

FY '25
CONTRACT DOCUMENTS
FOR
8. WASTEWATER TOXICITY TESTING
(WHOLE EFFLUENT TOXICITY (WET) TESTING)



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TOWN OF HUDSON
DEPARTMENT OF PUBLIC WORKS
1 MUNICIPAL DRIVE
HUDSON, MA 01749

EXHIBIT A

INVITATION TO BID

MATERIALS & SERVICES

Sealed proposals will be received at the Office of the Director of Public Works, 1 Municipal Drive, Hudson, MA 01749, until 10:00 A.M., Wednesday, April 24th, 2024 at which time all bids will be publicly opened and read for the purpose of providing the Town of Hudson, Department of Public Works the following:

Proposal must be on forms furnished by the Director of Public Works and will be available on and after Monday, April 8th, 2024.

All material bids may be obtained at following link or contact DPW Office 978-562-9333.

FY'25 Material Bid Specifications

<https://www.townofhudson.org/departments-public-works/pages/bid-packages>

1. BITUMINOUS CONCRETE (AT PLANT)
2. COLD PATCH
3. CRUSHED STONE ¾"
4. CEMENT CONCRETE
5. CATCH BASIN CLEANING
6. TRAFFIC LINE PAINTING & MARKING
7. WATER QUALITY TESTING
8. WASTEWATER TOXICITY TESTING
9. FERRIC CHLORIDE

Address all proposals to the Director of Public Works, 1 Municipal Drive, Hudson, MA 01749.

PLEASE SUBMIT ONE BID PER ENVELOPE AND MARK ON ENVELOPE PURPOSE OF BID ENCLOSED.

The Board of Selectmen must approve any contract issued in response to a successful bid. The Town reserves the right to reject any or all bids.

Minority and Women Businesses are encouraged to bid.

Eric M. Ryder
Director of Public Works

TOWN OF HUDSON
DEPARTMENT OF PUBLIC WORKS
SPECIFICATIONS FOR
WASTEWATER DISCHARGE TOXICITY TESTS
(WHOLE EFFLUENT TOXICITY (WET) TESTING)

1. GENERAL

The Town of Hudson, MA intends to contract for the Wastewater Discharge Toxicity Tests as required by NPDES Permit No. MA 0101788 for the period from July 1, 2024 to June 30, 2025. All testing procedures shall conform to USEPA Region 1 "Freshwater Chronic Toxicity Test Procedure and Protocol", Attachment A included with this specification. Due to compliance issues with each provider we have tried from outside USEPA Region 1, we are limiting bids to providers with USEPA Region 1. All current permit requirements are subject to change by the EPA upon permit renewal. The Town has no direct control of these changes should they occur.

The testing facility shall perform DMR QA-QC Testing for required parameters and perform subsequent reporting requirement for said testing.

2. TESTING AND QUANTITIY

During the time frame required in the permit, it will be necessary to conduct the required: Daphnid (*Ceriodaphnia dubia*) Survival and Reproduction quarterly tests during the second full week of the months of March, June, September, and December as specified in the discharge permit.

3. REPORTING

A certified report filed in triplicate on forms or format approved by the EPA shall be submitted to the Department of Public Works within fourteen (14) days of the completed tests.

4. COURIER SERVICE

Sample bottles, Chains of Custodies, Coolers and any other associated items required for the tests shall be supplied and delivered by the testing laboratory to the Town of Hudson Wastewater Treatment Facility at One Municipal Drive, Hudson, MA during normal working hours. Sample pick up is also to be provided by the testing facility during normal working hours.

5. LABORATORY ERROR

If test results are invalid due to laboratory error or do not meet EPA submission requirements, then reanalysis shall be performed at no cost to the Town of Hudson.

6. TESTING

Testing shall be performed in compliance with the USEPA Region 1 "Freshwater Chronic Toxicity Test Procedure and Protocol" (Attachment A). This procedure / protocol, is subject to change at the EPA's discretion.

7. CERTIFICATION

The testing facility shall be currently certified by the EPA for the required analysis and shall submit a copy of the certification with the bid proposal.

8. INSURANCE

The awarded testing facility shall provide the Town of Hudson with a Certificate of Insurance indicating coverage for Worker's Compensation in accordance with State Regulation, Professional Liability Coverage in the amount of \$1,000,000 limit per claim, Automobile Liability as is required and General Liability in the amount of \$1,000,000. The Town of Hudson shall be named as an additional insured and shall be notified in writing 30 days in advance of cancellation.

9. ADDITIONAL TESTING

The Town of Hudson may require that additional tests be performed. The awarded facility shall provide those tests at the same price as submitted on the bid proposal.

10. REVENUE ENFORCEMENT

The awarded facility shall provide the Town of Hudson a Certificate of Compliance with the Revenue Enforcement and Protection Act.

ATTACHMENT A

FRESHWATER CHRONIC TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable chronic (and modified acute) toxicity tests on three samples collected during the test period. The following tests shall be performed in accordance with the appropriate test protocols described below:

Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.

Chronic and acute toxicity data shall be reported as outlined in Section VIII. The daphnid tests can be used to calculate an LC50 at the end of 48 hours of exposure when both an acute (LC50) AND A CHRONIC (C-NOEC) test is specified in the permit.

II. METHODS

Methods to follow are those recommended by EPA in:

Lewis, P.A. et al. Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Third Edition. Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. July 1994, EPA/600/4-91/002.

Any exceptions are stated herein.

III. SAMPLE COLLECTION

For each sampling event, three discharge samples shall be collected. Fresh samples are necessary for Days 1, 3, and 5 (see Section V. for holding times). The initial sample is used to start the test on Day 1, and for test solution renewal on Day 2. The second sample is collected for use at the start of Day 3, and for renewal on Day 4. The third sample is used for renewal on Days 5, 6, and 7 (or until termination for the Ceriodaphnia dubia test). The initial (Day 1) sample will be analyzed chemically (see Section VI). Day 3 and 5 samples will be held until test completion. If either the Day 3 or 5 renewal sample is of sufficient potency to cause lethality to 50 percent or more test organisms in any of the dilutions for either species, then a chemical analysis shall be performed on the appropriate sample(s) as well.

Aliquots shall be split from the samples, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses. The remaining samples shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

Standard Methods for the Examination of Water and Wastewater also describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ration of 6.7 mg/l. anhydrous sodium thiosulfate to reduce 1 mg/l. chlorine. A thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) should also be run.

All samples held overnight shall be refrigerated at 4°C.

IV. DILUTION WATER

Grab samples of dilution water used for chronic toxicity testing shall be collected from the receiving water at a point upstream of the discharge free from toxicity or other sources of contamination. Avoid collecting near areas of obvious road or agricultural runoff, storm sewers or other point source discharges. An additional control (0% effluent) of a standard laboratory water of known quality shall also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY (S). Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency-New England
JFK Federal Building (CAA)
Boston, MA 02203

It may prove beneficial to have the dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol. See Section 7 of EPA/600/4-89/001 for further information.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA New England requires that fathead minnow tests be performed using four (not three) replicates of each control and effluent concentration because the non-parametric statistical tests cannot be used with data from only three replicates. Also, if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

The following tables summarize the accepted daphnid toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND RECOMMENDED EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

1. Test type	Static, renewal
2. Temperature (°C)	25 ± 1°C
3. Light quality laboratory illumination	Ambient
4. Photoperiod:	16 hr. light, 8 hr. dark
5. Test chamber size:	30 ml.
6. Test solution volume:	15 ml
7. Renewal of test solutions:	Daily using most recently collected sample
8. Age of test organisms:	Less than 24 hr.; and all released within an 8-hr. period of each other.
9. Number of neonates per test chamber:	1.
10. Number of replicate test chambers per treatment	10
11. Number of neonates per test concentration:	10
12. Feeding regime:	Feed 0.1 ml each of YCT and concentrated algal suspension per exposure chamber daily.
13. Aeration:	None
14. Dilution water: ²	Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q ^R or equivalent deionized water and reagent grade chemicals according to EPA chronic toxicity test manually) or deionized water combined with mineral water to appropriate hardness.
15. Effluents concentrations: ¹	5 effluent concentrations and a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16. Dilution factor:	≥0.5
17. Test duration	Until 60% of control females have three broods (generally 7 days and a maximum of 8 days).
18. End points:	Survival and reproduction
19. Test Acceptability	80% of greater survival and an average of 15 or more young/surviving female in the control solutions. At least 60% of surviving females in controls must produce three broods.

20. Sampling requirements for on-site tests, samples are collected daily and used within 24 hr. of the time they are removed from the Sampling device. For off-site tests a minimum of three samples are collected (i.e. days 1, 3, 5) and used for renewal (see Sec. III). Off-site tests samples must be first used within 36 hours of collection.

21. Sample volume required: Minimum 1 liter/day

Footnotes:

1. Adapted from EPA/600/4-91/002.
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

EPA NEW ENGLAND RECOMMENDED EFFLUENT TEST CONDITIONS FOR THE FATHEAD MINNOW (*PIMEPHALES PROMELAS*) LARVAL SURVIVAL AND GROWTH TEST.

1. Test type: Static renewal
2. Temperature (°C) $25 \pm 1^\circ \text{C}$
3. Light quality: Ambient laboratory illumination
4. Photoperiod: 16 hr: light, 8 hr dark
5. Test chamber size: 500 ml. minimum
6. Test solution volume: Minimum 250 ml/replicate
7. Renewal of test concentrations: Daily using most recently collected sample.
8. Age of test organisms: Newly hatched larvae less than 24 hr. old
9. No. larvae/test chamber and control: 15 (minimum of 10)
10. No. of replicate chambers/ concentration: 4
11. No. of larvae/concentration 60 (minimum of 40)
12. Feeding regime: Feed 0.1 g newly hatched, distilled water-rinsed *Artemia* nauplii at least 3 times daily at 4 hr. intervals or, as a minimum, 0.15 g twice daily, 6 hrs. between feedings (at the beginning of the work day prior to renewal, and at the end of the work day following renewal). Sufficient larvae are added to provide an excess. Larvae fish are not fed during the final 12 hr. of the test.
13. Cleaning: siphon daily, immediately before test solution renewal.
14. Aeration: None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L. Rate should be less than 100 bubbles/min.
15. Dilution Water Receiving water, other surface water, synthetic soft water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q or equivalent deionized and reagent grade chemicals according to EPA chrome toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
16. Effluent concentrations 5 and a control. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
17. Dilution factor: ≥ 05
18. Test duration: 7 days
19. End points: Survival and growth (weight)
20. Test acceptability: 80% or greater survival in controls; average dry weight per control larvae equals or exceeds 0.25 mg.

21. Sampling requirements: for on-site tests samples are collected and used within 24 hours of the time they are removed from the sampling device. For off-site tests a minimum of three samples are collected (i.e days 1, 3, 5) and used for renewal (see Sec IV). Off-site tests samples must be first used within 36 hours of collection.

22. Sample volume required: Minimum 2.5 liters/day

Footnotes:

1. Adapted from EPA/600/4-91/002
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.
3. When receiving water is used for dilution, an additional control made up of standard laboratory or culture water (0% effluent) is required.

VI. CHEMICAL ANALYSIS

As part of each daily renewal procedure, pH , specific conductance, dissolved oxygen and temperature must be measured at the beginning and end of each 24-hour period in each dilution and the controls. It is also recommended that total alkalinity and total hardness be measured in the control and highest effluent concentration on the Day 1, 3, and 5 samples. The following chemical analyses shall be performed for each sampling event.

<u>Parameter</u>	<u>Effluent Diluent Level (mg/l)</u>	<u>Minimum</u>	<u>Quantification</u>
Hardness	X	X	0.5
Alkalinity	X	X	2.0
pH	X	X	-
Specific Conductance	X	X	-
Total Solids and Suspended Solids	X	X	-
Ammonia	X	X	0.1
Total Organic Carbon	X	X	0.5
Total Residual Chlorine (TRC)	X	X	0.05
Dissolved Oxygen	X	X	1.0
<u>Total Metals</u>			
Cd	X		0.001
Cr	X		0.005
Pb	X	X	0.005
Cu	X	X	0.0025
Zn	X	X	0.0025
Ni	X	X	0.004
Al	X	X	0.02
Mg, Ca	X	X	0.05

Superscripts

1. Method 2340 B (hardness by calculation) from APHA (1992) Standard Methods for the Examination of Water and Wastewater. 18th Edition.
2. Total Residual Chlorine
Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:
Method 4500-CL E Low Level Amperometric Titration (the preferred method);
Method 4500-CL G DPD Colorimetric Method.
Or use USEPA Manual of Methods Analysis of Water and Wastes, Method 330.5

LC50 Median Lethal Concentration (Determined at 48 Hours)

- Probit Method
- Spearman-Kärber
- Trimmed Spearman-Kärber
- Graphical

Reference the flow chart on page 84 or page 172 of EPA 600/4-91/002 for the appropriate method to use on a given data set.

Chronic No Observed Effects Concentration (C-NOEC)

Methods of Estimation:

- Dunnett's Procedure
- Bonferroni's T-Test
- Steel's Many-One Rank Test
- Wilcoxin Rank Sum Test

Reference the flow charts on pages 50, 83, 96, 172, and 176 of EPA 600/4-91/0002 for the appropriate method to use on a given data set.

In the case of two tested concentrations causing adverse effects but an intermediate concentration not causing a statistically significant effect, report the C-NOEC as the lowest concentration where there is no observable effect. The definition of NOEC in the EPA Technical Support Document only applies to linear dose-response data.

VIII TOXICITY TEST REPORTING

A report of results will include the following:

- Description of sample collection procedures, site description;
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody; and
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable)
- Any other observation or test conditions affecting test outcome.

8. The permittee shall conduct chronic (and modified acute) toxicity tests four times per year. The chronic test may be used to calculate the acute LC at the 48-hour exposure interval. The permittee shall test the daphnid, Ceriodaphnia dubia, only. Toxicity test samples shall be collected during the second week of the months of March, June, September and December. The test results shall be submitted by the last day of the month following the 31st, respectively. The tests must be performed in accordance with test procedures and protocols specified in Attachment A of this permit.

Test Dates			Chronic	
Second Week in	Submit Results By:	Test Species	Acute Limit LC	Limit C-NOEC
March	April 30th	Ceriodaphnia dubia (daphnid)	2: 100%	2: 31%
June	July 31st			
September	October 31st	See Attachment A		
December	January 31st			

9. The LC is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate

10. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The "31% or greater" limit is defined as a sample which is composed of 31% (or greater) effluent, the remainder being dilution water. This is a maximum daily limit.
11. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in Attachment A Section IV, DILUTION WATER in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required in Attachment A, EPA New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If the guidance document is revoked, the permittee shall revert to obtaining approval as outlined in Attachment A. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in Attachment A.

We are approved for use of Alternate (Lab) Dilution Water.

REQUIRED BID FORM

BID FOR: WASTEWATER TOXICITY TESTING

ANALYSIS DESCRIPTION

QUARTERLY FRESH WATER CHRONIC (AND MODIFIED ACUTE) TOXICITY TESTS PER NPDES REQUIREMENTS

TOTAL ESTIMATED QUANTITY: 4

BID PRICE PER TEST _____

TOTAL ANALYTE ANNUAL PRICE _____

TOTAL LABORATORY ANALYSIS BID PRICE _____

COMPANY NAME: _____

CONTACT NAME: _____
(PLEASE PRINT)

TITLE: _____

COMPANY ADDRESS: _____

PHONE: _____ FAX: _____ E MAIL: _____

INDIVIDUAL AUTHORIZED TO SUBMIT BID: _____
(PLEASE PRINT)

DATE: _____
(SIGNATURE)

CERTIFICATE OF NON-COLLUSION
Chapter 30B, § 10

"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."

INDIVIDUAL OR CORPORATE OF PROPOSER

SIGNATURE OF AUTHORIZED AGENT

PRINTED NAME OF AUTHORIZED AGENT

DATE

CERTIFICATE OF TAX COMPLIANCE

Pursuant to Massachusetts General Law Chapter 62C, § 49A, I hereby certify under penalties of perjury that I have, to the best of my knowledge and belief, filed all state tax returns and paid all state taxes required under law.

SOCIAL SECURITY OR FEDERAL I.D. NUMBER

SIGNATURE: INDIVIDUAL OR CORPORATE OFFICER

DATE

PLEASE PRINT:

CORPORATE NAME: _____

ADDRESS: _____

P.O. BOX: _____

CITY, STATE, ZIP CODE: _____

- Your Social Security Number or Federal Identification Number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Proposers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed or extended. This request is made under the authority of M.G.L. Ch. 62C, §48A.

**CERTIFICATE OF AUTHORITY
MEETING OF BOARD OF DIRECTORS**

At a meeting of the Directors of the _____ duly called
(Corporation)

and held at _____ on the _____ day of

_____, in the year _____ at which a quorum was present and acting, it was

voted, that _____ the _____ of this Corporation
(Name) (Title/Position)

is hereby authorized and empowered to submit a bid, make, enter into, sign, seal and deliver, on behalf of this Corporation a Contract for

(Brief Description)

with the Town of Hudson, and to issue any bid, performance, or payment bonds if required in connection with such Contract.

I hereby certify that the above is a true and correct copy of the record, that said vote has not been amended or repealed and is in full force and effect as of this date, and

that _____ is duly elected _____ of this Corporation.

Clerk or Secretary of the Corporation