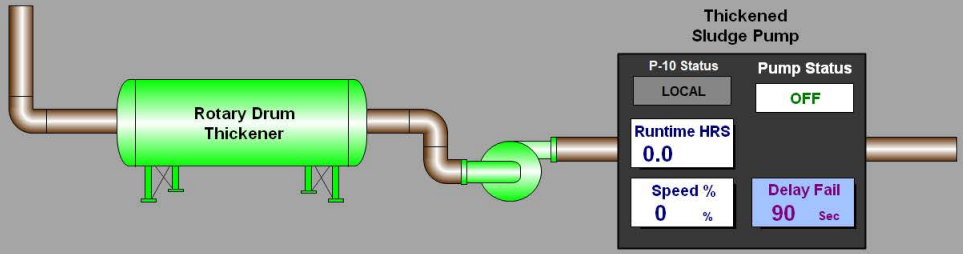
5/17/2023 8:11:01 AM

Thickened Sludge Pump Control



Thickening Autocycle

Pump On Delay	Pump Off Delay
0 Sec	0 Sec

Septage Storage Level	Septage Sump Level	Waste Storage Level
1.20	0.88	3.45

Thickened Sludge Storage Level	Thickened Sludge Flow (FE-1005)	Unthickened Sludge Flow (FE-1006)
5.88	0.41	0.00

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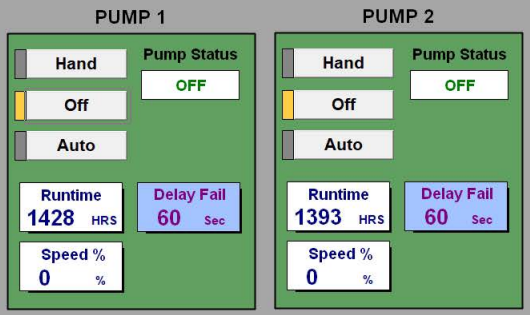
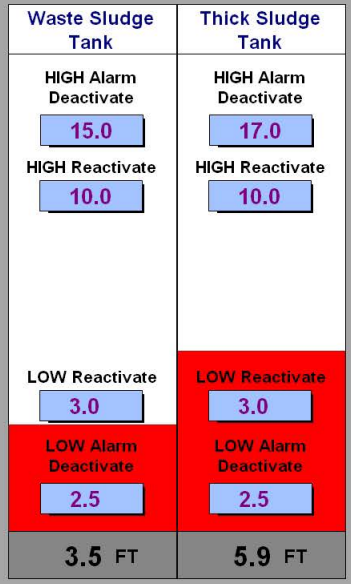
5/17/2023 8:11:09 AM

Unthickened Sludge Pump Control



Waste Sludge Flow	Septage Storage Level	Septage Sump Level
8.22	1.12	

Waste Storage Level	Thickened Sludge Storage Level	Thickened Sludge Flow (FE-1005)	Unthickened Sludge Flow (FE-1006)
3.47	5.89	0.00	5.88



Tank Select

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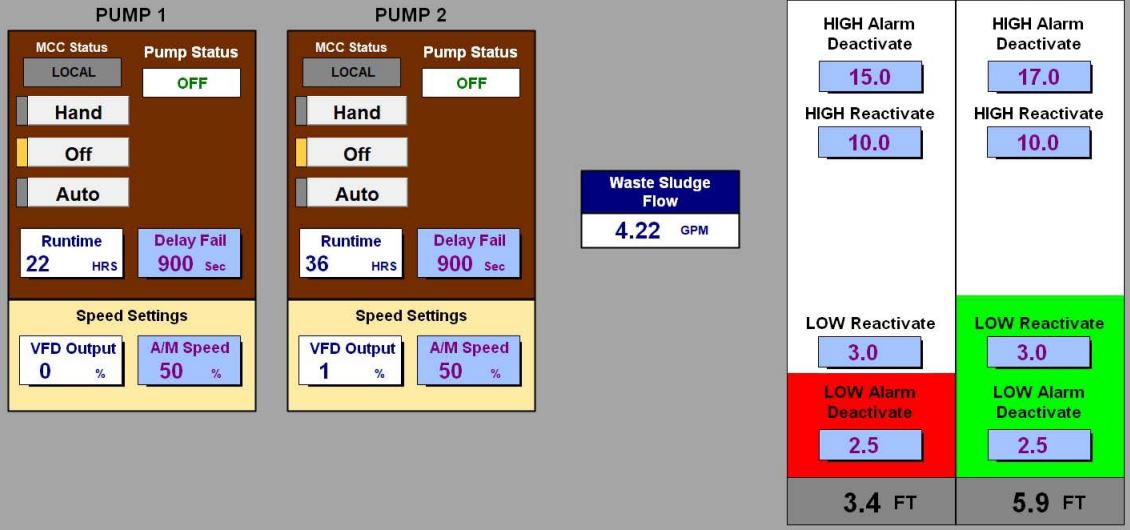
Waste Sludge Pump Control



Appendix C

TATA & HOWARD

Appendix C
List of Recommendations

Concern	Description	Priority	Category	Year Recommended	Still on list?	Location
Motors in classified area	Verify that they are rated for such classification. Chemical feed room looked tight, some issues with clearances in front of electrical cabinets	High	Capital improvement	2018	Added	Chemical Feed Room
Aeration blower replacement	Original to the plant (20 years old), and are oversized	High	Capital improvement	2018	Added	Blower Room, Main Building
Wiring in headworks building	Is a Class 1, Division 1 Group D area. All wiring system must be upgraded to meet code (NEC Art 501) for classified area	High	Capital improvement	2018	Added	Headworks Building
Wiring in sludge thickening room	Is a Class 1, Division 1 Group D area. All wiring system must be upgraded to meet code (NEC Art 501) for classified area	High	Capital improvement	2018	Added	Headworks Building
Scum pit	Needs to be replaced/rebuilt. Currently too much foam	High	Capital improvement	2023	Added	Clarifiers
Clarifier replacement	Drain, clean, and spot repair tanks. All mechanical needs to be replaced	High	Capital improvement	2023	Added	Clarifiers
Electrical manholes and conduits	Behind building gets flooded out during some high tides and water leaks into admin/control building	High	Proposed maintenance program	2018	Added	Exterior
Aeration piping and gate replacement	Needs to be replaced	High	Capital improvement	2023	Added	Aeration Tanks
Gas detection	Needs to be replaced, not working	High	Proposed maintenance program	2018	Added	All Buildings
Influent Pump Replacement	Influent Pumps Oversized	High	Capital improvement	2018	Added	Influent Wet Well Room
Influent pump room Improvements	Resolve leaks, and corroded pipes and fixtures	High	Capital improvement	2024	Added	Influent Wet Well Room
Float trees & level sensors in the clarifiers	Currently does not exist	High	Proposed maintenance program	2018	Added	Clarifiers
Fire Alarms		High	Capital improvement	2023	Added	All Buildings
Purchase Effluent Pump	Purchase effluent pump as ready standby	High	Proposed maintenance program	2024	Added	Effluent Pump Room
Disinfection Improvements	Rehabilitate containment area and install/repair: weir plate, leak detection, flood protection	High	Capital improvement	2024	Added	Effluent Pump Room
RAS pump room replace corroded elements	replace deteriorated and rusted equipment: stairs, piping, etc. Add E-stop, relocate HMI panel	High	Proposed maintenance program	2018	Added	RAS Pump Room
Odor Control Upgrades	Provide spare fan/motor, replace staircase	High	Proposed maintenance program	2024	Added	
SCADA and control panels upgrade	Add annuciators, install call out syetem and cyber security system	High	Capital improvement	2024	Added	Misc. Locations
New plant water	Existing system does not work	High	Capital improvement	2018	Added	All Buildings
Replace roofs	Needs to be replaced, in poor condition	High	Capital improvement	2023	Added	Admin/Control Building
Misc. Structural Repairs	Repair Cracks, seals expansion joints, etc.	High	Proposed maintenance program	2024	Added	Misc. Locations
Soda Ash Improvements	Clean and restore Soda Ash area and replace membrane	High	Proposed maintenance program	2024	Added	Chemical Feed Room
All electrical rooms/control building HVAC	No AC system and the drive and panels overheat in the summer, programmable thermostats, misc repairs	High	Proposed maintenance program	2018	Added	Electrical rooms, Main Building, Chlorine feed room
Install Influent wet well mixers	Experience continuous FOG buildup that has to be periodically pumped out	Medium	Proposed maintenance program	2018	Added	Influent Wet Well Room
Refrigerated samplers	Currently keep samples in coolers with ice	Medium	Proposed maintenance program	2018	Added	Misc. locations
Boiler room	Chimney and valves need replacing	Medium	Capital improvement	2023	Added	Boiler Room
Cleaning of tanks	All tanks need to be cleaned and put on a maintenance schedule	Medium	Proposed maintenance program	2023	Added	Misc. Locations
New mechanically cleaned screen	Existing sludge pumps experience ragging	Medium	Capital improvement	2018	Added	Headworks Building
Sodium Hypochlorite level transducers	Need to be installed on tank	Medium	Capital improvement	2023	Added	Biofilter Room
Alarms throughout system	Alarms are only shown on compute, need audio and visuals throughout plant	Medium	Capital improvement	2023	Added	All Buildings
Sludge disposal improvements	Necessary to pump sludge into tanker for removal, will improve sludge operations and limit spills	Medium	Capital improvement	2018	Added	Exterior
Flooding issues	Create ways to prevent flooding, i.e. flood stop barriers	Medium	Proposed maintenance program	2023	Added	Exterior
Rotary drum thickener	Polymer system and thickened sludge pumps require replacement	Medium	Proposed maintenance program	2018	Added	Thickened Sludge Tank
Valve replacement	Most if not all valves need to be replaced in system	Medium	Capital improvement	2023	Added	All Buildings
Alarms throughout system	Alarms are only shown on compute, need audio and visuals throughout plant	Medium	Capital improvement	2023	Added	All Buildings
VFDs in electrical room	Have overheated during operation – Verify the VFD's actual connected load power consumption (not to overloading VFDs) and the space ventilation requirements	Medium	Proposed maintenance program	2018	Added	Admin/Control Building
Lab equipment	Emergency shower, fire alarm, sink piping	Medium	Proposed maintenance program	2023	Added	Admin/Control Building
RAS pump room to exit door stairwell	Very damp, and understructure badly deteriorated and rusted	Medium	Proposed maintenance program	2018	Added	RAS Pump Room
Grading, repair and paving of driveway and sidewalks	Grading, repair and paving of driveway and sidewalks	Medium	Proposed maintenance program	2024		Misc. locations
Main switch gear	New surge protection devices	Medium	Proposed maintenance program	2018	Added	All Buildings
All gear, MCCs, panels, etc.	New lightning protection system	Medium	Proposed maintenance program	2018	Added	All Buildings
All gear, MCCs, panels, etc.	New grounding connections/systems	Medium	Proposed maintenance program	2018	Added	All Buildings
Alarms throughout system	Alarms are only shown on compute, need audio and visuals throughout plant	Medium	Capital improvement	2023	Added	All Buildings
Replumb Grit drain line	allow for diversion of flow to the bar rack during weekly servicing of the rock box and while conducting influent sampling	Medium	Capital improvement	2024	Added	Headworks Building
Valve replacement	Most if not all valves need to be replaced in system	Medium	Capital improvement	2023	Added	All Buildings

Soda ash motor and second pump	Motor continuously burns out	Low	Proposed maintenance program	2018 Added	Chemical Feed Room
Spare parts for polymer	Extra LMI pump	Low	Proposed maintenance program	2023 Added	Chemical Feed Room
Sampling shed	Needs to be replaced, in poor condition	Low	Proposed maintenance program	2023 Added	Misc. Locations
Electrical room with electrical gear/MCC	In fair mechanical condition, 20 year old equipment. Consider cleaning, testing and tightening of bussing, grounding etc.	Low	Proposed maintenance program	2018 Added	Headworks Building
Headworks building roof	Needs to be replaced, in poor condition	Low	Capital improvement	2023 Added	Headworks Building
Biofilter room drain	Needs to be replaced, in poor condition	Low	Proposed maintenance program	2023 Added	Biofilter Room
Sodium Hypochlorite eye wash station	Old and needs updating	Low	Proposed maintenance program	2023 Added	Biofilter Room
Security system	Needs update. The system is not working in a few locations	Low	Proposed maintenance program	2018 Added	All Buildings
Lighting	Buildings appear to have been updated recently to LED type fixtures. Some areas still could use an update	Low	Proposed maintenance program	2018 Added	All Buildings
Door handles	A large portion of door handles are broken or not working	Low	Capital improvement	2023 Added	All Buildings
Flood Barriers	Plant hardening technique	Low	Capital improvement	2023 Added	All Buildings
Building exterior	Needs pressure washing	Low	Proposed maintenance program	2023 Added	Exterior
Stormwater rebuild	Catch basins	Low	Proposed maintenance program	2023 Added	Exterior
Upgrade froth spray and chlorine pumping system	Needed for filamentous bacteria. A system was built by the operators, but cannot achieve full coverage	Low	Capital improvement	2018 Added	Aeration Tanks
Drain in WAS and TS tanks to storm drain	If foam builds up in tanks, it may drain into harbor, could tie drain back into plant	Low	Proposed maintenance program	2018 Added	TS and WAS Tanks
Float trees in TS and WAS tanks	Exists but inoperable	Low	Proposed maintenance program	2018 Added	TS and WAS Tanks
Gate between TS tank sides	Exists but inoperable, leakage between tanks, want ability to use one tank	Low	Proposed maintenance program	2018 Added	TS Tanks
Security system	Needs update. The system is not working in a few locations	Low	Proposed maintenance program	2018 Added	All Buildings
Conduits and electrical device supports	(Unistrut) in lower pump room needs to be replaced. Most are deteriorating from the wet atmosphere of the area	Low	Proposed maintenance program	2018 Added	Admin/Control Building
Main switch gear	1200 amp, hosing main breaker, ATS and feeder breakers is in fair physical condition, 20 year old equipment. Consideration to be taken for cleaning, testing and tightening of bussing	Low	Proposed maintenance program	2018 Added	Admin/Control Building
Outdoor 500KW standby generator	Is original, 20 years old, appears to be in fair mechanical condition. Will require field test to verify the actual serviceability	Low	Proposed maintenance program	2018 Added	Admin/Control Building
Pipe gallery floor concrete condition	Floor in poor condition, some areas have been repaired, but still experience groundwater intrusion through floor	Low	Proposed maintenance program	2018 Added	RAS Pump Room
Effluent pump replacement	Both pumps original to plant (19 years old), variable drives replaced 08/2014, low flow cycling issues	Low	Capital improvement	2018 Added	Effluent Pump Room
Security system	Needs update. The system is not working in a few locations	Low	Proposed maintenance program	2018 Added	All Buildings
Waterproof Doors	Plant hardening technique	Low	Capital improvement	2023 Added	All Buildings
Heating System	Heating system is currently not working within the buildings, very bad antifreeze leaks the winter of 2017	High- Immediate Action	Proposed maintenance program	2018 No	Misc. locations
Chlorine analyzer	Original to plant (19 years old), pump motor keeps burning out and the plastic mounting is broken	High	Proposed maintenance program	2018 No	Misc. locations
Sludge pump and valve replacement	All rotating elements replaced 2007, valves no longer hold, would like 6" impellers, current pumps require cleaning/rag removal frequently	High	Proposed maintenance program	2018 No	RAS Pump Room
Influent pump cavitation adjustments	Limit pump speed above occurrence of cavitation	High	Capital improvement	2018 No	Influent Pump Room
Grit screw housing	Rusting/rotting through, original to plant (19 years old), housing is worn inside, feed supports may fail from rust	High	Proposed maintenance program	2018 No	Grit Room
SCADA and control panels upgrade	Four main SCADA PLCs, use 1 computer with Windows 7 and Intellution. System limited and due for upgrade. Two main PLC panels were upgraded, other two were not. PLC controls in thickening room do not work with the PLC in the Pump Gallery	High	Capital improvement	2018 No	Misc. Locations
Yard Lighting	Consider adding in some areas around secondary clarifiers and on walkways and stairways of clarifiers	Low	Proposed maintenance program	2018 No	Exterior

Appendix D

TATA & HOWARD

Appendix D
Cost Breakdown

Priority	Concern	Location	2024 Cost	
High	Motors in classified area	Chemical Feed Room	$	71,900.00
High	Aeration blower replacement	Blower Room, Main Building	$	14,400.00
High	Wiring in headworks building	Headworks Building	$	77,700.00
High	Wiring in sludge thickening room	Headworks Building	$	77,700.00
High	Scum pit improvements	Clarifiers	$	36,000.00
High	Clarifier replacement	Clarifiers	$	230,000.00
High	Electrical manholes and conduits	Exterior	$	28,800.00
High	Aeration piping and gate replacement	Aeration Tanks	$	57,500.00
High	Gas detection	All Buildings	$	23,000.00
High	Fire Alarms	All Buildings	$	32,400.00
High	Influent Pump Replacement	Influent Wet Well Room	$	126,500.00
High	Influent pump room Improvements	Influent Wet Well Room	$	15,000.00
High	Float trees & level sensors in the clarifiers	Clarifiers	$	14,400.00
High	Disinfection Improvements	Effluent Pump Room	$	18,000.00
High	RAS pump room replace corroded elements	RAS Pump Room	$	62,600.00
High	SCADA/ Alarm Improvements	Misc. locations	$	30,000.00
High	HVAC and Ancillary Systems	Misc. locations	$	225,900.00
High	Repalce roofs	Headworks Building	$	100,700.00
		Cost	**$**	**1,242,500.00**
		Total Cost with 15% Engineering & 20% Contingency	**$**	**1,677,375.00**
Medium	Influent wet well mixers	Influent Wet Well Room	$	86,300.00
Medium	Refrigerated samplers	Misc. locations	$	7,200.00
Medium	Boiler room chimney and valves	Boiler Room	$	32,400.00
Medium	Cleaning of tanks	Misc. Locations	$	48,600.00
Medium	New mechanically cleaned screen	Headworks Building	$	287,500.00
Medium	Sodium Hyochlorite level transducers	Biofilter Room	$	10,800.00
Medium	Sludge disposal improvements	Exterior	$	14,400.00
Medium	Rotary drum thickener	Thickened Sludge Tank	$	143,800.00
Medium	Valve replacement	All Buildings	$	32,400.00
Medium	VFDs in electrical room	Admin/Control Building	$	143,800.00
Medium	Lab equipment	Admin/Control Building	$	3,600.00
Medium	New plant water	WWTP	$	63,300.00
Medium	Main switch gear	All Buildings	$	14,400.00
Medium	Lightning protection system	All Buildings	$	28,800.00
Medium	Grounding connections/systems	All Buildings	$	23,000.00
Medium	Alarms throughout system	All Buildings	$	46,800.00
Medium	Valve replacement	All Buildings	$	32,400.00
Medium	Replumb Grit drain line	Headworks Building	$	10,000.00
			$	-
		Cost	**$**	**1,019,500.00**
		Total Cost with 15% Engineering & 20% Contingency	**$**	**1,376,325.00**

Appendix D
Cost Breakdown

Priority	Concern	Location	2024 Cost	
Low	Soda ash motor and second pump	Chemical Feed Room	$	18,000.00
Low	Spare parts for polymer	Chemical Feed Room	$	7,200.00
Low	Sampling shed	Misc. Locations	$	8,000.00
Low	Electrical room with electrical gear/MCC	Headworks Building	$	100,700.00
Low	Biofilter room drain	Biofilter Room	$	15,100.00
Low	Sodium Hypochlorite eye wash station	Biofilter Room	$	5,800.00
Low	Security system	All Buildings	$	14,400.00
Low	Lighting	All Buildings	$	71,900.00
Low	Door handles	All Buildings	$	10,800.00
Low	Flood Barriers	Exterior	$	157,200.00
Low	Yard Lighting	Exterior	$	23,000.00
Low	Building exterior pressure wash	Exterior	$	27,000.00
Low	Stormwater rebuild	Exterior	$	172,800.00
Low	Upgrade froth spray and chlorine pumping system	Aeration Tanks	$	71,900.00
Low	Drain in WAS and TS tanks to storm drain	TS and WAS Tanks	$	71,900.00
Low	Float trees in TS and WAS tanks	TS and WAS Tanks	$	21,600.00
Low	Gate between TS tank sides	TS Tanks	$	28,800.00
Low	Conduits and electrical device supports	Admin/Control Building	$	14,400.00
Low	Main switch gear	Admin/Control Building	$	71,900.00
Low	Outdoor 500KW standby generator	Admin/Control Building	$	230,000.00
Low	Main building roof	Admin/Control Building	$	50,400.00
Low	Pipe gallery floor concrete condition	RAS Pump Room	$	17,300.00
Low	Effluent pump replacement	Effluent Pump Room	$	94,900.00
Low	Waterproof Doors	All Buildings	$	27,000.00
		Cost	**$**	**1,332,000.00**
		Total Cost with 15% Engineering & 20% Contingency	**$**	**1,798,200.00**
		Grand Total with 15% Engineering & 20% Contingency	**$**	**4,851,900.00**

TATA & HOWARD

OFFICE LOCATIONS:
MA | NH | CT | AZ

800-366-5760
www.tataandhoward.com

Appendix C
September 30, 2024 Letter to DEP/EPA Status Report Relative to TRC

MANCHESTER-BY-THE-SEA

DEPARTMENT OF PUBLIC WORKS
TOWN HALL, 10 CENTRAL STREET
Manchester-by-the-Sea, Massachusetts 01944-1399
Telephone (978) 526-1242

September 30, 2024

Massachusetts Department of Environmental Protection
ATTN: Joseph Nerden
DEP NERO - Wastewater Management Section
150 Presidential Way
Woburn, MA 01801

United States Environmental Protection Agency
ATTN: Douglas Koopman
5 Post Office Square – Suite 100
Mail Code – 04-03
Boston, Massachusetts 02109-3912

Subject: Permit Number MAG580043 - E. Schedule of Compliance - Status Report Relative to Process Improvements for Total Recoverable Copper

Dear Mr. Nerden & Mr. Koopman,

The Manchester-by-the-Sea Wastewater Treatment Plant (Facility), located at 12 Church Street, Manchester-by-the-Sea, Massachusetts (Town), and operated by the Town of Manchester-by-the-Sea, submits this status report regarding our Total Recoverable Copper limit per the above-referenced permit.

Background:

The Facility's General Permit, issued in 2023, introduced a new Total Recoverable Copper limit of 5.8 µg/L daily maximum and 3.7 µg/L monthly average. Prior to this, the Facility only had a monitoring requirement and no existing means to treat or remove copper within our current wastewater treatment processes. In October 2023, the Town received a proposal from its consultant and subcontractor for jar testing and a pilot program aimed at copper removal. The estimated cost of the pilot program was $25,900. Simultaneously, the Town is working on a Basis of Design (BOD) report for future plant upgrades, which were to be funded in upcoming capital improvement programs. Since the draft BOD did not account for copper removal (as there was no prior limit), its focus was on replacement, upgrades, and optimization of the existing equipment and processes. The projected construction costs in the draft BOD exceeds $4 million.

Given the procurement complexities associated with a project of this scale (e.g., requests for qualifications, hiring an owner project manager, etc.), and the potential operational and financial impacts of adding copper treatment and removal, the Town opted to delay the pilot testing. We deemed it more advantageous to wait for the final BOD and solicit proposals from consultants experienced in meeting similar copper limits and implementing copper removal processes. We are currently awaiting the final BOD report, which will serve as the basis for a request for qualifications (RFQ) for all necessary upgrades at the Facility.

Discussion:
Since last October, the Town has approved a $4.1 million capital project for the previously mentioned upgrades. To manage this project, we have hired (on Town staff) a full-time project representative with extensive experience in large-scale capital improvements and wastewater facility operations, who will serve as our Clerk of the Works. This is in addition to our team of operators. The initial focus to date has been on understanding our permit, particularly the Total Recoverable Copper limits, and exploring potential solutions for compliance. Initial considerations included looking at coagulation and filtering the copper, however given the site constraints, namely available land area in the heart of downtown Manchester. Additionally, the high capital costs would likely account for all our available project budget, without making the other critical improvements at the Facility. Given these complications our attention is now aimed at better understanding the sources of copper and our surrounding environment. Afterall, the current sampled value of 8.1 ug/l is higher than acute 1-hour value of 5.8 ug/l and would render the harbor a dead zone which is not our current understanding of the existing condition of Manchester Harbor nor Salem Sound.

After consideration of above, our research indicates that the EPA used a limited data set (four results) to establish ambient copper levels. We believe that improving our understanding of copper concentrations in the receiving stream (Salem Sound) is critical. Upon further review, many factors in a marine sampling environment could cross contaminate a sample of this nature. To that end, we propose developing a sampling plan that accounts for tidal conditions and currents to ensure we are collecting samples that accurately reflect upstream water quality, without influence from effluent discharge. We are currently executing an agreement with a consultant for instruction on clean outfall sampling procedures including a site-specific SOP and performing confirmation testing of our receiving water at multiple locations. We would welcome any comments from EPA on the time and frequency of additional samples, and/or sampling procedures and best practices.

Another critical issue is the use of dilution factors in establishing water quality-based permit limits. We request clarification regarding how the dilution factor (202) used by the EPA for MBTS was determined, as it plays a significant role in setting our copper limits. Additionally, it is unclear why MBTS, a small facility with a high dilution factor, has such stringent copper limits, while neighboring facilities with larger flows have no copper limits. Again, the anecdotal evidence suggests the background limit of copper is not impacting these receiving waters. We believe any error or compounding errors in our sampling or calculation would result in our current more stringent limit and therefore should be revisited for accuracy.

Finally, we seek to gather more analytical data to determine copper loading at the Facility and assess the extent to which copper exists in dissolved versus particulate form. This information will better inform potential solutions. The new copper limit represents a significant departure from

previous "monitor only" requirements, and the compliance schedule of 18 months is extremely aggressive. To address this, we have reached out to other facilities facing similar copper limits and will consider a range of options for reducing effluent copper. However, ultimately we believethe strategy (and then design and implementation) would be best suited for an outside consultant to evaluate during our initial design phase for the upcoming capital improvements.

Given the timeline for design, permitting, and construction (estimated at 12 months each, to allow for maintenance of plant operations and continuous permit compliance), it is unlikely that we will be able to implement process improvements to meet the new copper limits within the next two years let alone the next 6-months. Therefore, we respectfully request to extend our deadline for implementation and for the opportunity to develop a more comprehensive and representative data set for copper in both the receiving waters and our effluent. This would enable us to work collaboratively with the EPA and DEP to determine the most appropriate compliance path forward. Should this be acceptable to EPA and DEP we will follow up with a revised sampling plan and submit the results from our initial confirmation sampling (implementing new sampling SOP), tentatively scheduled to be in hand by the end of October 2024.

Thank you for your consideration. Please feel free to contact me directly at 978 526 1242 or damc@manchester.ma.us with any questions or requests for further information.

All the Best,

Charles J. Dam, P.E.
Director of Public Works
Town of Manchester-by-the-Sea

Via email:

Greg Federspiel - MBTS
Nate Desrosiers - MBTS
Mike Thompson - MBTS
Tom Parisi - MBTS