AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

Chang Farms, Inc.

is authorized to discharge from a facility located at

301 River Road
Whately, MA 01373

to receiving water named

Connecticut River (MA34-04)
Connecticut River Watershed

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This Permit shall become effective on the first day of the calendar month immediately following 60 days after signature.[1]

This Permit expires at midnight five years from the last day of the month preceding the effective date.

This Permit supersedes the Permit issued on December 20, 2013.

This Permit consists of this **cover page**, **Part I**, **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011) and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this 23 day of February, 2022

for THELMA MURPHY Digitally signed by THELMA MURPHY Date: 2022.02.23 16:37:49 -05'00'

Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Procedures for appealing EPA's Final Permit decision may be found at 40 CFR § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated process and irrigation water from sprout production through **Outfall Serial Number 001** to the Connecticut River. The discharge shall be limited and monitored as specified below; the receiving water shall be monitored as specified below.

Effluent Characteristic	**Effluent Limitations**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Effluent Flow[6]	Report MGD	0.65 MGD	Continuous	Recorder
pH[7]	6.5 - 8.3 S.U.		Continuous	Recorder
Total Suspended Solids (TSS)	15.5 mg/L 84 lb/day	23.2 mg/L 126 lb/day	1/Week	Composite
Biochemical Oxygen Demand, 5-day (BOD5)	26.6 mg/L 144 lb/day	41.5 mg/L 225 lb/day	1/Week	Composite
E. coli, April to October[8]	126 cfu/100 mL	409 cfu/100 mL	1/Month	Grab
Total Residual Chlorine (TRC)[9]	1.0 mg/L	1.0 mg/L	1/Week	Grab
Total Kjeldahl Nitrogen[10]	Report mg/L	---	1/Month	Composite
Nitrite + Nitrate Nitrogen[10]	Report mg/L	---	1/Month	Composite
Total Nitrogen[10]	Report mg/L Report lb/day	---	1/Month	Calculated
Rolling Annual Average, Total Nitrogen[11]	12.4 lb/day	---	1/Month	Calculated
Total Phosphorus[12]	Report mg/L	---	1/Quarter	Composite
Whole Effluent Toxicity (WET) Testing[13,14]				
LC_{50}	---	≥ 50 %	2/Year	Composite
Hardness	---	Report mg/L	2/Year	Composite
Ammonia Nitrogen	---	Report mg/L	2/Year	Composite
Total Aluminum	---	Report mg/L	2/Year	Composite
Total Cadmium	---	Report mg/L	2/Year	Composite

Effluent Characteristic	Effluent Limitations		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Total Copper	---	Report mg/L	2/Year	Composite
Total Nickel	---	Report mg/L	2/Year	Composite
Total Lead	---	Report mg/L	2/Year	Composite
Total Zinc	---	Report mg/L	2/Year	Composite

Ambient Characteristic[15]	Reporting Requirements		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Hardness	---	Report mg/L	2/Year	Grab
Ammonia Nitrogen	---	Report mg/L	2/Year	Grab
Total Aluminum	---	Report mg/L	2/Year	Grab
Total Cadmium	---	Report mg/L	2/Year	Grab
Total Copper	---	Report mg/L	2/Year	Grab
Total Nickel	---	Report mg/L	2/Year	Grab
Total Lead	---	Report mg/L	2/Year	Grab
Total Zinc	---	Report mg/L	2/Year	Grab
pH[16]	---	Report S.U.	2/Year	Grab
Temperature[16]	---	Report °C	2/Year	Grab

Footnotes:

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the discharge point from the wastewater treatment system, prior to co-mingling with any other wastestream. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA). The Permittee shall report the results to EPA and the State of any additional testing above that required herein, if testing is done 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.

3. 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 calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).

4. Measurement frequency of continuous is defined as the use of a recording device to measure flow and pH. Measurement frequency of 1/day is defined as the recording of one measurement for each 24-hour period. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day calendar week. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Measurement frequency of 1/quarter is defined as the sampling of one discharge event in each calendar quarter. Calendar quarters are defined as January through March, inclusive, April through June, inclusive, July through September, inclusive and October through December, inclusive. Measurement frequency of 2/year is defined as the sampling of one-two discharge events during a single calendar year (months for sampling are defined in the corresponding footnotes below). If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.

5. Each composite sample will consist of at least eight grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.

6. Effluent flow shall be reported in million gallons per day (MGD).

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 will be conducted during the period April 1st through October 31st only.

9. For the purposes of this permit, TRC analysis must be completed using a test method in 40 CFR Part 136 that achieves a minimum level no greater than 20 µg/L (0.02 mg/L).

10. Total Kjeldahl nitrogen, nitrite nitrogen, and nitrate nitrogen samples shall be collected concurrently by composite sample. The results of these analyses shall be used to calculate both the concentration and mass loadings of Total Nitrogen:

    Total Nitrogen = total Kjeldahl nitrogen + total nitrate nitrogen + total nitrite nitrogen

    The Total Nitrogen loading values reported each month shall be calculated as follows:

    Total Nitrogen (lb/day) = [average monthly total nitrogen concentration (mg/L) * total monthly effluent flow (million gallons) / days in the month] * 8.345

11. The rolling annual average total nitrogen limit is an annual average mass-based limit (lb/day), which shall be reported as a rolling 12-month average. The value will be calculated as the arithmetic mean of the monthly average total nitrogen for the reporting month and the monthly average total nitrogen for the previous 11 months. Report both the rolling annual average and the monthly average each month.

    See Part I.C.4. for special conditions related to nitrogen.

12. Total phosphorus monitoring should take place in the final month of each calendar quarter (i.e., March, June, September, and December). For the purposes of this permit, phosphorus analysis must be completed using a test method in 40 CFR Part 136 that achieves a minimum level no greater than 10 μg/L (0.01 mg/L).

13. The Permittee shall conduct acute toxicity tests (LC50) in accordance with test procedures and protocols specified in Attachment A of this permit. LC50 is defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. Toxicity test samples shall be collected and tests completed during the same weeks each time of calendar quarters ending July 31 and October 31. 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.

14. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A**, 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 **Attachment A**, Section IV., DILUTION WATER. Even where alternate dilution water has been used, the results of the receiving water control (0% effluent) analyses must be reported. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.

15. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A**, 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 upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A**. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.

16. 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.

Part I.A. continued.

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

3. 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.

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

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

6. 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.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

8. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify EPA as soon as they know or have reason to believe (40 CFR § 122.42):

    a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (1) 100 micrograms per liter (µg/L);
        (2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/L) for antimony;
        (3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
        (4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) 500 μg/L;
(2) One mg/L for antimony;
(3) 10 times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
(4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources are not authorized by this permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this permit (24-hour reporting).

2. The discharge of stormwater from the waste-sprout tractor loading area through Outfall 001 is prohibited.

C. SPECIAL CONDITIONS

1. Best Management Practices (BMPs) Plan

The Permittee shall design, install, and implement control measures to minimize the discharge of pollutants from the operations at the Facility to the receiving water. At a minimum, the Permittee must implement control measures, both structural controls (e.g., filtration, containment areas, holding tanks) and non-structural (e.g., operational procedures and operator training). The Permittee shall continue to implement, maintain, and update as necessary, a BMP Plan to record such control measures. The BMP Plan shall be a written document that is consistent with the terms of this permit. Additionally, the BMP Plan shall serve as a tool to document the Permittee's compliance with the terms of this permit. The following BMP control measures must be implemented and recorded in the Facility's BMP Plan:

a. Monitoring Program - A program which clearly tracks permit limits, requirements, and conditions such that the permit parameters, sample locations, sample frequency, and sample type are properly collected and reported.
b. Preventative Maintenance - A preventative maintenance program must involve inspections and maintenance of process water system operation and treatment systems (i.e., well field(s), storage tanks, heat exchanger(s), inline screen(s) and UV disinfection

system) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdown or failures resulting in discharges of pollutants to surface waters. All wash water that leads to process water drainage must be reclaimed and properly treated. No sanitary waste waters.

c. Pollutant Minimization – The Permittee shall develop, implement, and maintain a minimization program designed to evaluate and minimize the discharge of pollutants to surface waters from the facility. At a minimum this shall include the specific procedures used to minimize the discharge of pollutants to surface waters above water quality criteria and permit limitations, and any standards that can be incorporated into the design of the Facility to minimize the discharge of conventional and toxic pollutants.
d. Good Housekeeping - Design good housekeeping measures to maintain areas that are potential sources of pollutants.
e. Spill Prevention and Response Procedure - Areas where potential spills can occur, and their accompanying drainage points, must be identified clearly in the BMP Plan. The potential for spills to enter the process water drainage system must be eliminated whenever feasible. Where appropriate, specific material handling procedures, storage requirements, and procedures for cleaning up spills must be identified in the BMP Plan and made available to the appropriate personnel. The nearby drains should be tested for pollutants contained in the material spilled within 24 hours of the spill and as directed by the EPA or the MassDEP during the cleanup.
f. Employee Training - Employee training programs must inform personnel responsible for implementing activities identified in the BMP Plan, or otherwise responsible for process water management at all levels, of the components and goals of the BMP Plan. Training should address topics such as spill response, good housekeeping and material management practices. The BMP Plan must identify periodic dates for such training (at a minimum annually).
g. Visual Inspections - Qualified facility personnel must be identified to inspect designated equipment and facility areas. Material handling areas must be inspected for evidence of, or the potential for, pollutants entering the drainage system. Along with the monitoring program in the vicinity of the wastewater treatment building, the outfall at the receiving water shall be visually inspected to the extent practicable. A tracking or follow up procedure must be used to ensure that appropriate actions have been made in response to problems observed during the inspection. Records of inspections must be maintained for five (5) years.
h. Recordkeeping and Internal Reporting Procedures - Incidents such as spills, permit violations or other discharges, along with other information describing the quality and quantity of process water discharges must be included in the records. All inspections and maintenance activities must be documented and maintained on site for at least five (5) years.
i. Material Management – See Discharges of Chemicals and Additives Special Condition in Part I.C.2. See also Quaternary Ammonium Compound Recordkeeping Special Condition in Part I.C.3. The information required there must be reported in the BMP Plan.
j. Data Validation – The Permittee shall attach a copy of the laboratory case narrative to the respective Discharge Monitoring Report (DMR) form submitted to EPA and MassDEP for each sampling event reported or concurrent with the submittal of reports using NetDMR as detailed in Part I.E of this Permit. The laboratory case narrative shall include

a copy of the laboratory data sheets for each analysis (identifying the test method, the analytical results, and the detection limits for each analyte and provide a brief discussion of whether all appropriate QA/QC procedures were met and were within acceptable limits. Narrative description must explain any violations of permit limitations and corrective actions taken to correct the violation.

k. Annual Assessment - An annual site inspection must be conducted by assigned personnel as named in the BMP Plan, to verify that the description of potential pollutant sources is accurate, that the process flow diagram has been updated or otherwise modified to reflect current conditions, and controls to reduce pollutants in process water discharges identified in the BMP Plan are being implemented and are adequate. A tracking or follow-up procedure must be used to ensure that the appropriate action has been taken in response to the inspection. Records documenting significant observations made during the site inspection must be retained as part of the BMP Plan for a minimum of five (5) years.

l. Corrective Action – When a violation of a permit limitation or requirement occurs, the Permittee must follow protocols in Part II. Standard Conditions at a minimum. The cause for any violation must be identified and corrected within applicable timeframes.

m. Consistency Review – The Permittee must conduct a consistency review of its BMP Plan in relation to other plans which incorporate best practices. Process controls may reflect requirements of Best Management Practices (BMP) Programs, including the Operation and Maintenance Plan, and may incorporate any part of such plans into the BMP Plan by reference.

n. Amending the BMP Plan – The Permittee shall immediately amend the BMP Plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the Connecticut River; a release of reportable quantities of toxic or conventional pollutants; or if the BMP Plan proves to be ineffective in achieving the general objectives of controlling pollutants in process water discharges.

2. Discharges of Chemicals and Additives

The discharge of any chemical or additive, including chemical substitution that was not reported in the application submitted to EPA or provided through a subsequent written notification submitted to EPA is prohibited. Upon the effective date of this permit, chemicals and/or additives that have been disclosed to EPA may be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA or applicable State water quality standards. Discharges of a new chemical or additive are authorized under this permit 30 days following written notification to EPA unless otherwise notified by EPA. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA in accordance with Part I.D.3 of this permit. The written notification must include the following information, at a minimum:

a. The following information for each chemical and/or additive that will be discharged:

(1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;

(2) Purpose or use of the chemical/additive;
(3) Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
(4) The frequency (e.g., hourly, daily), magnitude (i.e., maximum application concentration), duration (e.g., hours, days), and method of application for the chemical/additive;
(5) If available, the vendor's reported aquatic toxicity (i.e., NOAEL and/or LC_{50} in percent for aquatic organism(s)).

b. Written rationale that demonstrates that the discharge of such chemicals and/or additives as proposed will not: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

3. Quaternary Ammonium Compound Recordkeeping

The Permittee shall maintain a record (e.g., spreadsheet, database, etc.) of the quantity of raw materials containing quaternary ammonium compounds (Quats). The record/log shall include the volume (liters) and mass (kilograms) of the compounds used and the expected and/or measured concentration in the discharge calculated using the effluent flow data collected for Part I.A. of this Permit.

4. Total Nitrogen Discharge Minimization

a. The Permittee shall continue to implement, monitor, and evaluate measures to minimize the average mass discharge of total nitrogen ("TN"). Such measures include using low-TN source water, water re-use, improved wastewater treatment, and other operational changes.

b. The Permittee shall submit an annual report to EPA and the MassDEP by June 1st of each year, that summarizes activities related to minimizing discharges of nitrogen, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous calendar year, and the previous five (5) calendar years. If, in any year, the discharges of TN on an average annual basis have increased, the annual report shall include a detailed explanation of the reasons why TN discharges have increased, including any change in influent flows/loads and any operational changes. The report shall also include all supporting data.

D. 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 electronically using NetDMR no later than the 15th day of the month following the monitoring period. 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 as NetDMR attachments rather than as hard copies. *See* Part I.D.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 following the monitoring period), 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 particular 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 WD:

(1) Transfer of Permit notice;
(2) Request for changes in sampling location;
(3) BMPP reports and certifications;
(4) Request to discharge new chemicals or additives;
(5) Report on unacceptable dilution water/request for alternative dilution water for WET testing.
(6) Annual Nitrogen Minimization Report.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov or by hard copy mail to the following address:

U.S. Environmental Protection Agency
Water Division
NPDES Applications Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. Submittal of Reports in Hard Copy Form

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

(1) Written notifications required under Part II, Standard Conditions. Beginning December 21, 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

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 and/or II 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 II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).

b. Verbal reports and verbal notifications shall be made to EPA's Enforcement and Compliance Assurance Division at:

617-918-1510

c. Verbal reports and verbal notifications shall be made to the State's Emergency Response at:

888-304-1133

E. STATE 401 CERTIFICATION CONDITIONS

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:

a. Within six (6) months of the effective date of this Final Permit, the Permittee shall submit to MassDEP an evaluation of whether the Facility uses or stores any products containing any per- and polyfluoroalkyl substances (PFAS) and whether use or storage of those products can be reduced or eliminated. The analysis shall be submitted electronically to massdep.npdes@mass.gov.

b. Within six (6) months after the permittee has been notified by MassDEP of an EPA multi-lab validated method for wastewater, or two (2) years after the effective date of this Final Permit, whichever is earlier, the Permittee shall conduct monitoring of the effluent for PFAS compounds as detailed in the table below. If EPA's multi-lab validated method is not available by twenty (20) months after the effective date of this Final Permit, the Permittee shall contact MassDEP (massdep.npdes@mass.gov) for guidance on an appropriate analytical method. Notwithstanding any other provision of this Final Permit 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. Those results do not need to be reported to EPA through NetDMR, unless EPA establishes a requirement through a future permitting action.

Effluent (Outfall 001)

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

[2] Quarters are defined as January to March, April to June, July to September, and October to December. Samples shall be taken during the same month each quarter and shall be taken 3 months apart (e.g., an example sampling schedule could be February, May, August, and November).

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample 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 describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must 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 (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

It may prove beneficial to have the proposed 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.

V. TEST CONDITIONS

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

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 ± 1^{o}C or 25 ± 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic 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 acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	≥ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hr light, 8 hr dark
5.	Size of test vessels	250 mL minimum
6.	Volume of test solution	Minimum 200 mL/replicate
7.	Age of fish	1-14 days old and age within 24 hrs of each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3]	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the 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
- 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 observations or test conditions affecting test outcome.

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit

condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

a. *Definition*. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or

improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. *Planned Changes*. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).

(3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. *Anticipated noncompliance*. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

d. *Monitoring reports*. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; 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; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any

relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

"approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any

other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program."

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants;"

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source;" and

(d) Which has never received a finally effective NPDES permit for discharges at that "site."

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System."

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a "primary industry category."

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH3-N	Ammonia nitrogen as nitrogen
NO3-N	Nitrate as nitrogen
NO2-N	Nitrite as nitrogen
NO3-NO2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

RESPONSE TO COMMENTS

NPDES Permit # MA0040207
Chang Farms, Inc.
Whately, Massachusetts

The U.S. Environmental Protection Agency's Region 1 (EPA) is issuing a Final National Pollutant Discharge Elimination System (NPDES) Permit to Chang Farms, Inc. (the Permittee) for the Chang Farms bean sprout manufacturing facility (the Facility) located in Whately, Massachusetts. This permit is being issued under the Federal Clean Water Act (CWA), 33 U.S.C., §§ 1251 et. seq.

In accordance with the provisions of 40 CFR §124.17, this document presents EPA's responses to comments received on the draft NPDES Permit # MA0040207 (the Draft Permit). The Response to Comments explains and supports EPA's determinations that form the basis of the final permit (the Final Permit). From November 9, 2021 through December 8, 2021, EPA solicited public comments on the Draft Permit for the reissuance of a NPDES permit to discharge treated process and irrigation water from Outfall Serial Number 001 to the Connecticut River.

EPA received comments from:

- Connecticut River Conservancy, dated December 7, 2021 (transmitted December 8, 2021)

Although EPA's decision-making process has benefited from the comments submitted, the information and arguments presented did not raise any substantial new questions concerning the permit that warrants EPA exercising its discretion to reopen the public comment period. EPA did, however, make certain changes in response to the public comments EPA received on the Draft Permit, listed in Part I, below. The analyses underlying these changes are explained in the responses to individual comments in Part II, below, and are reflected in the Final Permit. EPA maintains that the Final Permit is a "logical outgrowth" of the Draft Permit that was available for public comment.

A copy of the Final Permit and this response to comments document will be posted on the EPA Region 1 web site: https://www.epa.gov/npdes-permits/massachusetts-final-individual-npdes-permits.

A copy of the Final Permit may be also obtained by writing or calling Nathan Chien, U.S. EPA, 5 Post Office Square, Suite 100 (Mail Code: 06-4), Boston, MA 02109-3912; Telephone: (617) 918-1649; Email Chien.Nathan@epa.gov.

I. Summary of Changes to the Final Permit

1. The Permittee address was incorrectly written as South Deerfield. It has been corrected to Whately.
2. Total Phosphorus monitoring in Part I.A.1. was changed to quarterly from yearly in response to comment II.A.3.

II. Responses to Comments

Comments are reproduced below as received; they have not been edited.

A. Comments from Connecticut River Conservancy

I am submitting comments on the revised draft National Pollutant Discharge Elimination System (NPDES) permit for Chang Farms, Inc., on behalf of the Connecticut River Conservancy (CRC), formerly the Connecticut River Watershed Council. Chang Farms discharges into the Connecticut River, and we have commented on previous renewals of this permit. In 2016, we signed a consent decree with Chang Farms as a result of a lawsuit CRC filed in response to repeated violations of their NPDES permits. We are pleased that the facility has been mostly in compliance with permit limits since then. Our comments on the draft permit follow.

Comment 1

Unreported stormwater inputs. CRC is concerned about the previously unreported stormwater inputs described on page 13 of the Fact Sheet. CRC is glad that EPA has specifically called these out in the draft permit as not being allowed. It's disappointing that this issue was not identified in the renewal application.

Response to Comment 1

EPA acknowledges this comment.

Comment 2

E. coli monitoring frequency. Chang Farms requested a reduction in the frequency of *E. coli* monitoring from weekly to monthly. EPA has granted that reduction for reasons outlined in the Fact Sheet at Section 5.1.6. CRC concurs with this rationale, especially since there is no known pathogenic source of the bacteria in the sprout growing process.

Response to Comment 2

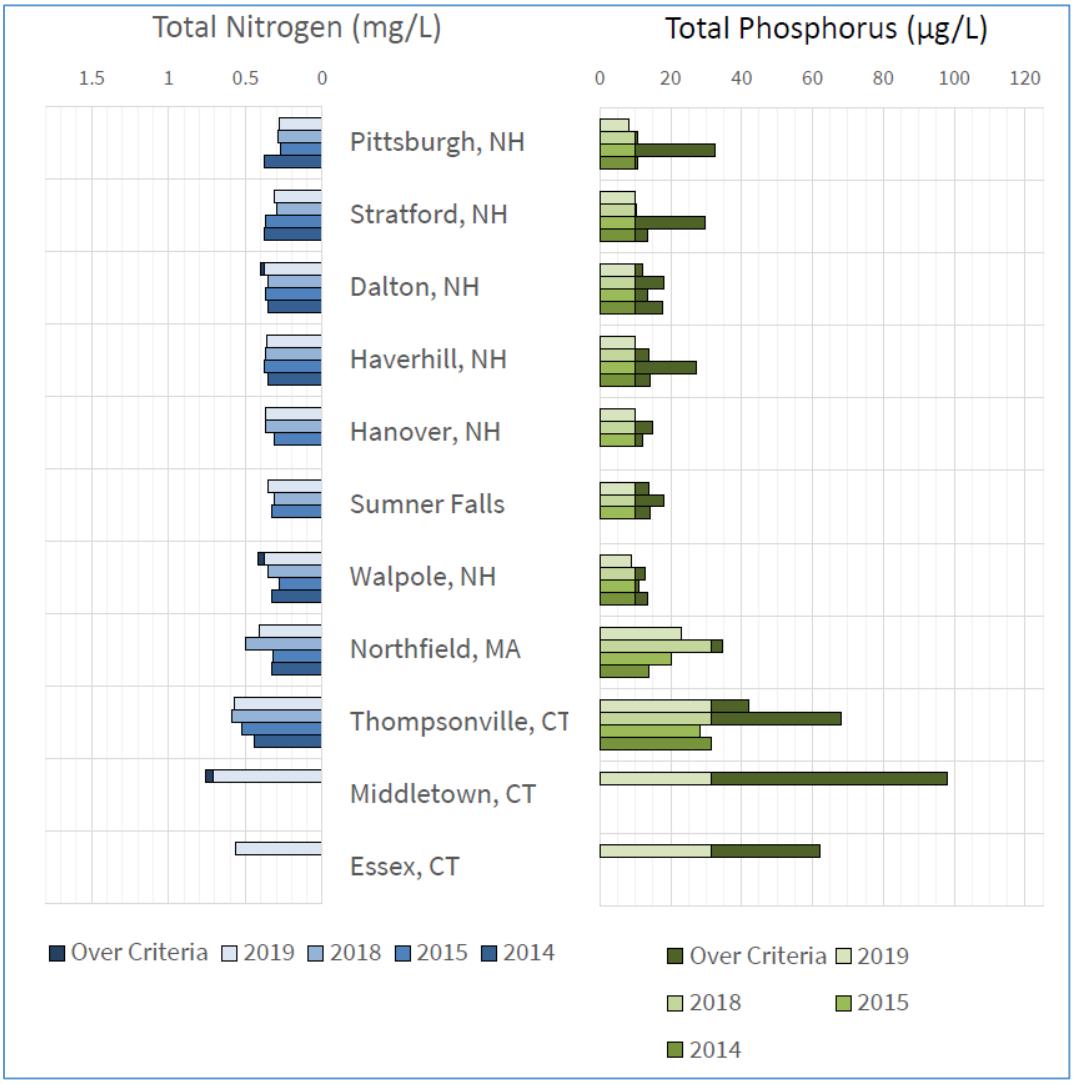
EPA acknowledges this comment.

Comment 3

Total Phosphorus monitoring frequency. Monitoring of total phosphorus (TP) has been reduced in frequency from monthly to once annual testing. CRC recommends quarterly testing instead of once annual testing, for reasons outlined below.

As shown in Appendix B of the Fact Sheet, monthly results for TP in the effluent at the facility vary greatly, from essentially zero to 0.59 mg/L. Section 3.2 on page 13 of the Fact Sheet also explains two sources of stormwater connected to the treatment system that previously had not been reported. It is possible that the previous TP concentrations had been affected by stormwater inputs into the system. In addition, the Fact Sheet on page 12 says that phosphorus fertilizer is added to the sprout irrigation water. Understanding TN and TP inputs from point sources is important to track long term nutrient loading trends in the Connecticut River watershed, especially when there are invasive plant species growing in the mainstem Connecticut River and its coves downstream in Holyoke and Agawam, and in the state of Connecticut. Long Island Sound is also impaired for nitrogen.

The Fact Sheet at Section 5.1.8.2 explains EPA's rationale for allowing annual testing, with a reasonable potential analysis in Appendix C. CRC has never thought the Gold Book value of 0.1 mg/L was completely appropriate for the Connecticut River, which is a series of hydroelectric dam impoundments. In addition, the data EPA used for determining the ambient TP levels in the CT River are more than 13 years old. CRC is under the impression that DEP has conducted more recent sampling in the mainstem. CRC has conducted several years of "Samplepalooza" which is a one-day snapshot of nutrient levels in several dozen locations around the watershed. Our sampling locations in Northfield near the VT/NH/MA border, and Thompsonville, near the MA/CT border indicates significant TP and TN contributions within MA, and ambient levels through the MA section of the river may exceed the 0.015 mg/L median value EPA used from the 2008 data. Please see a graph below of our mainstem results from several years, simply as a reference (in the key, where it says Over Criteria, that is referring to the Ecoregion TP criteria, not the Gold Book criteria, which was used for evaluation purposes only).



EPA concurs with the Comment that the Facility's effluent Total Phosphorus concentrations exhibit high variability. Using data in Appendix A of the fact sheet, EPA calculated a coefficient of variation of 0.76 or 76%, which corroborates that claim. At the same time, the small magnitude of the discharge and the significant dilution afforded the effluent in the receiving water indicate that this variability would not violate the conservative assumptions of EPA's analysis to determine whether the discharge has the reasonable potential to cause or contribute to an excursion of the water quality standards as described in Part 2.2.4 and Appendix C of the Fact Sheet.

EPA does find that the Comment proposes a middle ground between the infrequent monitoring required in the Draft Permit and the monthly frequency required in the 2014 Permit. Quarterly frequency would provide enough data points to estimate a sample variance over a five year permit term (20) as opposed to a dataset from annual samples (5). EPA also would highlight the concerns raised in the fact sheet regarding the concentration seen in the effluent (maximum value

of 590 µg/L) relative to available criteria (see Fact Sheet section 5.1.8.2). EPA has updated the Final Permit to require quarterly total phosphorus monitoring.

In response to the Comment's concerns about sources of phosphorus, EPA notes that the drainage area of the *single* unauthorized stormwater input is quite small, and EPA finds it unlikely to be a significant source of phosphorus. In addition, EPA notes that any excess phosphorus fertilizer added to the agricultural fields surrounding the manufacturing building would leach to the Connecticut River through groundwater and would not be fully represented in the effluent concentrations measured at the outfall. Importantly, any phosphorus from either potential source that has contributed to the discharge's phosphorus concentration would have been represented in the historical data EPA used to conduct its reasonable potential analysis.

EPA did contact MassDEP to confirm that there was no more recent state sampling of the mainstem of the Connecticut River. It was confirmed that recent sampling by MassDEP's Watershed Planning Program has focused exclusively on tributaries to the Connecticut River. Results of additional sampling conducted by the U.S. Geological Survey (USGS) of the mainstem in Northfield, upstream of the discharge, is expected to be published sometime in 2022. Preliminary data found for that site on the USGS's National Water Information System database (NWIS)[1] reported a median Total Phosphorus concentration of 12 µg/L (unfiltered) for the sampling period April 28, 2017 through September 21, 2021.

Comment 4

TN loading requirement. CRC concurs with the rationale EPA has presented in Section 5.1.8.1 of the Fact Sheet for maintaining the current total nitrogen loading limit.

Response to Comment 4

EPA acknowledges this comment.

Comment 5

PFAS testing requirements (MA permit). CRC supports quarterly testing of the effluent for PFAS compounds in the MassDEP permit, at least for the first year of the permit. It is important to understand PFAS inputs to river systems.

Response to Comment 5

MassDEP acknowledges this comment.

[1] See https://nwis.waterdata.usgs.gov/usa/nwis/qwdata/?site_no=01161280&agency_cd=USGS&inventory_output=0&rdb_inventory_output=file&begin_date=2008-01-26&end_date=2022-01-01&TZoutput=0&pm_cd_compare=Greater%20than&radio_parm_cds=all_parm_cds&qw_attributes=0&qw_sample_wide=wide&rdb_qw_attributes=0&date_format=YYYY-MM-DD&rdb_compression=file&submitted_form=brief_list.

AUTHORIZATION TO DISCHARGE UNDER
THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

Chang Farms, Inc.

is authorized to discharge from a facility located at

301 River Road
South Deerfield, MA 01373

to receiving water named

Connecticut River (MA34-04)
Connecticut River Watershed

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This Permit shall become effective on [*the first day of the calendar month immediately following 60 days after signature*].[1]

This Permit expires at midnight on [*five years from the last day of the month preceding the effective date*].

This Permit supersedes the Permit issued on December 20, 2013.

This Permit consists of this **cover page**, **Part I**, **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011) and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this day of

_____
Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Pursuant to 40 Code of Federal Regulations (CFR) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the Permit will become effective upon the date of signature. Procedures for appealing EPA's Final Permit decision may be found at 40 CFR § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated process and irrigation water from sprout production through **Outfall Serial Number 001** to the Connecticut River. The discharge shall be limited and monitored as specified below; the receiving water shall be monitored as specified below.

Effluent Characteristic	**Effluent Limitations**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Effluent Flow[6]	Report MGD	0.65 MGD	Continuous	Recorder
pH[7]	6.5 - 8.3 S.U.		Continuous	Recorder
Total Suspended Solids (TSS)	15.5 mg/L 84 lb/day	23.2 mg/L 126 lb/day	1/Week	Composite
Biochemical Oxygen Demand, 5-day (BOD5)	26.6 mg/L 144 lb/day	41.5 mg/L 225 lb/day	1/Week	Composite
E. coli, April to October[8]	126 cfu/100 mL	409 cfu/100 mL	1/Month	Grab
Total Residual Chlorine (TRC)[9]	1.0 mg/L	1.0 mg/L	1/Week	Grab
Total Kjeldahl Nitrogen[10]	Report mg/L	---	1/Month	Composite
Nitrite + Nitrate Nitrogen[10]	Report mg/L	---	1/Month	Composite
Total Nitrogen[10]	Report mg/L Report lb/day	---	1/Month	Calculated
Rolling Annual Average, Total Nitrogen[11]	12.4 lb/day	---	1/Month	Calculated
Total Phosphorus[12]	Report mg/L	---	1/Year	Composite
Whole Effluent Toxicity (WET) Testing[13,14]				
LC_{50}	---	≥ 50 %	2/Year	Composite
Hardness	---	Report mg/L	2/Year	Composite
Ammonia Nitrogen	---	Report mg/L	2/Year	Composite
Total Aluminum	---	Report mg/L	2/Year	Composite
Total Cadmium	---	Report mg/L	2/Year	Composite

Effluent Characteristic	Effluent Limitations		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Total Copper	---	Report mg/L	2/Year	Composite
Total Nickel	---	Report mg/L	2/Year	Composite
Total Lead	---	Report mg/L	2/Year	Composite
Total Zinc	---	Report mg/L	2/Year	Composite

Ambient Characteristic[15]	Reporting Requirements		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Hardness	---	Report mg/L	2/Year	Grab
Ammonia Nitrogen	---	Report mg/L	2/Year	Grab
Total Aluminum	---	Report mg/L	2/Year	Grab
Total Cadmium	---	Report mg/L	2/Year	Grab
Total Copper	---	Report mg/L	2/Year	Grab
Total Nickel	---	Report mg/L	2/Year	Grab
Total Lead	---	Report mg/L	2/Year	Grab
Total Zinc	---	Report mg/L	2/Year	Grab
pH[16]	---	Report S.U.	2/Year	Grab
Temperature[16]	---	Report °C	2/Year	Grab

Footnotes:

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the discharge point from the wastewater treatment system, prior to co-mingling with any other wastestream. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA). The Permittee shall report the results to EPA and the State of any additional testing above that required herein, if testing is done 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.

3. 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 calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).

4. Measurement frequency of continuous is defined as the use of a recording device to measure flow and pH. Measurement frequency of 1/day is defined as the recording of one measurement for each 24-hour period. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day calendar week. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Measurement frequency of 1-2/year is defined as the sampling of one-two discharge events during a single calendar year (months for sampling are defined in the corresponding footnotes below). If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.

5. Each composite sample will consist of at least eight grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.

6. Effluent flow shall be reported in million gallons per day (MGD).

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 will be conducted during the period April 1st through October 31st only.

9. For the purposes of this permit, TRC analysis must be completed using a test method in 40 CFR Part 136 that achieves a minimum level no greater than 20 µg/L (0.02 mg/L).

10. Total Kjeldahl nitrogen, nitrite nitrogen, and nitrate nitrogen samples shall be collected concurrently by composite sample. The results of these analyses shall be used to calculate both the concentration and mass loadings of Total Nitrogen:

Total Nitrogen = total Kjeldahl nitrogen + total nitrate nitrogen + total nitrite nitrogen

The Total Nitrogen loading values reported each month shall be calculated as follows:

Total Nitrogen (lb/day) = [average monthly total nitrogen concentration (mg/L) * total monthly effluent flow (million gallons) / days in the month] * 8.345

11. The rolling annual average total nitrogen limit is an annual average mass-based limit (lb/day), which shall be reported as a rolling 12-month average. The value will be calculated as the arithmetic mean of the monthly average total nitrogen for the reporting month and the monthly average total nitrogen for the previous 11 months. Report both the rolling annual average and the monthly average each month.

    See Part I.C.4. for special conditions related to nitrogen.

12. Total phosphorus monitoring should take place in June of each year and reported on the monthly DMR for June (due July 15th). For the purposes of this permit, phosphorus analysis must be completed using a test method in 40 CFR Part 136 that achieves a minimum level no greater than 10 µg/L (0.01 mg/L).

13. The Permittee shall conduct acute toxicity tests (LC50) in accordance with test procedures and protocols specified in Attachment A of this permit. LC50 is defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. Toxicity test samples shall be collected and tests completed during the same weeks each time of calendar quarters ending July 31 and October 31. 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.

14. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A**, 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 **Attachment A**, Section IV., DILUTION WATER. Even where alternate dilution water has been used, the results of the receiving water control (0% effluent) analyses must be reported. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.

15. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A**, 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 upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A**. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.

16. 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.

Part I.A. continued.

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

3. 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.

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

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

6. 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.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

8. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify EPA as soon as they know or have reason to believe (40 CFR § 122.42):

    a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (1) 100 micrograms per liter (µg/L);
        (2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/L) for antimony;
        (3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
        (4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

    b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (1) 500 µg/L;
        (2) One mg/L for antimony;

(3) 10 times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
(4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources are not authorized by this permit and shall be reported in accordance with Part D.1.e.(1) of the Standard Conditions of this permit (24-hour reporting).

2. The discharge of stormwater from the waste-sprout tractor loading area through Outfall 001 is prohibited.

C. SPECIAL CONDITIONS

1. Best Management Practices (BMPs) Plan

The Permittee shall design, install, and implement control measures to minimize the discharge of pollutants from the operations at the Facility to the receiving water. At a minimum, the Permittee must implement control measures, both structural controls (e.g., filtration, containment areas, holding tanks) and non-structural (e.g., operational procedures and operator training). The Permittee shall continue to implement, maintain, and update as necessary, a BMP Plan to record such control measures. The BMP Plan shall be a written document that is consistent with the terms of this permit. Additionally, the BMP Plan shall serve as a tool to document the Permittee's compliance with the terms of this permit. The following BMP control measures must be implemented and recorded in the Facility's BMP Plan:

a. Monitoring Program - A program which clearly tracks permit limits, requirements, and conditions such that the permit parameters, sample locations, sample frequency, and sample type are properly collected and reported.
b. Preventative Maintenance - A preventative maintenance program must involve inspections and maintenance of process water system operation and treatment systems (i.e., well field(s), storage tanks, heat exchanger(s), inline screen(s) and UV disinfection system) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdown or failures resulting in discharges of pollutants to surface waters. All wash water that leads to process water drainage must be reclaimed and properly treated. No sanitary waste waters.
c. Pollutant Minimization – The Permittee shall develop, implement, and maintain a minimization program designed to evaluate and minimize the discharge of pollutants to

surface waters from the facility. At a minimum this shall include the specific procedures used to minimize the discharge of pollutants to surface waters above water quality criteria and permit limitations, and any standards that can be incorporated into the design of the Facility to minimize the discharge of conventional and toxic pollutants.

d. Good Housekeeping - Design good housekeeping measures to maintain areas that are potential sources of pollutants.
e. Spill Prevention and Response Procedure - Areas where potential spills can occur, and their accompanying drainage points, must be identified clearly in the BMP Plan. The potential for spills to enter the process water drainage system must be eliminated whenever feasible. Where appropriate, specific material handling procedures, storage requirements, and procedures for cleaning up spills must be identified in the BMP Plan and made available to the appropriate personnel. The nearby drains should be tested for pollutants contained in the material spilled within 24 hours of the spill and as directed by the EPA or the MassDEP during the cleanup.
f. Employee Training - Employee training programs must inform personnel responsible for implementing activities identified in the BMP Plan, or otherwise responsible for process water management at all levels, of the components and goals of the BMP Plan. Training should address topics such as spill response, good housekeeping and material management practices. The BMP Plan must identify periodic dates for such training (at a minimum annually).
g. Visual Inspections - Qualified facility personnel must be identified to inspect designated equipment and facility areas. Material handling areas must be inspected for evidence of, or the potential for, pollutants entering the drainage system. Along with the monitoring program in the vicinity of the wastewater treatment building, the outfall at the receiving water shall be visually inspected to the extent practicable. A tracking or follow up procedure must be used to ensure that appropriate actions have been made in response to problems observed during the inspection. Records of inspections must be maintained for five (5) years.
h. Recordkeeping and Internal Reporting Procedures - Incidents such as spills, permit violations or other discharges, along with other information describing the quality and quantity of process water discharges must be included in the records. All inspections and maintenance activities must be documented and maintained on site for at least five (5) years.
i. Material Management – See Discharges of Chemicals and Additives Special Condition in Part I.C.2. See also Quaternary Ammonium Compound Recordkeeping Special Condition in Part I.C.3. The information required there must be reported in the BMP Plan.
j. Data Validation – The Permittee shall attach a copy of the laboratory case narrative to the respective Discharge Monitoring Report (DMR) form submitted to EPA and MassDEP for each sampling event reported or concurrent with the submittal of reports using NetDMR as detailed in Part I.E of this Permit. The laboratory case narrative shall include a copy of the laboratory data sheets for each analysis (identifying the test method, the analytical results, and the detection limits for each analyte and provide a brief discussion of whether all appropriate QA/QC procedures were met and were within acceptable limits. Narrative description must explain any violations of permit limitations and corrective actions taken to correct the violation.

k. Annual Assessment - An annual site inspection must be conducted by assigned personnel as named in the BMP Plan, to verify that the description of potential pollutant sources is accurate, that the process flow diagram has been updated or otherwise modified to reflect current conditions, and controls to reduce pollutants in process water discharges identified in the BMP Plan are being implemented and are adequate. A tracking or follow-up procedure must be used to ensure that the appropriate action has been taken in response to the inspection. Records documenting significant observations made during the site inspection must be retained as part of the BMP Plan for a minimum of five (5) years.

l. Corrective Action – When a violation of a permit limitation or requirement occurs, the Permittee must follow protocols in Part II. Standard Conditions at a minimum. The cause for any violation must be identified and corrected within applicable timeframes.

m. Consistency Review – The Permittee must conduct a consistency review of its BMP Plan in relation to other plans which incorporate best practices. Process controls may reflect requirements of Best Management Practices (BMP) Programs, including the Operation and Maintenance Plan, and may incorporate any part of such plans into the BMP Plan by reference.

n. Amending the BMP Plan – The Permittee shall immediately amend the BMP Plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the Connecticut River; a release of reportable quantities of toxic or conventional pollutants; or if the BMP Plan proves to be ineffective in achieving the general objectives of controlling pollutants in process water discharges.

2. Discharges of Chemicals and Additives

The discharge of any chemical or additive, including chemical substitution that was not reported in the application submitted to EPA or provided through a subsequent written notification submitted to EPA is prohibited. Upon the effective date of this permit, chemicals and/or additives that have been disclosed to EPA may be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA or applicable State water quality standards. Discharges of a new chemical or additive are authorized under this permit 30 days following written notification to EPA unless otherwise notified by EPA. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA in accordance with Part I.D.3 of this permit. The written notification must include the following information, at a minimum:

a. The following information for each chemical and/or additive that will be discharged:

(1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
(2) Purpose or use of the chemical/additive;
(3) Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;

(4) The frequency (e.g., hourly, daily), magnitude (i.e., maximum application concentration), duration (e.g., hours, days), and method of application for the chemical/additive;
(5) If available, the vendor's reported aquatic toxicity (i.e., NOAEL and/or LC_{50} in percent for aquatic organism(s)).

b. Written rationale that demonstrates that the discharge of such chemicals and/or additives as proposed will not: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

3. Quaternary Ammonium Compound Recordkeeping

The Permittee shall maintain a record (e.g., spreadsheet, database, etc.) of the quantity of raw materials containing quaternary ammonium compounds (Quats). The record/log shall include the volume (liters) and mass (kilograms) of the compounds used and the expected and/or measured concentration in the discharge calculated using the effluent flow data collected for Part I.A. of this Permit.

4. Total Nitrogen Discharge Minimization

a. The Permittee shall continue to implement, monitor, and evaluate measures to minimize the average mass discharge of total nitrogen ("TN"). Such measures include using low-TN source water, water re-use, improved wastewater treatment, and other operational changes.

b. The Permittee shall submit an annual report to EPA and the MassDEP by June 1st of each year, that summarizes activities related to minimizing discharges of nitrogen, documents the annual nitrogen discharge load from the facility, and tracks trends relative to the previous calendar year, and the previous five (5) calendar years. If, in any year, the discharges of TN on an average annual basis have increased, the annual report shall include a detailed explanation of the reasons why TN discharges have increased, including any change in influent flows/loads and any operational changes. The report shall also include all supporting data.

D. 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 electronically using NetDMR no later than the 15th day of the month following the monitoring period. 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 as NetDMR attachments rather than as hard copies. *See* Part I.D.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 following the monitoring period), 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 particular 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 WD:

      (1) Transfer of Permit notice;
      (2) Request for changes in sampling location;
      (3) BMPP reports and certifications;
      (4) Request to discharge new chemicals or additives;
      (5) Report on unacceptable dilution water/request for alternative dilution water for WET testing.
      (6) Annual Nitrogen Minimization Report.

   b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov or by hard copy mail to the following address:

U.S. Environmental Protection Agency
Water Division
NPDES Applications Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. Submittal of Reports in Hard Copy Form

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

      (1) Written notifications required under Part II, Standard Conditions. Beginning December 21, 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

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 and/or II 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 II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).

b. Verbal reports and verbal notifications shall be made to EPA's Enforcement and Compliance Assurance Division at:

617-918-1510

c. Verbal reports and verbal notifications shall be made to the State's Emergency Response at:

888-304-1133

E. STATE 401 CERTIFICATION CONDITIONS

1. This Permit is in the process of receiving state water quality certification issued by the State under § 401(a) of the CWA and 40 CFR § 124.53. EPA will incorporate by reference all State water quality certification requirements (if any) into the Final Permit.

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (Ceriodaphnia dubia) definitive 48 hour test.**
- **Fathead Minnow (Pimephales promelas) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample 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 describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must 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 (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

It may prove beneficial to have the proposed 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.

V. TEST CONDITIONS

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

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 ± 1^{o}C or 25 ± 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic 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 acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	≥ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (PIMEPHALES PROMELAS) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hr light, 8 hr dark
5.	Size of test vessels	250 mL minimum
6.	Volume of test solution	Minimum 200 mL/replicate
7.	Age of fish	1-14 days old and age within 24 hrs of each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3]	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the 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
- 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 observations or test conditions affecting test outcome.

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit

condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

a. *Definition*. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or

improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. *Planned Changes*. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).

(3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. *Anticipated noncompliance*. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

d. *Monitoring reports*. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; 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; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any

relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

"approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any

other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program."

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants;"

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source;" and

(d) Which has never received a finally effective NPDES permit for discharges at that "site."

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System."

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a "primary industry category."

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH3-N	Ammonia nitrogen as nitrogen
NO3-N	Nitrate as nitrogen
NO2-N	Nitrite as nitrogen
NO3-NO2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NUMBER: MA0040207

PUBLIC NOTICE START AND END DATES: November 9, 2021 to December 8, 2021

NAME AND MAILING ADDRESS OF APPLICANT:

Chang Farms, Inc.
P.O. Box 191
South Deerfield, MA 01373

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Chang Farms
301 River Road
Whately, MA 01373

RECEIVING WATER AND CLASSIFICATION:

Connecticut River (MA34-04)
Connecticut River Watershed
Class B

SIC CODE: 0100 (Agricultural Production Crops)
0182 (Bean Sprouts Grown Under Cover)

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Figures

Appendices

1.0 Proposed Action

Chang Farms, Inc. (the Permittee) has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge from the Chang Farms facility located in Whately, Massachusetts (the Facility) into the Connecticut River.

The permit currently in effect was issued on December 20, 2013 with an effective date of March 1, 2014 and expired on February 28, 2019 (the 2014 Permit). The Permittee filed an application for permit reissuance with EPA dated June 29, 2018, as required by 40 Code of Federal Regulations (CFR) § 122.6. Since the permit application was deemed timely and complete by EPA on April 23, 2019, the Facility's 2014 Permit has been administratively continued pursuant to 40 CFR § 122.6 and § 122.21(d). EPA and the State conducted a site visit on September 1, 2021.

2.0 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251 – 1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 CFR §§ 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). *See also* 40 CFR §§ 122.4(d), 122.44(d)(1), and 122.44(d)(5). CWA §§ 301 and 306 provide for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations (TBELs) and "water quality-based" effluent limitations (WQBELs). *See* CWA §§ 301 and 304(b); 40 CFR §§ 122, 125, and 131.

2.1 Technology-Based Requirements

Technology-based treatment requirements represent the minimum level of control that must be imposed under CWA §§ 301(b) and 402 to meet best practicable control technology currently available (BPT) for conventional pollutants and some metals, best conventional control technology (BCT) for conventional pollutants, and best available technology economically achievable (BAT) for toxic and non-conventional pollutants. *See* 40 CFR § 125 Subpart A.

Subpart A of 40 CFR Part 125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under § 301(b) of the CWA, including the application of EPA promulgated Effluent Limitation Guidelines (ELGs) and case-by-case determinations of effluent limitations under CWA § 402(a)(1). EPA promulgates New Source Performance Standards (NSPS) under CWA § 306 and 40 CFR § 401.12. *See also* 40 CFR §§ 122.2 (definition of "new source") and 122.29.

In general, ELGs for non-POTW facilities must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989. *See* 40 CFR § 125.3(a)(2). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by a NPDES permit. In the absence of published technology-based effluent guidelines, the permit writer is authorized under CWA § 402(a)(1)(B) to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ).

2.2 Water Quality-Based Requirements

The CWA and federal regulations require that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1),122.44(d)(5), 125.84(e) and 125.94(i).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 CFR §§ 131.10-12. Generally, WQSs consist of three parts: 1) beneficial designated use or uses for a water body or a segment of a water body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) antidegradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 CFR § 131.12. The applicable State WQSs can be found in Title 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00).

As a matter of state law, state WQSs specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to monthly average limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use," 2) based on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 CFR § 122.44(d)(1)(vi)(A-C).

2.2.2 Antidegradation

Federal regulations found at 40 CFR § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

Massachusetts' statewide antidegradation policy, entitled "Antidegradation Provisions," is found in the State's WQSs at 314 CMR 4.04. Massachusetts guidance for the implementation of this policy is in an associated document entitled "Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00," dated October 21, 2009. According to the policy, no lowering of water quality is allowed, except in accordance with the antidegradation policy, and all existing in-stream uses, and the level of water quality necessary to protect the existing uses of a receiving water body must be maintained and protected.

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State's antidegradation requirements, including the protection of the existing uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among the various sources, including point source discharges, subject to NPDES permits. *See* 40 CFR § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 CFR § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 CFR § 122.44(d)(1)(i).

2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs, the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 CFR § 124.53 and § 124.55. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified.

If the State believes that conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307, or applicable requirements of State law, the State should include such conditions in its certification

and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through EPA's permit appeal procedures of 40 CFR Part 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to final permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limitations based upon WQSs and State requirements are contained in 40 CFR §§ 122.4(d) and 122.44(d).

2.3 Effluent Flow Requirements

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the effluent limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under CWA § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced and the calculated effluent limitations might not be sufficiently protective (i.e., might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at a lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may ensure the validity of its "worst-case" effluent flow assumptions through imposition of permit conditions for effluent flow.[1] In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs.

[1] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id.* 40 CFR §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 599 (EAB 2010). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *See In re Washington Aqueduct Water Supply Sys., 11 E.A.D. 565, 584 (EAB 2004)*.

The limitation on effluent flow is within EPA's authority to condition a permit to carry out the objectives and satisfy the requirements of the CWA. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 CFR §§ 122.4(a) and (d), 122.43 and 122.44(d). A condition on the discharge designed to ensure the validity of EPA's WQBELs and reasonable potential calculations that account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§402 and 301 and the implementing regulations, as WQBELs are designed to assure compliance with applicable water quality regulations, including antidegradation requirements. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of effluent is also consistent with the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 CFR § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Consequently, the effluent flow limit is a permit condition that relates to the Permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 CFR §§ 122.41(d), (e).

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the discharges. The monitoring program is needed to enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and*

Reporting Rule.[2] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[3] (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- 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.

2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on EPA's NetDMR support portal webpage.[4]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for providing written notifications required under the Part II Standard Conditions.

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[2] Fed. Reg. 49,001 (Aug. 19, 2014).
[3] 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. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49,001 (Aug. 19, 2014).
[4] https://netdmr.zendesk.com/hc/en-us

2.5 Standard Conditions

The Standard Conditions, included as Part II of the Draft Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 CFR Part 122.

2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified to include less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(*l*). Anti-backsliding provisions apply to effluent limits based on technology, water quality, and/or State certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2014 Permit unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

The Facility is located on River Road in the Town of Whately, Massachusetts. A location map is provided in Figure 1. Three separate parcels make up the Facility, with areas of 45, 23, and 5 acres (73 acres total). The 23- and 5-acre parcels lie to the east of River Road and are bounded to the east by the Connecticut River. Across River Road to the west lies the 45-acre parcel. This westernmost parcel contains the buildings used for bean sprout production. The remaining farmland is used for organic agricultural crops. A site plan is provided in Figure 2.

Chang Farms is primarily engaged in the growing, harvesting, washing, and packing of bean sprouts for retail sale. For the most part, these activities take place inside the buildings on the western parcel of the Facility. All water is sourced from groundwater supplied by three sets of wells tapping into the surficial aquifer. The sprouts are grown in enclosed rooms under a controlled environment and harvested, packed, and shipped directly from the site to restaurants and groceries around the country. The agricultural land is not irrigated due to the wet local climate and does not contribute wastewater to Outfall 001.

3.1.1 Effluent Limitation Guidelines

EPA has not promulgated technology-based effluent limitation guidelines (ELGs) for agricultural activities engaged in crop production (SIC 0100) in 40 CFR Subchapter N Parts 405 through 471. Therefore, in accordance with CWA § 402(a)(1)(B) and 40 CFR § 125.3(c)(2), EPA may establish effluent limitations on a case-by-case basis using BPJ. The NPDES regulations in 40 CFR §125.3(c)(2) state that permits developed on a case-by-case basis under Section 402 (a)(1) of the CWA shall apply the appropriate factors listed in 40 CFR § 125.3(d) and must consider 1)

the appropriate technology for the category class of point sources of which the applicant is a member, based on available information, and 2) any unique factors relating to the applicant.

3.2 Location and Type of Discharge

The Draft Permit authorizes discharges to the Connecticut River through Outfall 001 consisting of wastewater from bean sprout production. Outfall 001 is located at Latitude 42° 27' 44.6", Longitude -72° 35' 18.7" on the western bank of the Connecticut River. The outfall is fed by a 6-inch discharge line extending from the process barn, under River Road and Sugarloaf Brook. A schematic of water flow is provided in Figure 3.

The manufacturing process begins when purchased bean seeds (soy and mung) are soaked in tepid water to prepare the seed for germination. After soaking, the seeds are placed in growing cells and grown for seven to eight days. Periodic irrigation with temperature-controlled well water is used throughout the growing cycle. After germination, the sprouts are harvested. Sprouts are fed into an assembly line where part of the sprout is removed via vibration and the remaining portion of the bean sprout is packaged and shipped off-site. The parts of the sprouts that are not used along with waste sprouts that have been damaged or fallen on the floor are swept up and trucked to the agricultural fields, providing compost cover and a potential source of nutrients for the crops being grown. Process water is generated from the packaging and cleaning process.

All wastewater from bean sprout manufacturing originates from groundwater collected from three sets of wells located across the 73-acre property. The Facility holds a Water Management Act (WMA) Permit issued by the Massachusetts Department of Environmental Protection (MassDEP), allowing for a maximum of 650,000 gallons per day of withdrawal from the surficial aquifer. The groundwater wells are pumped to a Receiver Tank inside the Farm Building where they comingle before distribution for the two distinct wastewater flows – irrigation water and process water. All water in the Receiver Tank is pre-treated with sodium bicarbonate to adjust the pH and prevent violations of State WQS for pH. In addition, the Receiver Tank is treated with chlorine dioxide – a combination of 12.5% sodium hypochlorite, 15% hydrochloric acid, and 25% sodium chlorite – as an antimicrobial agent.

Seed sprouts are soaked in a calcium hypochlorite water solution for a 7 to 8-day cycle in darkened grow rooms. Irrigation water along with a phosphorus fertilizer[5] is applied periodically to the germinating seed sprouts. The irrigation water varies from 90°F during the sprouting phase to 66°F during subsequent irrigation stages. The spent irrigation water is sent to an in-ground tank in the wastewater treatment building before traveling through an in-line filter to remove solids and passing through a heat exchanger to transfer heat back to incoming irrigation water. From there, the spent irrigation water combines with spent process water in an in-ground tank.

Process water is used in the packaging of sprouts, and the cleaning of the equipment and facilities. Cleaning chemicals – mainly disinfectants – are used (and discharged) during the cleaning process. A list of these chemicals is provided in Part 5.2.2 Discharge of Chemicals and

[5] According to the Permittee's 2018 Permit Renewal Application, nitrogen/nitrogen-containing compounds are not added directly to the process water.

Additives. Of particular concern for toxicity are quaternary ammonium compounds which are added to the process water flow prior to its use. Spent process water is sent to the wastewater treatment building where it combines with spent irrigation water. At this point the wastewater stream may include sprout solids, chemical cleaning agents, nutrients, and bacteria.

The wastewater is then sent through a slotted rotating screen filter and to the last in-ground wastewater storage tank. Composite samples are drawn from this tank. Two pumps with 400 gallon per minute (gpm) capacities (combined capacity of 640 gpm) withdraw water from this tank and send it first through a series of pipes where pH and other grab samples can be measured before flowing through a buried conduit to Outfall 001 and into the Connecticut River. A pair of Ultraviolet Treatment Modules are installed in the wastewater treatment building after the last in-ground wastewater storage tank. However, at the time of the site visit these units were not in use (this is discussed further in the *E. coli* monitoring section below).

During the September 1, 2021, site visit, EPA learned of additional sources of water to the outfall. The waste-sprout tractor loading ramp sits outside the manufacturing building and is equipped with a storm drain. The Permittee informed EPA that stormwater runoff from this drain flows to the wastewater treatment building where it mixes with process water and is discharged through Outfall 001. Since this water source was not identified on the Permittee's application, it is an illicit discharge and has been explicitly labelled as a prohibited discharge in Part I.B.2. of the Draft Permit. EPA recommends berm-ing or covering this area to prevent the introduction of stormwater runoff to the wastewater treatment plant, which would dilute the process water flow. In addition, boiler blowdown is potentially discharged to the wastewater treatment plant. Given the lack of information provided by the Permittee regarding this wastewater flow (including not identifying it on the permit renewal application), this is also an illicit discharge. EPA welcomes comments on these flows during the public notice period.

Whately municipal water is used in rest rooms at the Facility. Wastewater from the restrooms is discharged to an on-site septic system and not through Outfall 001.

The Permittee indicated on their 2018 Application that production is stable over the calendar year and does not exhibit any significant seasonal trends, but the market for bean sprouts is expected to grow.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the Permittee, including Discharge Monitoring Reports (DMRs), from September 1, 2016 through August 31, 2021, is provided in Appendix A of this Fact Sheet.

4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

The Facility discharges through Outfall 001 to Massachusetts Segment ID MA34-04 of the Connecticut River, which extends for 34.50 miles from the confluence with the Deerfield River in Greenfield/Deerfield downstream to Holyoke Dam in Holyoke/South Hadley. Further

downstream, the Connecticut River flows across the state line into Connecticut and eventually discharges to Long Island Sound.

Connecticut River is classified as Class B, with qualifiers for Combined Sewer Overflows (CSO) and warm water fishery, in the Massachusetts WQSs, 314 Code of Massachusetts Regulations (CMR) 4.06. Class B waters are described in the Commonwealth of Massachusetts Water Quality Standards at 314 CMR 4.05(3)(b) as follows: *"designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated in 314 CMR 4.06, they shall be suitable as a source of public water supply with appropriate treatment ("Treated Water Supply"). Class B waters shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value."*

Connecticut River (Segment 34-04) is listed in the *Massachusetts Year 2016 Integrated List of Waters* ("303(d) List") as a Category 5 "Waters Requiring a TMDL.[6] The cause of impairment listed is *Escherichia coli* (*E. coli*) and PCBs in fish tissue. To date no TMDL has been developed for this segment for either of these impairments. The *Connecticut River Watershed 2003 Water Quality Assessment Report* lists Segment 34-04 as supporting all designated uses except fish consumption due to PCBs in fish tissues.[7]

4.2 Ambient Data

A summary of the ambient data collected in the receiving water in the vicinity of the Facility that is referenced in this Fact Sheet can be found in Appendix B.

4.3 Available Dilution

To ensure that discharges do not cause or contribute to violations of WQSs under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water.[8] The critical flow is some measure of the low flow of the receiving water and may stipulate the magnitude, duration, and frequency of allowable excursions from the magnitude component of criteria in order to prevent adverse impacts of discharges on existing and designated uses. State WQSs specify the hydrologic condition at which water quality criteria must be applied.

For rivers and streams in Massachusetts, the lowest flow condition at and above which aquatic life criteria must be applied is the lowest mean flow for seven consecutive days, recorded once in 10 years, or 7-day 10-year low flow (7Q10). *See* 314 CMR 4.03(3)(a). For rivers and streams and waters whose flows are regulated by dams or similar structures, human health based criteria may be applied at the harmonic mean flow. *See* 314 CMR 4.03(3)(d).

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[6] *Massachusetts Year 2016 Integrated List of Waters*. MassDEP Division of Watershed Management Watershed Planning Program, Worcester, Massachusetts; December, 2019, Control Number: 470.1.
[7] Connecticut River Watershed 2013 Water Quality Assessment Report. MassDEP Division of Watershed Management, Worcester, Massachusetts; October, 2008, Report Number: 34-AC-2.
[8] EPA Permit Writer's Manual, Section 6.2.4

MassDEP calculated the 7Q10 and harmonic mean flow for the Connecticut River based on data from the United States Geological Survey (USGS) low-flow frequency statistics for the nearest USGS gauging station to the Facility along the Connecticut River (station number 01170500 at gauge identifier) for a 30-year period of record, and the USGS's SWToolbox frequency analysis tool.[9] The 7Q10 and harmonic mean flow in the receiving water upstream of the discharge was then calculated as follows:

$$Flow_{@Facility} = Flow_{@Gauge} / Drainage\ Area_{@Gauge} * Drainage\ Area_{@Facility}$$

Where:

$Drainage\ Area_{@Gauge}$ = 7,860 square miles (mi^2)
$7Q10\ Flow_{@Gauge}$ = 2,077 cubic feet per second (cfs)
$Harmonic\ Mean\ Flow_{@Gauge}$ = 6,359 cfs
$Drainage\ Area_{@Facility}$ = 7,920 mi^2

Therefore:

7Q10 = 2,077 cfs / 7,860 mi^2 * 7,920 mi^2
7Q10 = 2,093 cfs (1,350 MGD)

Harmonic mean = 6,359 cfs / 7,860 mi^2 * 7,920 mi^2
Harmonic mean = 6,407 cfs (4,134 MGD)

Using the above-calculated 7Q10 (Q_s), the dilution factor (DF) was calculated using the permitted daily maximum flow ($Q_{d)}$ as follows:

$$DF = (Q_s + Q_d)/Q_d$$

Where:

Q_S = 7Q10 in million gallons per day (MGD)
Q_d = Discharge flow in MGD

Therefore:

DF = (2,093 cfs + 1.01 cfs) / 1.01 cfs = 2,073

EPA used this dilution factor (DF), the 7Q10 and/or the harmonic mean flow in its quantitative derivation of WQBELs for pollutants in the Draft Permit.

5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State WQSs are described below. These proposed effluent limitations and conditions, the basis of which is discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit.

[9] USGS SWToolbox software information page: https://www.usgs.gov/software/swtoolbox-software-information

5.1 Effluent Limitations and Monitoring Requirements

The State and Federal regulations, data regarding discharge characteristics, and data regarding ambient characteristics described above, were used during the effluent limitations development process. Discharge and ambient data are included in Appendix A and B. EPA's Reasonable Potential Analysis is included in Appendix C and results are discussed in the applicable sections below.

5.1.1 Effluent Flow

The Facility's 2014 Permit includes a maximum daily flow limit of 0.65 million gallons per day (MGD) and no average monthly flow limit. The flow limit is based on the maximum allowable groundwater withdrawal permitted under the Facility's WMA permit. This limit was increased in the 2014 Permit, from a 2006 Permit flow limitation of 0.15 MGD, due to expansions to the Facility. MassDEP conducted an antidegradation review for the 2014 Permit and concluded that the increased discharge would not result in a significant lowering of water quality. This conclusion was predicated on the inclusion of a nitrogen load limit derived from the lower flow limit.

From September 1, 2016 through August 31, 2021, daily maximum effluent flow has ranged from 0.198 MGD to 0.477 MGD (Appendix A). During that same period, monthly average effluent flow has ranged from 0.131 MGD to 0.257 MGD. The Draft Permit maintains the maximum daily flow limit of 0.65 MGD as well as continuous monitoring for flow using a totalizer or similar device, when the Facility is discharging.

In addition to the maximum daily flow limit, the 2014 Permit includes a flow rate limit of 640 gallons per minute (GPM). This is based on the combined flow rate of the two UV units. From July 1, 2016 through June 30, 2021 the flow rate was as high as 557 GPM (Appendix A). The Permittee no longer consistently uses their UV system and except for two anomalous bacteria samples (discussed further below) have consistently been able to meet their limit. In addition, the high bacteria samples were not associated with anomalous flow rates or exceedances of the limitation. As a result, EPA finds the flow rate limitation is no longer necessary and it has been removed in the Draft Permit. This change is consistent with the backsliding exception at 40 CFR § 122.44(l)(2)(i)(A), material alterations to the permitted facility have occurred which justify the application of a less stringent limit.

5.1.2 pH

The hydrogen-ion concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (S.U.). Solutions with pH 7.0 S.U. are neutral, while those with pH less than 7.0 S.U. are acidic and those with pH greater than 7.0 S.U. are basic. Discharges with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Sudden pH changes can kill aquatic life. pH can also have an indirect effect on the toxicity of other pollutants in the water.

From September 1, 2016 through August 31, 2021, pH has ranged from 6.5 to 8.1 S.U. (Appendix A). The Draft Permit requires a pH range of 6.5 to 8.3 S.U. when the Facility is discharging, monitored continuously, and that the discharge cannot change the naturally occurring pH range by more than 0.5 S.U. The pH limitations are based on the State WQSs for Inland Water, Class B at 314 CMR 4.05(3)(b)3, which require that the pH of the receiving water be in the range of 6.5 to 8.3 S.U. and not more than 0.5 units outside of the natural background range. These limitations are based on CWA § 301(b)(1)(C) and 40 CFR § 122.44(d).

5.1.3 Total Suspended Solids

Solids could include inorganic (e.g., silt, sand, clay, and insoluble hydrated metal oxides) and organic matter (e.g., flocculated colloids and compounds that contribute to color). Solids can clog fish gills, resulting in an increase in susceptibility to infection or asphyxiation. Suspended solids can increase turbidity in receiving waters and reduce light penetration through the water column or settle to form bottom deposits in the receiving water. Suspended solids also provide a medium for the transport of other adsorbed pollutants, such as metals, which may accumulate in settled deposits that can have a long-term impact on the water column through cycles of re-suspension.

The 2014 Permit includes concentration and mass-based limits carried forward from the 2006 Permit for Chang Farms. These limits were a result of water quality concerns, particularly dissolved oxygen depletion, and were derived using the statistical methodology in EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD).[10] Specifically, they were calculated by projecting an upper bound (95th or 99th percentile) from the TSS effluent data available at the time of permit drafting, ensuring that the concentration of TSS discharged does not increase through time. The limits in effect are average monthly limits of 15.5 mg/L and 84 lb/day and maximum daily limits of 23.2 mg/L and 126 lb/day, monitored weekly by composite sample. From September 1, 2016 through August 31, 2021, these TSS limitations were not exceeded with the median values less than half the limits across the four requirements (Appendix A). EPA has not found or received any new information indicating that these limits are not protective of water quality criteria or need changing for other reasons. Therefore, the Draft Permit continues the limits from the 2014 Permit in accordance with anti-backsliding requirements found in 40 CFR § 122.44(1).

5.1.4 Biochemical Oxygen Demand

Biochemical oxygen demand (BOD) measures the amount of oxygen consumed by microorganisms in decomposing organic matter in water. BOD also measures the chemical oxidation of inorganic matter (i.e., the extraction of oxygen from water via chemical reaction). The rate of oxygen consumption in a waterbody is affected by several variables: temperature, pH, the presence of microorganisms, and the type of organic and inorganic material. BOD directly affects the amount of dissolved oxygen in rivers and streams. The greater the BOD, the more rapidly oxygen is depleted in the stream. Depletion of the in-stream oxygen levels cause

[10] USEPA, *Technical Support Document for Water Quality-Based Toxics Control*, Office of Water, Washington, D.C., March 1991.

aquatic organisms to become stressed, suffocate, and die. Five-day Biochemical Oxygen Demand (BOD_5) is a common measure of BOD.

As with TSS discussed above, the 2014 Permit includes concentration and mass-based BOD_5 limits carried forward from the previous permit and based on historical effluent monitoring data. The BOD_5 limits in effect are average monthly limits of 26.6 mg/L and 144 lb/day and maximum daily limits of 41.5 mg/L and 225 lb/day, monitored weekly by composite sample. From September 1, 2016 through August 31, 2021, the mass-based limits were not exceeded while the concentration-based limits were exceeded five times (Appendix A). The highest observed monthly average concentration was 32.5 mg/L, and the highest observed daily maximum concentration was 57 mg/L. EPA has not found or received any new information indicating that these limits are not protective of water quality criteria or need changing for other reasons. Therefore, the Draft Permit continues the limits from the 2014 Permit in accordance with anti-backsliding requirements found in 40 CFR § 122.44(1).

5.1.5 Temperature

Section 502(6) of the Clean Water Act defines heat as a "pollutant." *See* 33 U.S.C. § 1362(6). Water temperature affects the metabolic and reproductive activities of aquatic organisms and can determine which fish and macroinvertebrate species can survive in a given water body. Certain cold-blooded species cannot regulate their body temperature through physiological means, so their body temperatures reflect the temperatures of the water they inhabit. Rapid increases or decreases in ambient water temperature can directly affect aquatic life, particularly fish. Ambient water temperature can indirectly affect aquatic life by influencing water quality parameters such as dissolved oxygen, by which the solubility of oxygen decreases as water temperature increases.

At the Facility, heated water is used for bean sprout irrigation. Groundwater is passed through a heat exchanger prior to use in the sprouting phase, which requires heating water in a tank up to 90°F. The subsequent growing phase requires an irrigation water temperature range between 66 to 70°F. Following irrigation and prior to discharge, the blended process water is cycled back through the heat exchanger to remove excess heat, transferring it to the incoming groundwater (Figure 3). The Permittee has indicated on their permit renewal application that water is discharged at temperatures of 59 to 66°F.

Massachusetts WQS for Class B, warm water fisheries state:

> *Temperature shall not exceed 83°F (28.3°C) in warm water fisheries. The rise in temperature due to a discharge shall not exceed… 5°F (2.8°C) in rivers and streams designated as warm water fisheries (based on the minimum expected flow for the month)*

And

> *Natural seasonal and daily variations that are necessary to protect existing and designated uses shall be maintained. There shall be no changes from natural background conditions that would impair any use assigned to this Class, including those conditions*

> *necessary to protect normal species diversity, successful migration, reproductive functions or growth of aquatic organisms*

See 314 CMR 4.05(3)(b)2.

Given the high dilution afforded the discharge in the receiving water (DF of 2,073) and the effluent temperatures reported by the permittee (59-66°F), EPA finds it unlikely that the discharges from the Facility could cause a change in temperature in the Connecticut River so as to exceed the temperature WQS. Therefore, the Draft Permit does not include any effluent limitations or additional reporting for temperature.

5.1.6 Bacteria

Bacteria grow and thrive in the bean sprout growing cells. As described above, this segment of the Connecticut River is listed in the *Massachusetts 2016 Integrated List of Waters* as impaired for *E. coli*. While no TMDL has been developed for pathogens in this segment of the Connecticut River, Massachusetts WQS at 314 CMR 4.05(3)(b)(4), state that,

> *for other waters… the geometric mean of all E. coli samples taken within the most recent six months shall not exceed 126 colonies per 100 ml typically based on a minimum of five samples and no single sample shall exceed 235 colonies per 100 ml; alternatively, the geometric mean of all enterococci samples taken within the most recent six months shall not exceed 33 colonies per 100 ml typically based on a minimum of five samples and no single sample shall exceed 61 colonies per 100 ml. These criteria may be applied on a seasonal basis at the discretion of the Department;*

The State determined that *E. Coli* is the appropriate indicator parameter for this receiving water.

Based on the State WQS for Class B waters, the 2014 Permit requires seasonal monitoring for *E. coli* from April through October, at a weekly frequency, with a maximum daily limitation of 409 colony forming units per 100 milliliters (CFU/100 mL) and an average monthly limit of 126 CFU/100 mL. The maximum daily limitation is an interpretation of the single sample maximum standard cited above, "*no single sample shall exceed 235 colonies per 100ml.*" This value is based on the 75th percent confidence level of the bacteria concentrations that would lead to illness rates of eight per 1000 swimmers measured at a bathing beach. MassDEP recommends the implementation of this maximum daily value based on the 90th percent confidence level, a corresponding value of 409 CFU/100 mL.

Generally, *E. coli* levels are low in the Facility's discharge. Of the 35 months of reported data from September 1, 2016 through August 31, 2021, only three months had *E. coli* values greater than half the permitted limits. However, two of those months had single sample maximum values more than double the permitted limits (June 2017 value of 2,190 MPN/100 mL and September 2019 value of 1,300 MPN/100 mL), leading to two violations of both the daily maximum and monthly average permit limits (for a total of four violations). The Permittee has indicated that they no longer use the UV treatment units because of the generally low *E. coli* values. While the

Draft Permit does not mandate their use, EPA recommends that the Permittee examine internal sampling procedures and Best Management Practices (BMPs) to prevent bacterial contamination and discharge. The Draft Permit maintains the maximum daily and average monthly effluent limitations for *E. coli*, consistent with State WQS, the presence of *E. coli* in the effluent, and anti-backsliding requirements found in 40 CFR § 122.44(1). Given that recreational activities in the receiving water are unlikely to occur from November through March, these human-health based limits continue to be imposed seasonally (April through October).

The Permittee has requested a reduction in the frequency of *E. coli* testing, from a frequency of weekly to a frequency of monthly. In order to process such a request, EPA followed the procedures outlined in EPA's 1996 Memorandum: *Interim Guidance for Performance – Based Reductions of NPDES Permit Monitoring Frequencies*.[11] To determine eligibility for a reduction, EPA assessed the compliance history of the Facility. There are no open EPA enforcement actions that prohibit participation in the performance-based reduction program and there have been no significant noncompliance (SNC) violations of the *E. coli* limits in the last two years or any violations of the *E. coli* limits or other toxic pollutants in the last year. Following the 1996 Guidance, EPA calculated a long-term average from the average monthly *E. coli* dataset (Appendix A) and compared that value with the effluent limits. The ratio of the long-term effluent average *E. coli* concentration to monthly average limit was 12%. According to Table 1 from the 1996 Guidance, a monitoring frequency reduction from once per week to once per month is merited. While the 1996 Guidance indicates that seasonal, discontinuous data may not be representative of long-term performance, EPA has no reason to believe that *E. coli* discharges would differ significantly during November through March given that Facility operations remain continuous. As a result, the Draft Permit has reduced *E. coli* monitoring to a frequency of once per month. Future SNC violations for *E. coli* would be justification for returning to the original monitoring frequency.

5.1.7 Total Residual Chlorine

Chlorine and chlorine compounds are toxic to aquatic life. Free chlorine is directly toxic to aquatic organisms and can react with naturally occurring organic compounds in receiving waters to form toxic compounds such as trihalomethane. Chang Farms uses chlorine dioxide formulated from a 1:1:1 ratio of hydrochloric acid, sodium hypochlorite, and chlorite to sanitize Facility water lines. Chlorinated foam is used to clean the Facility and calcium hypochlorite is used in the bean sprout growing process.

The 2014 Permit includes Total Residual Chlorine (TRC) maximum daily and average monthly limits of 1.0 mg/L, monitored weekly. From September 1, 2016 through August 31, 2021, TRC values ranged from non-detect to 0.1 mg/L. In drafting the 2006 Permit, EPA found that the Facility's discharges of chlorine had the reasonable potential to cause or contribute to an exceedance of water quality criteria. Chlorinated discharges are subject to Massachusetts WQS' *Implementation Policy for the Control of Toxic Pollutants in Surface Waters*, 1990. The policy states that, "*In segments with dilution factors greater than 100, the maximum effluent*

[11] Available at: https://www.epa.gov/nutrient-policy-data/interim-guidance-performance-based-reductions-npdes-permit-monitoring.

concentration of chlorine shall not exceed 1.0 mg/L TRC." The Facility's dilution factor remains above this threshold (2,073).

Since TRC has an existing WQBEL, EPA notes that the reasonable potential analysis described in 40 CFR § 122.44(d)(1)(i) has already been conducted in a previous permitting action demonstrating that there is reasonable potential to cause or contribute to an excursion of WQS. Given that the permit already contains a WQBEL based on the prior analysis and the fact that TRC continues to be used and discharged by the Facility, EPA has determined that continuation of the limit is necessary pursuant to anti-backsliding requirements. Therefore, the WQBEL will be carried forward unless it is determined that a more stringent WQBEL is necessary to continue to protect WQS or that a less stringent WQBEL is allowable based on anti-backsliding regulations at CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l).

Given the State WQS policy for chlorinated discharges and the high dilution factor, the existing limits, EPA has determined that the existing limits continue to be protective of WQSs and more stringent limits are not required. The proposed effluent limitation and continued monitoring requirements are necessary and appropriate to carry out the provisions of the CWA and ensure compliance with State WQSs. See CWA §308(a), 33 U.S.C. §1318(a); 40 CFR §§ 122.4(d), 122.44(d)(1).

5.1.8 Nutrients

Nutrients are compounds containing nitrogen and phosphorus. Although nitrogen and phosphorus are essential for plant growth, even moderately elevated concentrations of these nutrients can cause eutrophication, a condition in which aquatic plant and algal growth is excessive. Plant and algae respiration and decomposition reduces dissolved oxygen in the water, creating poor habitat for fish and other aquatic animals. Phosphorus is typically the limiting nutrient triggering eutrophication in freshwater ecosystems and nitrogen in marine or estuarine ecosystems. For this permit, both phosphorus and nitrogen are nutrients of concern as described below.

5.1.8.1 Total Nitrogen

Chang Farms discharges to the Connecticut River, which drains to Long Island Sound (LIS). In 2000, New York and Connecticut finalized a Total Maximum Daily Load[12] (TMDL) that addressed dissolved oxygen impairments in Long Island Sound due to excessive nitrogen loading. It was approved by EPA in 2001. While the TMDL included waste load allocations (WLAs) for point sources in Connecticut and New York, out-of-basin facilities were not assigned WLAs. The Connecticut and New York WLAs included in the TMDL were based on an assumption that out-of-basin point source loads of total nitrogen would be reduced in aggregate by 25% from the baseline through enforceable permit requirements imposed by permitting authorities in the out-of-basin states to protect downstream waters. Building off this assumption,

[12] Connecticut Department of Environmental Protection and New York State Department of Environmental Conservation, *A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound* (LIS TMDL), December 2000.

the 2014 Permit required monthly monitoring for total Kjeldahl nitrogen, nitrate and nitrite, the sum of which provides the total nitrogen (TN) concentration and an annual average total nitrogen loading limit of 12.4 lb/day was implemented in the permit.

During the development of the 2014 Permit and the nitrogen requirements, EPA and MassDEP were simultaneously processing a request for an increased flow limitation by the Facility (0.15 MGD to 0.65 MGD) that necessitated an antidegradation review by the State. At the time, EPA considered facilities discharging more than 35 lb/day of Total Nitrogen to the LIS watershed to be significant sources of nitrogen, subject to more stringent requirements including numeric limitations. Over concerns that the flow increase would lead the Facility to discharge more than 35 lb/day of TN,[13] EPA capped the load at the current annual baseline average load, 12.4 lb/day, and implemented an additional nitrogen evaluation and minimization program to ensure increased flow does not lead to increases in nitrogen loading. In summary, the 2014 Permit required:

1) Monthly monitoring for total Kjeldahl nitrogen, nitrate and nitrite, the sum of which provides the total nitrogen (TN) concentration.
2) An annual average total nitrogen loading limit of 12.4 lb/day.
3) A Nitrogen Evaluation and Minimization Special Condition requiring annual reporting on efforts to reduce nitrogen loading to the Connecticut River.

EPA's approach to controlling out of basin discharges of nitrogen to LIS was updated in 2019. EPA has adopted a systematic, state-by-state approach to control nitrogen pollution discharging from "out-of-basin" point sources in Massachusetts, New Hampshire and Vermont into tributaries of LIS, a severely impaired water body shared by New York and Connecticut. In contrast to the 2014 Permit's approach, EPA prioritized implementing effluent limits for major POTW facilities with design flows greater than 1 MGD. Industrial dischargers and POTWs with flows less than 1 MGD are now being re-issued with nitrogen optimization requirements in lieu of effluent limitations.[14] EPA has estimated that between 2016-2020, the average annual load in pounds per day for all 48 Massachusetts point source discharges to the Connecticut River is 8,334 lb/day. The annual average TN load from the Facility ranged from 3.98 to 11.11 lb/day over the last five years (Appendix A). At the current TN limit (12.4 lb/day), Chang Farm would be contributing less than 0.15% of this load. In addition, using data from the same time frame, Chang Farm contributes ~59 lb-TN per million-gallon discharged which would be the 12th lowest ratio of the 48 dischargers (25th percentile).

In its 2018 Permit Renewal Application, the Permittee requested an increase in the total nitrogen loading limit based on a finding that "the bean sprout operation reduces Total Nitrogen loading." While EPA recognizes that Chang Farms is subject to requirements beyond those that would be required under EPA's 2019 approach, updating the Chang Farms permit to the current EPA

[13] The projected load was 53.6 lb/day based on an average total nitrogen concentration of 9.89 mg/L from effluent data collected from May 2009 through February 2013.
[14] A complete summary of EPA's updated methodology is provided in the fact sheets to recently issued POTW permits discharging in the LIS watershed. See, e.g., Erving POTW #1 (MA0101516) available at https://www.epa.gov/npdes-permits/massachusetts-final-individual-npdes-permits.

approach is not straightforward. The CWA's anti-backsliding regulations prohibit a permit from being renewed to include less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(*l*). EPA did investigate the Permittee's claim to see if an updated TN limitation is warranted given the new information provided by the Permittee. A summary of EPA's analysis is provided below. The Permittee's *Technical Evaluation of Total Nitrogen Discharge* is also attached as Appendix D.[15]

The basic structure of the Permittee's argument is as follows:

(1) The effluent discharged to the Connecticut River is sourced from groundwater wells across the property.
(2) The total nitrogen concentration in these wells is higher than the total nitrogen concentration of the effluent.
(3) Bean sprout production is the major sink for where that nitrogen could be going, i.e., bean sprouts are taking nitrogen from the source water and since they are being shipped off site, nitrogen is being removed from the system.
(4) The effluent discharged from Outfall 001 is contributing less nitrogen to the Connecticut River than the groundwater would be in the absence of pumping.

The Permittee supported this argument by calculating a Total Nitrogen mass balance. See Appendix D. From the mass balance, the Permittee showed that bean sprout production is taking up nitrogen in the influent groundwater such that the final effluent is depleted in TN relative to the influent groundwater concentration. Given that this groundwater would have made it to the Connecticut River in the absence of bean sprout production/pumping, TN is removed from the system. This argument is supported by a limited dataset collected by Chang Farms that matches up monthly effluent TN concentration with monthly influent groundwater TN concentration. Of the 43 months where the Permittee collected concurrent influent/effluent samples between March 2015 and September 2018, 31 of the months had effluent TN concentrations lower than influent TN concentrations.

While EPA finds the Permittee's claim – that growing crops irrigated with nitrogen-rich groundwater is removing some nitrogen from the system – convincing, EPA also believes that the entire system was not adequately characterized in the Permittee's mass-balance analysis. During the site visit, EPA identified two additional sources of nitrogen produced from bean sprout manufacturing: nitrogen fertilizer and composted waste sprouts applied to the agricultural land on the property. According to the Permittee, a maximum of 3 tons of organic nitrogen-fertilizer is added to the crops. In addition, some significant quantity of waste sprouts are returned to the fields. Given the unknown quantity of total nitrogen released to the groundwater and/or the Connecticut River from these sources, EPA does not find there to be definitive evidence that the amount of nitrogen taken up by the bean sprouts and removed from the nitrogen-rich groundwater would offset these other additions to the system.

[15] The Permittee's application, where the TN limit request can be found, is part of the administrative record and can be requested from EPA for those interested in the unabridged technical argument.

An additional problem identified in the Permittee's analysis has to do with the claim that nitrogen is removed by both sprout production and diversion of groundwater from Sugarloaf Brook. Given a property-scale mass balance, these two "flows" are effectively the same. In other words, there is no extra reduction in water (and nitrogen) making it to the Connecticut River by reducing groundwater recharge to Sugarloaf Brook that is not already accounted for by the effluent discharge volume (and reduction of nitrogen in the effluent relative to influent). Therefore, nitrogen reduction has effectively been double counted in the Facility's final equation in Section D of Appendix D:

(N in WW – N in GW) + (reduced N contribution of Sugarloaf Brook) = change in N loading

The equation should be:

(N in WW – N in GW) = change in N loading

As a result of the issues and uncertainties identified in the Permittee's analysis, EPA tentatively denies the Permittee's request for a relaxation of the TN load limitation.

However, EPA is open to accepting new information during the public comment period to fill or correct these information gaps and to evaluate whether a less stringent limit is possible. Specifically, if the Permittee can quantitatively demonstrate that the additional sources of nitrogen (waste sprout composting and nitrogen fertilizer addition) added to the system are no greater than a re-calculated nitrogen deficit (second change in N loading equation above), which would indicate that the overall operation of the facility does not result in a net increase of nitrogen to the system. Such evidence would include, at a minimum, records of fertilizer usage over the preceding 5 years, information on nitrogen content of the fertilizer, amount of bean sprout waste added to the fields daily/annually, estimated rate of nitrogen release from the breakdown of bean sprouts, etc.[16] In the scenario where such evidence was proffered, EPA may either increase the limit or remove the limit; monitoring conditions and nitrogen optimization requirements would be maintained in both cases, consistent with other out-of-basin LIS point sources of similar discharge volumes/loads. Additional groundwater influent reporting would also be required to ensure that the net nitrogen load continues to be reduced. EPA is soliciting comment on this approach.

In summary, the Draft Permit maintains monthly TN effluent monitoring, annual optimization reporting, and the annual TN load limitation of 12.4 lb/day, consistent with the water quality goals discussed above and in accordance anti-backsliding regulations at CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l).

5.1.8.2 Phosphorus

[16] Evidence demonstrating a net decrease in TN load to the Connecticut River would be considered new information that was not available at the time of permit issuance in 2013 and would have justified a less stringent effluent limitation at the time of permit issuance. See the "new information" exception to backsliding at 40 CFR § 122.44(l)(b)(1).

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities.

The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter;[17] 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation, for instance, by fouling engines and propellers, making waters unappealing to swimmers, and interfering with fishing lures and equipment; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; and 6) producing toxic cyanobacteria during certain algal blooms. Cultural (or accelerated) eutrophication is the term used to describe dense and excessive plant growth in a water body that results from nutrients entering the system as a result of human activities. Discharges from municipal and industrial wastewater treatment plants, agriculture runoff, and stormwater are examples of human-derived (*i.e.*, anthropogenic) sources of nutrients in surface waters. See generally, *Nutrient Criteria Technical Guidance Manual – Rivers and Streams*, EPA July 2000 [EPA-822-B-00-002], Chapters 1 and 3.

The MA WQS under 314 CMR 4.05(5)(c) requires that, unless naturally occurring, surface waters must be free from nutrients that cause or contribute to impairment of the existing or designated uses, and the concentration of phosphorus may not exceed site specific criteria developed in a TMDL. Nutrients are also prohibited in concentrations that would cause or contribute to cultural eutrophication. Cultural eutrophication also results in exceedances of other nutrient-related water quality standards such as low dissolved oxygen, decreased water clarity, objectionable odors, and surface scum. The MA WQS at 314 CMR 4.05(3)(b)(1) requires that dissolved oxygen not be less than 6.0 mg/L in cold water fisheries or 5.0 mg/L in warm water fisheries. Further, the MA WQS at 4.05(3)(b)(5), (6) and (8) state that waters must be free from "floating, suspended, and settleable solids," free from "color and turbidity in concentrations or combinations that are aesthetically objectionable…", and have no taste and odor "in such concentrations or combinations that are aesthetically objectionable, that would impair any use assigned to this Class, or that would cause tainting or undesirable flavors in the edible portions of aquatic life." To prevent cultural eutrophication, the MA WQS at 4.05(5)(c) states that "Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses." Also see Part 2.2.2 of this Fact Sheet above regarding antidegradation and existing uses which may be impacted by nutrient over-enrichment.

[17] "Algae" includes phytoplankton (microscopic algae measured by levels of chlorophyll a), macroalgae (commonly referred to as seaweed), and other plants stimulated by nutrient over-enrichment. Excessive algal growth contributes to low levels of dissolved oxygen through increased plant respiration and decomposition of dead plant matter. Notably, during the day, algae provide oxygen to the water as a by-product of photosynthesis. At night, however, when photosynthesis ceases but plant respiration continues, dissolved oxygen levels decline. Additionally, as these algae die, they are decomposed by bacteria that consume yet more oxygen. When dissolved oxygen levels are low, aquatic organisms become stressed and die, and overall aquatic health is degraded.

When permitting nutrient discharges, EPA analyzes available information from a reasonably conservative standpoint, as it regards one key function of a nutrient limit as preventative. This protective approach is appropriate because, once begun, the cycle of eutrophication can be difficult to reverse due to the tendency of nutrients to be retained in the sediments. For this reason, time is of the essence when permitting for nutrients, so EPA acts on the best information reasonably available when developing the draft permit, and does not generally delay permit issuance pending collection of new data or development of new models. This approach is also consistent with the requirement for NPDES permits to be revisited and reissued at regular intervals, with permit terms not to exceed five years.

When translating narrative phosphorus criteria into numeric values (and establishing WQBELs, if necessary), EPA looks to a wide range of materials, including nationally recommended criteria and other relevant materials, such as EPA nutrient technical guidance and information published under Section 304(a) of the CWA, peer-reviewed scientific literature and site-specific surveys and data to determine instream targets that are protective of water quality. See 40 CFR § 122.44(d)(1)(vi)(A), (B).

EPA has produced several guidance documents, described below, that recommend a range of total ambient phosphorus concentrations that are sufficiently stringent to control cultural eutrophication and other adverse nutrient-related impacts, with 0.1 mg/L representing the upper end of this range. These guidance documents recommend protective in-stream phosphorus concentrations based on two different analytical approaches. An effects-based approach provides a threshold value above which adverse effects (*i.e.*, water quality impairments) are likely to occur. This approach applies empirical observations of a causal variable (*i.e.*, phosphorus) and a response variable (*i.e.*, chlorophyll-a as a measure of algal biomass) associated with designated use impairments. Alternatively, reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregion class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent conditions in waters in that ecoregion that are minimally impacted by human activities (*i.e.*, reference conditions), and thus by definition representative of water without cultural eutrophication. Dischargers in Massachusetts and New Hampshire are located within either Ecoregion VII, Nutrient-Poor, Largely Glaciated Upper Midwest and Northeast or Ecoregion XIV, Eastern Coastal Plains. The recommended total phosphorus criteria for these ecoregions are 10 µg/L and 31.25 µg/L, respectively. While reference conditions reflect in-stream phosphorus concentrations that are sufficiently low to meet the requirements necessary to support designated uses, they may also represent levels of water quality beyond what is necessary to support such uses.

EPA follows an effects-based approach. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends maximum threshold concentrations that are designed to prevent or control adverse nutrient-related impacts from occurring. Specifically, the Gold Book recommends in-stream phosphorus concentrations of no greater than 0.05 mg/L in any stream entering a lake or reservoir, 0.1 mg/L for any stream not discharging directly to lakes or impoundments, and 0.025 mg/L within a lake or reservoir.

The Gold Book recommended value of 0.1 mg/L is coterminous with the range of published, peer-review values presented in a more recent EPA technical guidance manual, *Nutrient Criteria Technical Guidance Manual – Rivers and Streams*, EPA July 2000 [EPA-822-B-00-002], Chapter 7 Table 4 (a simplified version of this table is shown as Table 1 below), which contains recommended threshold ambient concentrations (all more stringent than 0.1 mg/L) drawn from the scientific literature that are sufficiently stringent to control periphyton and plankton (two types of aquatic plant growth associated with eutrophication). This guidance indicates that in-stream phosphorus concentrations between 0.01 mg/L and 0.09 mg/L will be sufficient to control periphyton growth and concentrations between 0.035 mg/L and 0.070 mg/L will be sufficient to control plankton.

Table 1. Recommended Nutrient Levels to Prevent Eutrophic Impairment

PERIPHYTON Maximum			
TP (µg/L)	**Chlorophyll a (µg/L)**	**Impairment Risk**	**Source**
38-90	100-200	nuisance growth	Dodds et al. 1997
75	200	eutrophy	Dodds et al. 1998
20	150	nuisance growth	Clark Fork River Tri-State Council, MT
20		*Cladophora* nuisance growth	Chetelat et al. 1999
10-20		*Cladophora* nuisance growth	Stevenson unpubl. Data
PLANKTON Mean			
TP (µg/L)	**Chlorophyll a (µg/L)**	**Impairment Risk**	**Source**
42	8	eutrophy	Van Nieuwenhuyse and Jones 1996
70	15	chlorophyll action level	OAR 2000
35	8	eutrophy	OECD 1992 (for lakes)

The published, peer-reviewed phosphorus targets are thus 0.1 mg/L or below, irrespective of the methodological approach employed. In addition to opting for the less stringent of the available approaches (*i.e.*, effects-based in favor of reference-based), EPA has chosen to apply the upper end of the range of all available published nutrient thresholds. However, as the Gold Book notes, there are natural conditions of a water body that can result in either increased or reduced eutrophic response to phosphorus inputs; in some waters more stringent phosphorus reductions may be needed, while in some others a higher total phosphorus threshold could be assimilated without inducing a eutrophic response. EPA is not aware of any site-specific factors relevant to the receiving water that would result in it being unusually more or less susceptible to phosphorus loading.

In determining whether the discharge has the reasonable potential to cause or contribute to excursions above the instream water quality criteria for phosphorus, EPA used the mass balance equation presented in Appendix C to project the phosphorus concentration downstream of the discharge. If there is reasonable potential, this mass balance equation is also used to determine the limit that is required in the permit.

Based on the phosphorus criterion described above, the upstream 7Q10 flow, and the design flow of the Facility, Appendix C presents the details of the mass balance equation, the determination of whether there is reasonable potential to cause or contribute to an excursion of WQS and, if necessary, the limits proposed in the Draft Permit WQS. As shown, it was determined that the downstream concentration is 15 µg/L which does not exceed the instream target of 100 µg/L. Therefore, there is no reasonable potential to cause or contribute to an excursion of WQS, so the Draft Permit does not propose a phosphorus limit. Given the effluent phosphorus concentrations – values that regularly exceed the Gold Book criteria – and the continued use of phosphorus-containing fertilizer, monitoring remains in place in the Draft Permit. However, the low downstream phosphorus concentration calculated in EPA's reasonable potential analysis indicate less frequent monitoring is warranted, given the unlikelihood for a large increase in phosphorus use to lead to a noticeable change in the downstream phosphorus concentration. Therefore, total phosphorus monitoring frequency has been reduced to once per year.

5.1.9 Whole Effluent Toxicity

CWA §§ 402(a)(2) and 308(a) provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Whole effluent toxicity (WET) testing is conducted to ensure that the additivity, antagonism, synergism, and persistence of the pollutants in the discharge do not cause toxicity, even when the individual pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the Facility does not discharge combinations of pollutants into the receiving water in amounts that would be toxic to aquatic life or human health.

In addition, under CWA § 301(b)(1)(C), discharges are subject to effluent limitations based on WQSs. Under CWA §§ 301, 303 and 402, EPA and the States may establish toxicity-based limitations to implement narrative water quality criteria calling for "no toxics in toxic amounts." *See also* 40 CFR § 122.44(d)(1). The Massachusetts WQSs at 314 CMR 4.05(5)(e) state, "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife." In addition, the Massachusetts WQSs at 314 CMR 4.03(2)(a) require no lethality to organisms passing through a mixing zone.

In accordance with current EPA guidance and State policy,[18] whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the LC_{50}. For a Facility with a dilution factor greater than 1,000, EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) recommends acute toxicity testing. Both EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) and the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) recommended criterion to prevent acutely toxic effects is 0.3 T.U. Further,

[18] *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters*. February 23, 1990.

for discharges with dilution factors greater than 100, if there is reasonable potential to exceed water quality criteria, the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) specifies that the end-of-pipe acute (i.e., LC_{50}) limit is 2.0 toxic units (T.U.), equivalent to an LC_{50} of 50%.

The acute WET limit in the 2014 Permit is LC_{50} greater than or equal to 50% using the daphnid (*Ceriodaphnia dubia*) and the fathead minnow (*Pimephales promelas*) as the test species. From September 1, 2016 through August 31, 2021, WET test results observed an LC_{50} less than 100% in only one sample species (out of 20 samples) – an LC_{50} of 50% in the daphnid during the second quarter of 2021. Given that the permit limit has not been violated and the dilution afforded the Facility has increased since the last permit issuance, EPA has found a more stringent limit is not required.

In accordance with 40 CFR § 122.44(d), the Draft Permit continues the LC_{50} effluent limit from the 2014 Permit and acute toxicity testing for both species. Toxicity testing must be performed in accordance with EPA Region 1's test procedures and protocols specified in **Attachment A,** *Freshwater Acute Toxicity Test Procedure and Protocol* (February 2011) of the Draft Permit.

5.1.9.1 Quaternary Ammonium Compounds

The 2014 Permit mandated a Toxicity Reduction Evaluation (TRE) to identify the source of the toxicity in the Facility's effluent and identify steps to reduce such toxicity. The TRE determined that quaternary ammonium compounds found in several disinfection chemicals used by the Facility are the likely source of the toxicity with expected annual use as high as 77.17 kg. These compounds are commonly used in the food processing industry as disinfectants to prevent the biodegradation of products, in this case bean sprouts. The TRE had the following recommendation:

> Practical control measures center on continuous record-keeping of quaternary ammonium compounds consumption with weekly reconciliation and monthly analysis for ammonia and quaternary ammonium compounds. Once additional WET testing results are in hand with a statistical number of results indicating the presence of toxicity, a use limit and/or effluent limit on quaternary ammonium compounds can be established.

As a result, the Draft Permit includes a Best Management Practice for the control of Quaternary Ammonium Compounds, in line with the TRE's recommendation. Specifically, the condition requires the Facility maintain a log of the quantity (in units of mass and volume) of raw materials containing these compounds and the expected or measured concentration in the discharge. Given the improvements in acute toxicity observed in the effluent (no permit limit violations over the last 5 years), EPA does not find mandating discharge monitoring of Total Quaternary Ammonium Compounds necessary. However, should the discharge demonstrate toxicity in the future, monitoring may be required.

5.2 Special Conditions

5.2.1 Best Management Practices

Best management practices (BMPs) may be expressly incorporated into a permit on a case-by-case basis where it is determined that they are necessary to achieve effluent limitations and standards or to carry out the purpose and intent of the CWA under § 402(a)(1). BMPs may be necessary to control or abate the discharge of pollutants when: 1) authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) authorized under CWA § 402(p) for the control of storm water discharges; 3) numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. *See* 40 CFR § 122.44(k). Pollutants may be present because they are generated during Facility operations, which could result in significant amounts of these pollutants reaching waters of the United States via discharges of wastewater from sprout manufacturing.

The 2014 Permit carried forward the BMP requirements from the 2006 Permit and this Draft Permit does the same in accordance with anti-backsliding regulations found in 40 CFR § 122.44(1). In this case, the Draft Permit requires the Facility to continue to update and implement its BMP Plan through the selection, design, installation, and implementation of control measures (including BMPs) to meet the following non-numeric effluent limits as well as the other numeric effluent limits that apply to the Facility's discharge. Proper implementation of BMPs will minimize the potential discharge of pollutants related to inadequate treatment, human error, and/or equipment malfunction.

BMP requirements include:

1) Monitoring Program
2) Preventative Maintenance
3) Pollutant Minimization
4) Good Housekeeping
5) Spill Prevention and Response Procedure
6) Employee Training
7) Visual Inspections
8) Recordkeeping and Internal Reporting Procedures
9) Chemicals and Additives Reporting (formerly referred to as Material Management)
10) Data Validation
11) Annual Assessment
12) Corrective Action
13) Consistency Review
14) Amending the BMP Plan

These non-numeric effluent limitations support, and are equally enforceable as, the numeric effluent limitations included in the Draft Permit. The purpose of these requirements is to reduce or eliminate the discharge of pollutants to waters of the United States. They have been selected on a case-by-case basis based on those appropriate for this specific facility. *See* CWA §§ 304(e) and 402(a)(1) and 40 CFR § 122.44(k). These requirements will also ensure that discharges from the Facility will meet State WQSs pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1).

Unless otherwise stated, the Permittee may select, design, install, implement and maintain BMPs as the Permittee deems appropriate to meet the permit requirements. The selection, design, installation, implementation and maintenance of control measures must be in accordance with good engineering practices and manufacturer's specifications.

5.2.2 Discharges of Chemicals and Additives

Chemicals and additives include, but are not limited to: algaecides/biocides, antifoams, coagulants, corrosion/scale inhibitors/coatings, disinfectants, flocculants, neutralizing agents, oxidants, oxygen scavengers, pH conditioners, and surfactants. The Draft Permit allows the discharge of only those chemicals and additives specifically disclosed by the Permittee to EPA. The following chemicals and additives were disclosed to EPA:

- Hydrochloric Acid 15%
- R 530 Vacuum Pump Oil
- P-1 Bean Seed Dressing and Plant Nutrient Solution
- Corro-Flex Caulk
- Sodium chlorite 25%
- AW Hydraulic Fluid ISO 68
- Dupont Adox 3125 25% Sodium Chloride
- Morton Professional Water softener (sodium chloride)
- Dupont Adox 8125 Sodium Chlorite
- Jax Packer Oil 22
- High Calcium Chemical Hydrate Lime
- Bean Promoter Bean Seed Treatment
- Boilermate 1200S
- WF-68 Mineral Oil
- Induclor Calcium Hypochlorite Granules
- Prohypo
- Sodium Hypochlorite 12.5%
- Sodium Hypochlorite 15%
- Soda Ash, Commercial Sodium Carbonate
- Anhydrous Calcium Chloride
- Sodium bicarbonate USP No 1
- Microsolve Activator Solution
- Microsolve disinfectant Cleaner
- Zep Calcium, Lime and Rust Stain Remover
- Zep Door San
- Zep FS Amine Z
- Zep FS Concentrated Foaming Acid
- Zep FS Formula 4089
- Zep FS Formula 4489 Foaming Acid
- Zep Peroxy Serve 5

However, EPA recognizes that chemicals and additives in use at a Facility may change during the term of the permit. As a result, the Draft Permit includes a provision that requires the Permittee to notify EPA in writing of the discharge a new chemical or additive; allows for EPA review of the change; and provides the factors for consideration of such changes. The Draft Permit specifies that for each chemical or additive, the Permittee must submit the following information, at a minimum, in writing to EPA:

- Product name, chemical formula, general description, and manufacturer of the chemical/additive.
- Purpose or use of the chemical/additive.
- Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive.
- The frequency (e.g., hourly, daily), magnitude (e.g., maximum application concentration), duration (e.g., hours, days), and method of application for the chemical/additive.
- If available, the vendor's reported aquatic toxicity (i.e., NOAEL and/or LC_{50} in percent for aquatic organism(s)).

The Permittee must also provide an explanation that demonstrates that the discharge of such chemical or additive: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit. This information should also be reported in the Facility's BMP Plan referenced in the Best Management Practices Special Condition above.

Assuming these requirements are met, discharges of a new chemical or additive is authorized under the permit upon notification to EPA unless otherwise notified by EPA.

6.0 Federal Permitting Requirements

6.1 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and habitat of such species that has been designated as critical (a "critical habitat").

Section 7(a)(2) of the ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) administers Section 7 consultations for marine and anadromous species.

The Federal action being considered in this case is EPA's proposed NPDES permit for Chang Farm. The Draft Permit is intended to replace the 2014 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to federally listed species, and initiates consultation, when required under Section 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in the expected action area of the outfall to determine if EPA's proposed NPDES permit could potentially impact any such listed species in this section of the Connecticut River (MA34-04).

Regarding protected species under the jurisdiction of NOAA Fisheries, a number of anadromous and marine species and life stages are present in Massachusetts waters. Various life stages of protected fish, sea turtles and whales have been documented in Massachusetts coastal and inland waters, either seasonally or year-round. In general, adult and subadult life stages of Atlantic sturgeon (*Acipenser oxyrinchus*) and adult shortnose sturgeon (*Acipenser brevirostrom*) are present in coastal waters. These sturgeon life stages are also found in some river systems in Massachusetts, along with early life stages of protected sturgeon and juvenile shortnose sturgeon. Protected marine species, including adult and juvenile life stages of leatherback sea turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), Kemp's ridley sea turtles (*Lepidochelys kempii*) and green sea turtles (*Chelonia mydas*) are found in coastal waters and bays. Adult and juvenile life stages of North Atlantic right whales (*Eubalaena glacialis*) and fin whales (*Balaenoptera physalus*) have also been documented in coastal waters and bays. Those coastal areas have been designated as critical habitat for North Atlantic right whale feeding.

In this case, the Facility's outfall and action area do not overlap with coastal waters where protected marine species (sea turtles and whales) are found. The Facility's discharge is over 80 miles north of Long Island Sound and over 80 miles west of the Massachusetts coastline. However, one species of anadromous fish, the shortnose sturgeon (*Acipenser brevirostrom*), is potentially present in the vicinity of the discharge. In general, adult shortnose sturgeon (SNS) are present in coastal waters, but various sturgeon life stages are also found in some river systems in Massachusetts. As noted previously, the Facility discharges directly into the mainstem of the Connecticut River. According to NOAA Fisheries,[19] an existing dam-locked population of shortnose sturgeon inhabit the upstream sections of the Connecticut River above the Holyoke Dam in Holyoke, MA, approximately 24 miles downstream of the Facility's outfall. The lifestages include adult and juvenile SNS that are expected to migrate, forage and overwinter in the area, young of year SNS that are expected to migrate and forage in the area and post yolk-sac larvae SNS that are expected to migrate and forage in the area. Because these species may be affected by the discharges authorized by the proposed permit, EPA has thoroughly evaluated the potential impacts of the permit action on these anadromous species through the preparation of a Biological Assessment (BA). EPA is in the process of finalizing the BA. On the basis of the evaluation, EPA's preliminary determination is that this action may affect, but is not likely to adversely affect, the life stages of shortnose sturgeon which are expected to inhabit the

[19] See §7 resources for NOAA Fisheries at https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27.

Connecticut River in the vicinity of the action area of the discharge. Therefore, EPA has judged that a formal consultation pursuant to section 7 of the ESA is not required. EPA is seeking concurrence from NOAA Fisheries regarding this determination through the information in the Draft Permit, this Fact Sheet, as well as the detailed BA that will be sent to NOAA Fisheries Protected Resources Division during the Draft Permit's public comment period.

For protected species under the jurisdiction of the USFWS, one listed species, the northern long-eared bat (*Myotis septentrionalis*), was identified as potentially occurring in the action area of the Facility's discharge. Another endangered species, the northeastern bulrush *(Scirpus ancistrochaetus),* was found to be in the general vicinity of the discharge; however, upstream of it and unlikely to be impacted by any industrial action. According to the USFWS,[20] the northeastern bulrush is a wetland obligate plant occurring in acidic to almost neutral wetlands including sinkhole ponds, wet depressions, vernal pools (collectively, seasonal or ephemeral wetlands), beaver flowages, and other riparian areas found in hilly country (Schuyler 1962, p. 47). Since the Chang Farms action area discharges directly to the mainstem of the Connecticut River, it does not overlap with the habitat of the northeastern bulrush. Therefore, the proposed permit action is deemed to have no impact on this listed species and ESA consultation with USFWS for this plant is not required.

According to the USFWS, the threatened northern long-eared bat is found in the following habitats based on seasons, "winter – mines and caves; summer – wide variety of forested habitats." This species is not considered aquatic. However, because the Facility's projected action area in the Connecticut River near Deerfield Massachusetts overlaps with the general statewide range of the northern long-eared bat, EPA prepared an Effects Determination Letter for the Chang Farms NPDES Permit Reissuance and submitted it to USFWS. Based on the information submitted by EPA, the USFWS notified EPA by letter, dated September 2, 2021, that the permit reissuance is consistent with activities analyzed in the USFWS January 5, 2016, Programmatic Biological Opinion (PBO).[21] The PBO outlines activities that are excepted from "take" prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.). The USFWS consistency letter concluded EPA's consultation responsibilities for the Chang Farms NPDES permitting action under ESA section 7(a)(2) with respect to the northern long-eared bat. No further ESA section 7 consultation is required with USFWS.

At the beginning of the public comment period, EPA notified USFWS and NOAA Fisheries Protected Resources Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

EPA finds that adoption of the proposed permit is not likely to adversely affect any threated or endangered species or its critical habitat and informal consultation with NOAA Fisheries or USFWS under Section 7 of the ESA is required. Initiation of consultation is required and shall be requested by the EPA or by USFWS/NOAA Fisheries where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information

[20] For USFWS species list see at https://ecos.fws.gov/ipac/
[21] USFWS Event Code: 05E1NE00-2021-E-14173, September 2, 2021.

reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the analysis; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this analysis; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted. If there is any incidental take of a listed species, initiation of consultation would be required.

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 *et seq*., 1998), EPA is required to consult with the NOAA Fisheries if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat". *See* 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". *See* 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH. 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

EFH is only designated for fish species for which federal Fisheries Management Plans exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. A New England Fishery Management Council's Omnibus Essential Fish Habitat Amendment in 2017 updated the descriptions.

The Federal action being considered in this case is EPA's proposed NPDES permit for Chang Farms, which discharges though Outfall 001, to the Connecticut River segment MA34-04, in Whatley, MA. The Connecticut River is covered by EFH designation for riverine systems at Latitude 42° 27' 44.6", Longitude -72° 35' 18.7" as determined by the NOAA EFH Mapper.[22] EPA's review of available EFH information indicated that this water body is designated EFH for Atlantic salmon. Therefore, consultation with NOAA Fisheries under the Magnuson-Stevens Fishery Conservation and Management Act is required.

The Connecticut River and its tributaries are designated EFH for Atlantic salmon (*Salmo salar*). EPA has determined that the operation of this Facility, as governed by this permit action, may adversely affect the EFH of the Atlantic salmon in the Connecticut River Watershed. The Draft Permit has been conditioned in the following way to minimize any impacts that reduce the quality and/or quantity of EFH:

6.2.1 EPA's Finding of all Potential Impacts to EFH Species

- This Draft Permit action does not constitute a new source of pollutants. It is the reissuance of an existing NPDES permit;

[22] NOAA EFH Mapper available at https://www.habitat.noaa.gov/apps/efhmapper/

- The Facility withdraws no water from the Connecticut River, so the EFH will not be reduced in quality and/or quantity through impingement or entrainment of EFH designated species or their prey;
- Acute toxicity tests will be conducted twice a year to ensure that the discharge does not present toxicity problems;
- Total suspended solids, biochemical oxygen demand, pH, *E. coli*, total residual chlorine, and acute toxicity are regulated by the Draft Permit to meet water quality standards;
- The Draft Permit prohibits the discharge of pollutants or combination of pollutants in toxic amounts;
- The effluent limitations and conditions in the Draft Permit were developed to be protective of all aquatic life;
- The Draft Permit prohibits violations of the state water quality standards; and
- The proposed Draft Permit requirements minimize any reduction in quality and/or quantity of EFH, either directly or indirectly.

EPA believes that the conditions and limitations contained in the Draft Permit adequately protects all aquatic life, as well as the essential fish habitat of Atlantic salmon. Further mitigation is not warranted. Should adverse impacts to EFH be detected as a result of this permit action, or if new information is received that changes the basis for EPA's conclusions, NOAA Fisheries Habitat Division will be contacted and an EFH consultation will be re-initiated.

At the beginning of the public comment period, EPA notified NOAA Fisheries Habitat and Ecosystem Services Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents. In addition to this Fact Sheet and the Draft Permit, information to support EPA's finding was included in a letter under separate cover that will be sent to the NOAA Fisheries Habitat and Ecosystem Services Division during the public comment period.

7.0 Public Comments, Hearing Requests, and Permit Appeals

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

Nathan Chien
EPA Region 1
5 Post Office Square, Suite 100 (06-1)
Boston, MA 02109-3912
Telephone: (617) 918-1649
Email: Chien.Nathan@epa.gov

Prior to the close of the public comment period, any person may submit a written request to EPA for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the Draft Permit, EPA will respond to

all significant comments in a Response to Comments document attached to the Final Permit and make these responses available to the public at EPA's Boston office and on EPA's website.

Following the close of the comment period, and after any public hearings, if such hearings are held, EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 CFR § 124.19.

8.0 Administrative Record

The administrative record on which this Draft Permit is based may be accessed at EPA's Boston office by appointment, Monday through Friday, excluding holidays from Nathan Chien, EPA Region 1, 5 Post Office Square, Suite-100 (06-1), Boston, MA 02109-3912, or via email to Chien.Nathan@epa.gov.

November 9, 2021

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

Figure 1: Location Map

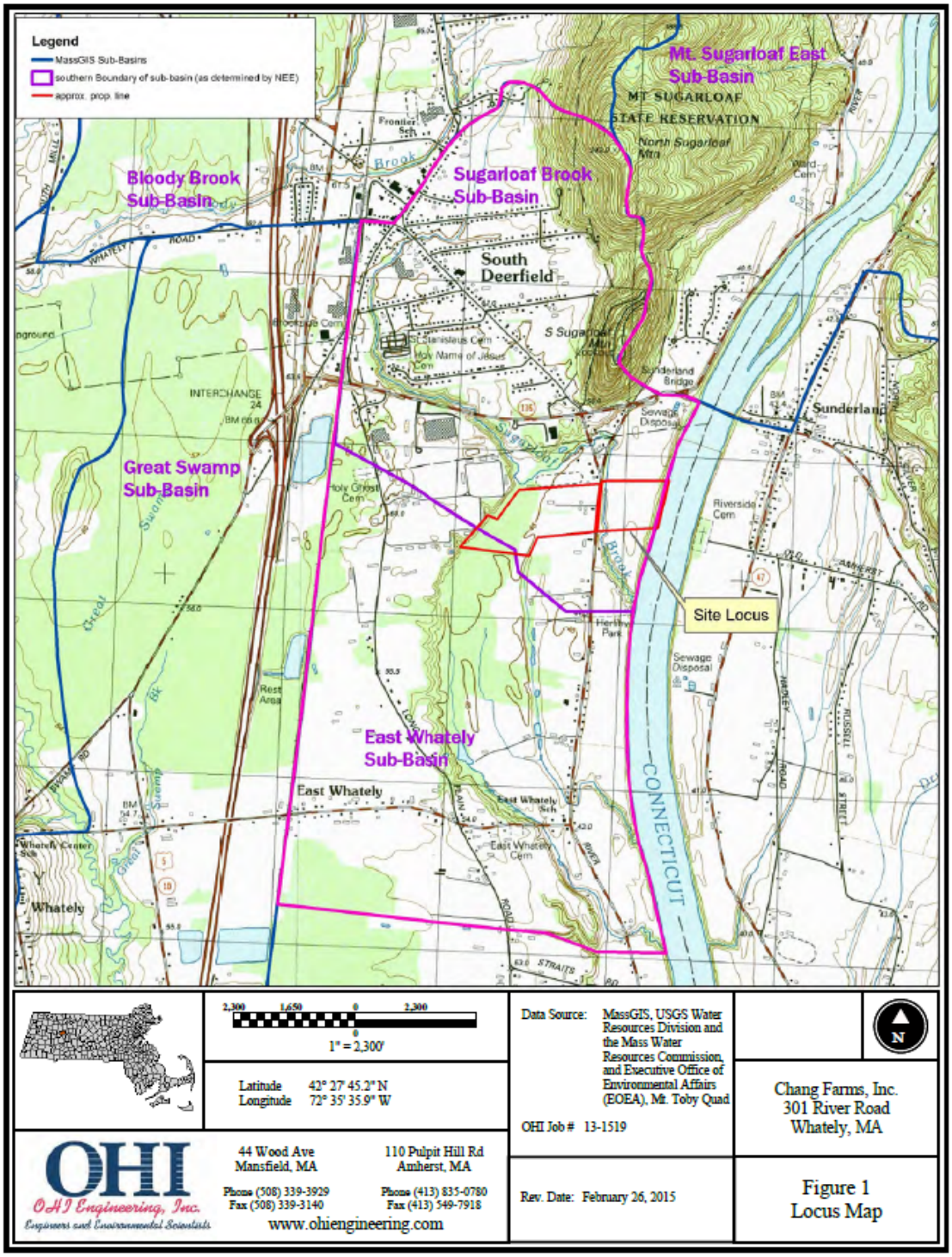


Figure 2: Site Plan

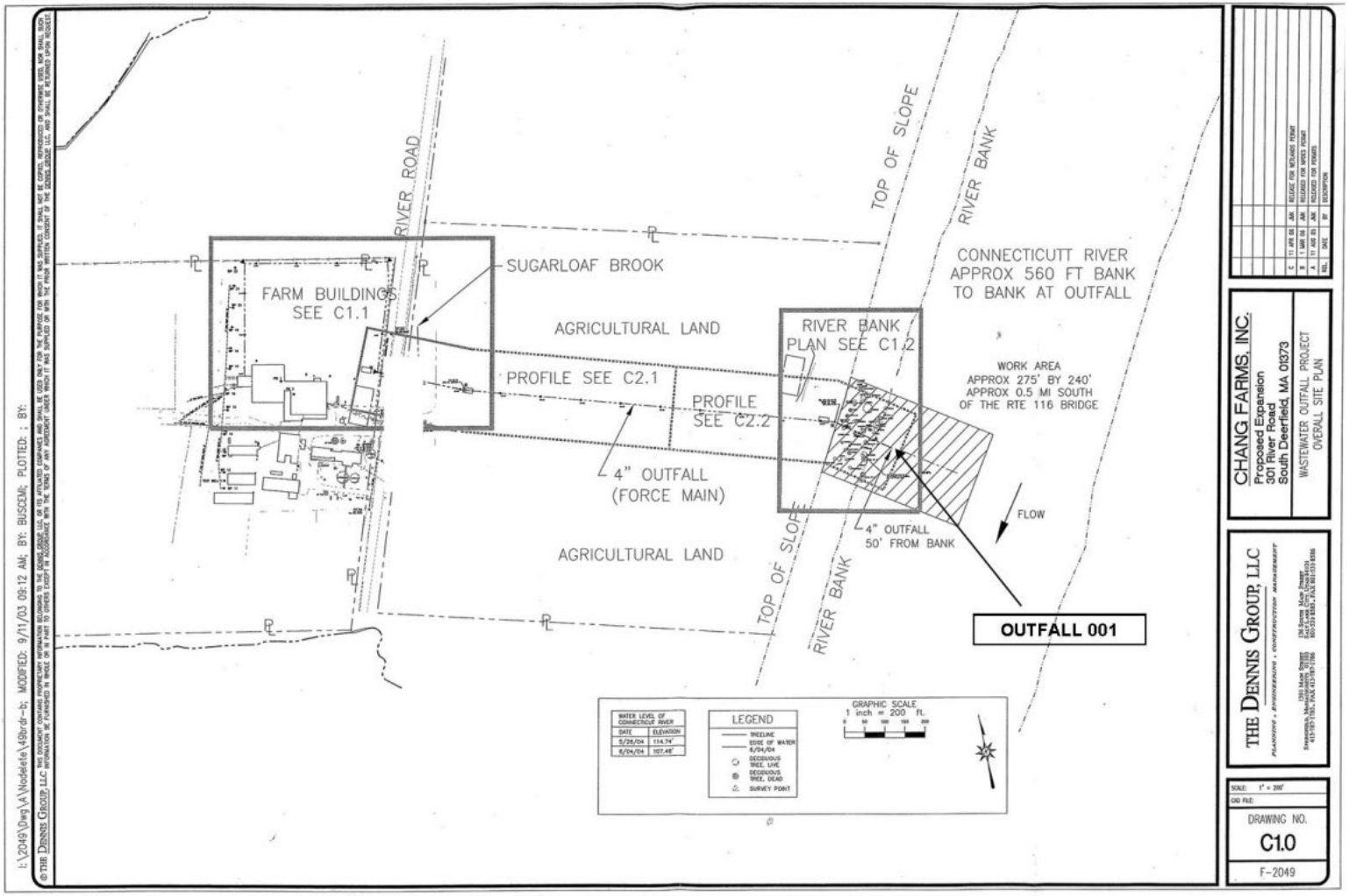
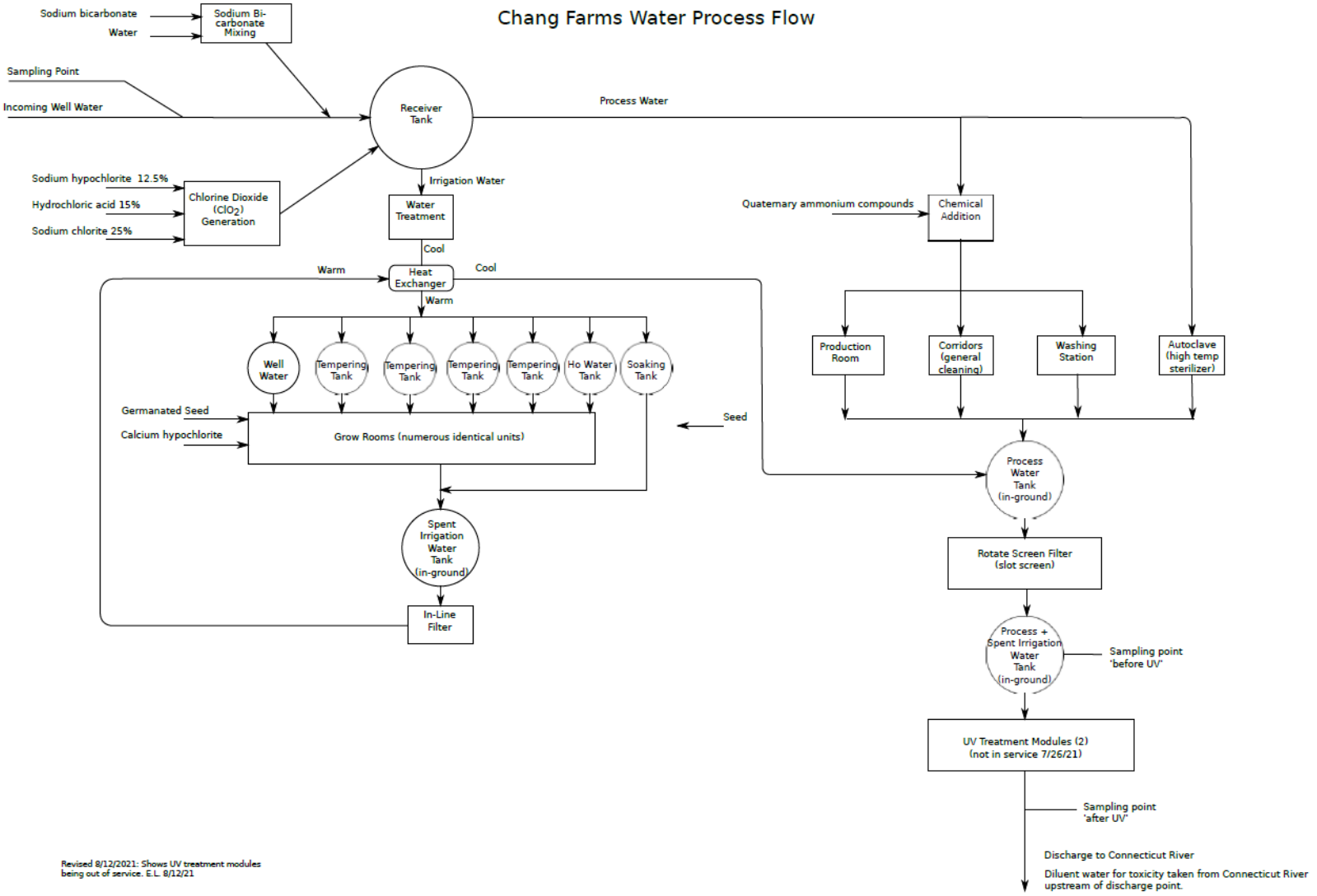


Figure 3: Schematic of Water Flow



Appendix A: Discharge Monitoring Data

Chang Farms Outfall Monitoring Location – 001 Monthly Effluent Data									
Parameter	**Flow**	**Flow**	**Flow rate**	**pH**	**pH**	**BOD5**	**BOD5**	**BOD5**	**BOD5**
	Monthly Avg	**Daily Max**	**Daily Max**	**Minimum**	**Maximum**	**Monthly Avg**	**Monthly Avg**	**Daily Max**	**Daily Max**
Units	**MGD**	**MGD**	**gal/min**	**SU**	**SU**	**lb/d**	**mg/L**	**lb/d**	**mg/L**
Effluent Limit	**Report**	**0.65**	**640**	**6.5**	**8.3**	**144**	**26.6**	**225**	**41.5**
Minimum	**0.131**	**0.198**	**327**	**6.5**	**6.71**	**10.01**	**4**	**15.88**	**9.2**
Maximum	**177**	**0.477**	**557**	**7.54**	**8.1**	**57**	**32.5**	**92.8**	**57**
Median	**0.21**	**0.24**	**428**	**6.745**	**7.19**	**25.18**	**14.25**	**36.76**	**21.5**
No. of Violations	**N/A**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**4**
Monitoring Period End Date									
9/30/2016	0.21	0.23	450	6.59	7.71	57	**32.5**	92.8	**57**
10/31/2016	0.208	0.236	516	6.69	7.92	14.06	8.1	19.63	11
11/30/2016	0.206	0.235	417	6.75	7.53	30.67	17.84	83.86	**47**
12/31/2016	0.22	0.265	425	6.68	7.8	14.87	8.1	23.2	13
1/31/2017	0.211	0.285	390	6.85	7.81	33.55	19.1	62.45	35
2/28/2017	0.197	0.225	432	7.54	7.72	30.76	16.03	42.82	24
3/31/2017	0.226	0.26	397.63	6.85	7.64	19.43	10.3	30.33	17
4/30/2017	0.22	0.24	413	6.54	7.11	19.83	10.8	28.55	16
5/31/2017	0.209	0.226	479	6.6	8.1	18.26	10.46	30.33	17
6/30/2017	0.195	0.218	473	6.7	7.8	20.5	12.6	26.76	15
7/31/2017	0.196	0.256	378	6.61	7.53	12.8	7.8	15.88	9.2
8/31/2017	0.217	0.249	429	6.86	7.92	14.92	8.2	19.63	11
9/30/2017	0.216	0.255	430	6.66	6.99	15.8	8.8	21.41	12
10/31/2017	0.198	0.228	486	6.58	6.73	21.69	13.13	36.34	22
11/30/2017	0.194	0.211	548	6.65	6.82	10.01	6.2	21.41	12

Chang Farms
Outfall Monitoring Location – 001
Monthly Effluent Data

Parameter	Flow	Flow	Flow rate	pH	pH	BOD5	BOD5	BOD5	BOD5
	Monthly Avg	Daily Max	Daily Max	Minimum	Maximum	Monthly Avg	Monthly Avg	Daily Max	Daily Max
Units	**MGD**	**MGD**	**gal/min**	**SU**	**SU**	**lb/d**	**mg/L**	**lb/d**	**mg/L**
12/31/2017	0.208	0.249	501	6.51	7.23	15.41	8.88	23.2	13
1/31/2018	0.2	0.226	362	6.57	6.71	41.37	24.8	60.66	34
2/28/2018	0.204	0.231	365	6.62	6.74	36.2	21.3	55.3	31
3/31/2018	0.19	0.214	476	6.66	6.95	25.8	16.3	35.68	20
4/30/2018	0.198	0.212	479	6.69	6.92	20.24	12.25	25	14
5/31/2018	0.196	0.216	471	6.68	6.83	19.3	11.8	28.55	18
6/30/2018	0.183	0.21	468	6.5	7.23	18.59	12.2	24.98	14
7/31/2018	0.2	0.26	436	6.78	7	16.8	10.05	19.63	11
8/31/2018	0.204	0.237	487	6.79	7.69	18.09	10.64	28.9	17
9/30/2018	0.21	0.22	485	7.38	8.1	32.95	19	62.45	36
10/31/2018	0.232	0.252	500	7.19	7.97	36.7	19	73.4	38
11/30/2018	0.218	0.233	475	6.75	7.1	36.42	20	63.73	35
12/31/2018	0.221	0.248	488	6.78	7.88	12.92	4	36.91	20
1/31/2019	0.21	0.24	475	6.86	7.04	24.56	14	47.36	27
2/28/2019	0.208	0.229	389	6.82	6.98	28.38	16.38	51.97	30
3/31/2019	0.211	0.241	429	6.86	7.45	30.36	17.25	36.96	21
4/30/2019	0.207	0.227	430	6.74	7.33	37.61	21.75	55.33	32
5/31/2019	0.22	0.247	361	6.65	7.06	40.55	22	55.29	30
6/30/2019	0.218	0.249	357	6.78	7.55	36.4	20	59.77	33
7/31/2019	0.228	0.265	470	7.24	7.83	48.62	25.6	68.38	36
8/31/2019	0.232	0.259	415	6.78	7.59	29.64	15.85	33.66	32
9/30/2019	0.229	0.261	418	7.41	7.55	26.5	13.9	40.03	21
10/31/2019	0.238	0.268	397	6.85	7.04	48.44	24.46	87.34	**44**
11/30/2019	0.234	0.267	490	6.54	7.24	33.21	17	48.84	25

Chang Farms
Outfall Monitoring Location – 001
Monthly Effluent Data

Parameter	Flow	Flow	Flow rate	pH	pH	BOD5	BOD5	BOD5	BOD5
	Monthly Avg	Daily Max	Daily Max	Minimum	Maximum	Monthly Avg	Monthly Avg	Daily Max	Daily Max
Units	**MGD**	**MGD**	**gal/min**	**SU**	**SU**	**lb/d**	**mg/L**	**lb/d**	**mg/L**
12/31/2019	0.243	0.392	392	7.19	7.35	47.13	23.25	68.91	34
1/31/2020	0.247	0.281	403	7.33	7.56	26.28	12.75	45.34	22
2/29/2020	0.23	0.25	394	6.83	7.07	43.03	22.5	55.46	29
3/31/2020	0.1759	0.2492	392	6.92	7.48	19.61	13.5	24.7	17
4/30/2020	0.131	0.202	366	6.81	6.96	14.42	13.14	39.5	36
5/31/2020	0.164	0.198	365	6.68	6.89	15.01	11	23.2	17
6/30/2020	0.177	0.2	369	6.71	7.88	10.68	7.25	20.63	14
7/31/2020	0.185	0.206	368	6.55	6.89	32.03	21	36.61	24
8/31/2020	0.196	0.22	366	6.52	6.74	21.44	13.13	32.6	20
9/30/2020	0.23	0.27	490	6.67	6.83	37.28	19.2	58.25	30
10/31/2020	0.228	0.27	360	6.83	6.99	16.84	15	44.1	24
11/30/2020	0.223	0.256	357	6.95	7.08	33.66	18.1	40.92	22
12/31/2020	0.233	0.276	331	7.01	7.16	28.67	14.74	42.79	22
1/31/2021	0.219	0.253	327	6.61	7.13	24.5	13.43	31.01	17
2/28/2021	0.22	0.24	427	6.9	7.22	21.84	11.75	24.55	13
3/31/2021	0.229	0.243	467	6.83	6.97	23.68	12.4	24.83	13
4/30/2021	0.232	0.477	557	6.68	6.87	19.88	10.28	27.08	14
5/31/2021	0.209	0.226	479	6.51	6.71	26.58	15.25	36.6	21
6/30/2021	0.208	0.22	384	6.58	6.71	44.42	25.6	76.52	**44**
7/31/2021	0.209	0.224	365	6.58	7.47	36.2	20.75	45.35	26
8/31/2021	0.204	0.225	475	6.75	6.86	24.23	14.5	26.73	16

Chang Farms Outfall Monitoring Location – 001 Monthly Effluent Data – Continued										
Parameter	**TSS**	**TSS**	**TSS**	**TSS**	**E. coli**	**E. coli**	**TRC**	**TRC**	**TN**	**TP**
	Monthly Avg	**Monthly Avg**	**Daily Max**	**Daily Max**	**Monthly Avg**	**Daily Max**	**Monthly Avg**	**Daily Max**	**ANNL AVG**	**Monthly Avg**
Units	**lb/d**	**mg/L**	**lb/d**	**mg/L**	**CFU/100mL**	**CFU/100mL**	**mg/L**	**mg/L**	**lb/d**	**mg/L**
Effluent Limit	**84**	**15.5**	**126**	**23.2**	**126**	**409**	**1.0**	**1.0**	**12.4**	**Report**
Minimum	**1.32**	**0.68**	**1.95**	**1**	**0**	**0**	**0**	**0**	**3.98**	**0**
Maximum	**24.71**	**12.88**	**37.5**	**21**	**551**	**2190**	**0.1**	**0.1**	**11.11**	**0.59**
Median	**8.84**	**5.125**	**14.76**	**8.8**	**2.23**	**10**	**Non-Detect**	**Non-Detect**	**7.41**	**0.115**
No. of Violations	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**0**	**N/A**
Monitoring Period End Date										
9/30/2016	14.24	8.13	24.98	14	< 10	< 10	0.1	0.1		0.38
10/31/2016	15.62	9	37.5	21	< 10	< 10	0.1	0.1		0.088
11/30/2016	5.5	3.2	10.71	6			0.1	0.1		< .1
12/31/2016	8.72	4.75	16.06	9			0.1	0.1		0.1
1/31/2017	7.9	4.5	23.2	13			< .1	< .1		0.11
2/28/2017	24.71	12.88	33.9	19			< .1	< .1		0.48
3/31/2017	4.7	2.5	4.7	2.5			< .1	< .1		0.077
4/30/2017	8.49	4.625	10.71	6	< 10	< 10	< .1	< .1		0.1
5/31/2017	9.46	5.4	24.98	14	< 10	< 10	< .1	< .1		0.09
6/30/2017	20.55	12.6	35.68	20	**551**	**2190**	< .1	< .1	11.11	0.08
7/31/2017	7.57	4.6	19.63	11	< 10	< 10	< .1	< .1		0.22
8/31/2017	11.4	6.3	21.4	12	< 10	< 10	< .1	< .1		0.59
9/30/2017	7.44	4.1	8.03	9	6.3	10	< .1	< .1		0.21
10/31/2017	11.36	6.88	18.17	11	< 10	< 10	< .1	< .1		0.12

Chang Farms
Outfall Monitoring Location – 001
Monthly Effluent Data – Continued

Parameter	TSS	TSS	TSS	TSS	E. coli	E. coli	TRC	TRC	TN	TP
	Monthly Avg	Monthly Avg	Daily Max	Daily Max	Monthly Avg	Daily Max	Monthly Avg	Daily Max	ANNL AVG	Monthly Avg
Units	lb/d	mg/L	lb/d	mg/L	CFU/100mL	CFU/100mL	mg/L	mg/L	lb/d	mg/L
11/30/2017	8.1	5	12.49	7			< .1	< .1		0.081
12/31/2017	7.59	4.4	8.92	5			< .1	< .1		0.52
1/31/2018	5.67	3.4	9.28	5.2			< .1	< .1		0.11
2/28/2018	10.3	6.1	15.88	9			< .1	< .1		0.13
3/31/2018	4.16	2.6	6.78	3.8			0.1	0.1		0.1
4/30/2018	9.38	5.68	14.27	8	< 10	< 10	< .1	< .1		0.11
5/31/2018	9.31	5.69	24.98	14	< 10	< 10	< .1	< .1		0.3
6/30/2018	7.25	4.8	11.95	6.7	< 10	< 10	< .1	< .1	7.41	0.16
7/31/2018	9.12	5.5	12.85	7.2	< 10	< 10	< .1	< .1		0.26
8/31/2018	12.31	7.24	23.8	14	< 10	< 10	< .1	<= .1		0.18
9/30/2018	6.63	11.49	9.2	15.88	31.25	110	< .1	< .1		0.31
10/31/2018	11.42	5.94	17.38	9.1	< 10	< 10	< .1	< .1		0.26
11/30/2018	7.1	3.9	12.2	6.7			< .1	< .1		0.27
12/31/2018	7.01	3.8	9.6	15.2			< .1	< .1		0.23
1/31/2019	9.77	5.57	15.44	8.8			< .1	< .1		0.21
2/28/2019	11.09	6.4	13.17	7.6			< .1	< .1		0.11
3/31/2019	13.02	7.4	19.36	11			< .1	< .1		0.09
4/30/2019	14.18	8.2	15.56	9	<= 2.33	5.2	<= .1	<= .1		0.14
5/31/2019	14.23	7.72	20.27	11	< 6	13	< .1	< .1		0.11
6/30/2019	10.87	5.98	16.02	8.8	11	23	< .1	< .1	7.82	0.14
7/31/2019	12.42	6.54	18.99	10	5	22	<= .1	<= .1		0.14
8/31/2019	4.95	2.65	18.7	10	<= 7	24	<= .1	<= .1		0.15
9/30/2019	9.34	4.9	16.01	8.4	**331**	**1300**	< .1	< .1		0.12

Chang Farms
Outfall Monitoring Location – 001
Monthly Effluent Data – Continued

Parameter	TSS	TSS	TSS	TSS	E. coli	E. coli	TRC	TRC	TN	TP
	Monthly Avg	Monthly Avg	Daily Max	Daily Max	Monthly Avg	Daily Max	Monthly Avg	Daily Max	ANNL AVG	Monthly Avg
Units	lb/d	mg/L	lb/d	mg/L	CFU/100mL	CFU/100mL	mg/L	mg/L	lb/d	mg/L
10/31/2019	13.7	6.9	18.66	9.4	11.54	18	<= .1	<= .1		0.12
11/30/2019	12.07	6.18	15.63	8.3			<= .1	<= .1		0.11
12/31/2019	16.17	7.98	22.28	11			<= .1	<= .1		0.24
1/31/2020	11.5	5.58	18.14	8.8			<= .1	<= .1		0.11
2/29/2020	6.98	3.36	12.24	6.4			<= .1	0.1		0.14
3/31/2020	7.63	5.25	12.2	8.4			<= .1	<= .1		0.13
4/30/2020	3.38	3.08	7.13	6.5	0.625	1	<= .1	<= .1		0.056
5/31/2020	5.59	4.1	6.14	4.5	2.58	6.3	< .1	< .1		0.17
6/30/2020	6.94	4.71	11.79	8	67.25	180	<= .1	<= .1	3.98	0.05
7/31/2020	9.55	6.26	15.25	10	15.7	36	<= .1	<= .1		0.08
8/31/2020	5.39	3.3	7.02	4.3	11.5	29	<= .1	<= .1		<= .01
9/30/2020	10.21	5.26	23.3	12	4.4	19	<= .1	<= .1		0.05
10/31/2020	4.32	2.35	6.61	3.6	2.23	7.4	<= .1	<= .1		< .025
11/30/2020	10.75	5.78	29.76	16			<= .1	<= .1		0.07
12/31/2020	1.32	0.68	1.95	1			<= .1	<= .1		0.058
1/31/2021	3.01	1.65	5.47	3			<= .1	<= .1		0.071
2/28/2021	6.6	3.55	9.29	5			<= .1	<= .1		0.13
3/31/2021	6.34	3.32	9.55	5			<= .1	<= .1		0.1
4/30/2021	8.96	4.63	11.03	5.7	8.53	31	<= .1	<= .1		0.51
5/31/2021	6.15	3.53	7.67	4.4	5.25	10	<= .1	<= .1		0.089
6/30/2021	4	2.3	6.96	4	36.52	100	<= .1	0.1	6.26	0.12
7/31/2021	11.51	6.6	24.42	14	21.05	56	<= .1	<= .1		0.025
8/31/2021	7.23	4.33	12.36	7.4	5.75	12	<= .1	<= .1		0.088

CHANG FARMS **Outfall Serial Number 001** **Whole Effluent Toxicity Quarterly Effluent Data**											
Parameter	**LC50 Acute Ceriodaphnia**	**LC50 Acute Pimephales**	**pH**	**TRC**	**Ammonia**	**Cadmium**	**Copper**	**Lead**	**Nickel**	**Zinc**	**Hardness**
	MO MIN	**MO MIN**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**
Units	**%**	**%**	**SU**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Effluent Limit	**50**	**50**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**
Minimum	**50**	**100**	**7.16**	**0**	**0**	**No Data**	**0**	**0**	**0**	**0**	**49**
Maximum	**100**	**100**	**7.73**	**0.03**	**0.31**	**No Data**	**0.023**	**0.001**	**0.012**	**0.027**	**84.6**
Median	**100**	**100**	**7.26**	**0.01**	**0.14**	**No Data**	**0.0075**	**Non-Detect**	**0.0005**	**0.0105**	**63.45**
No. of Violations	**0**	**0**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Monitoring Period End Date											
9/30/2016	100	100	7.73	< .02	0.25	< .001	< .005	< .002	0.002	0.013	84.6
6/30/2017	100	100	7.16	< .02	0.16	< .001	0.023	0.001	0.001	0.027	65.6
9/30/2017	100	100	7.25	0.02	0.31	< .001	0.01	< .002	< .001	0.004	61.8
6/30/2018	100	100	7.47	< .02	0.12	< .001	0.003	< .001	< .001	0.005	60.1
9/30/2018	100	100	7.26	0.03	0.07	< .001	0.013	< .001	< .001	0.021	68
6/30/2019	100	100	7.21	< .02	< .05	< .001	0.008	< .001	0.012	0.009	49
9/30/2019	100	100	7.26	< .02	0.18	< .001	0.006	< .001	< .001	0.015	68.8
6/30/2020	100	100	7.22	0.03	0.13	< .001	0.007	< .001	0.001	0.009	62.1
9/30/2020	100	100	7.44	0.03	0.06	< .001	0.008	< .002	< .001	0.012	64.8
6/30/2021	50	100	7.53	0.03	0.15	<= 15.5	0.005	< .002	0.001	< .004	58.5

Notes:

MGD = million gallons per day
gal/min = gallons per minute
lb/d = pounds per day
mg/L = milligrams per liter
CFU/100mL = colony forming units per 100 milliliters
< '#' = parameter not detected above '#'
0 = parameter not detected
N/A = not applicable

Appendix B: Ambient Data

CHANG FARMS **Connecticut River** **Whole Effluent Toxicity Quarterly Receiving Water Data**									
Parameter	**pH**	**Ammonia**	**Cadmium**	**Copper**	**Lead**	**Nickel**	**Zinc**	**Hardness**	**Aluminum**
	Daily Max	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**	**Daily Max**
Units	**SU**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Effluent Limit	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**	**Report**
Minimum	**7.2**	**0**	**0**	**No Data**	**0**	**0**	**0**	**30.1**	**0.037**
Maximum	**7.76**	**0.18**	**13.8**	**No Data**	**0.002**	**0.002**	**0.007**	**52.8**	**722**
Median	**7.56**	**Non-Detect**	**Non-Detect**	**No Data**	**Non-Detect**	**Non-Detect**	**Non-Detect**	**43.95**	**0.106**
No. of Violations	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Monitoring Period End Date									
9/30/2016	7.75	0.07	< .001	< .005	< .002	0.001	< .002	52.8	0.099
6/30/2017	7.2	0.18	< .001	< .003	0.002	0.002	0.007	30.1	0.428
9/30/2017	7.73	< .05	13.8	< .003	< .002	< .003	< .012	43.9	1.33
6/30/2018	7.66	< .05	< .001	< .003	< .001	< .001	0.002	45.9	0.113
9/30/2018	7.38	< .05	< .001	< .003	0.001	0.002	0.007	40.9	722
6/30/2019	7.5	< .05	11.3	< .005	< .002	< .001	0.004	33.6	0.126
9/30/2019	7.61	0.11	< .001	< .003	< .001	< .001	< .002	41.4	0.058
6/30/2020	7.51	< .05	< .001	< .003	< .001	< .001	< .002	50.3	0.037
9/30/2020	7.76	< .05	< .001	< .005	< .002	< .001	< .004	49.4	0.041
6/30/2021	7.5	<= .005	< .001	< .005	< .002	< .002	< .004	44	0.053

Appendix C: Reasonable Potential Analysis

Methodology

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentrations that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of the *Technical Support Document for Water Quality-based Toxics Control* (TSD)[1] to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory minimum levels). EPA used this methodology to calculate the 95th percentile.

EPA uses the calculated upper bound of the effluent data, along with a concentration representative of the parameter in the receiving water, the critical effluent flow, and the critical upstream flow to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$Q_s C_s + Q_e C_e = Q_d C_d$$

Where:

C_d = downstream concentration
C_s = upstream concentration (median value of available ambient data)
C_e = effluent concentration (95th percentile of effluent concentrations)
Q_s = upstream flow (7Q10 flow upstream of the outfall)
Q_e = effluent flow of the Facility (permitted maximum daily flow)
Q_d = downstream flow ($Q_s + Q_e$)

Solving for the receiving water concentration downstream of the discharge (C_d) yields:

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

When the downstream concentration exceeds the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above WQSs. *See* 40 CFR § 122.44(d). When EPA determines that a discharge causes, has the reasonable

[1] USEPA, *Technical Support Document for Water Quality-Based Toxics Control*, Office of Water, Washington, D.C., March 1991.

potential to cause, or contribute to such an excursion, the permit must contain WQBELs for the parameter. The limitation is calculated by rearranging the above mass balance equation to solve for the effluent concentration using the applicable criterion as the downstream concentration. The resulting effluent concentration then becomes the basis for the effluent limit. *See* 40 CFR § 122.44(d)(1)(iii).

Determination of Applicable Criteria

The Gold Book Total Phosphorus criterion (0.1 mg/L) was selected as the applicable chronic criterion. For a complete discussion, see Section 5.1.8.2.

Calculation of Reasonable Potential

EPA first calculated the upper bound of expected effluent concentrations for each parameter. EPA then used the calculated upper bound of expected effluent concentrations, the permitted maximum effluent flow and the upstream 7Q10 flow to project the in-stream concentration downstream from the discharge. EPA relied on MassDEP's *Connecticut River Watershed 2008 DWM Water Quality Monitoring Data Technical Memorandum* (February 2013) for ambient total phosphorus data. The data was collected at the Route 116 bridge crossing upstream of the Facility (42.46760, -72.58479). Five values were collected from May 2008 through September 2008, with a range of 0.013 mg/L – 0.025 mg/L and a median value of 0.015 mg/L. EPA used the median value in its calculation. When the resultant in-stream concentration (C) exceeds the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above water quality standards. The results are summarized in the table below.

Summary of Reasonable Potential Results

Parameter	Effluent Flow	Effluent Conc[1]	Upstream Flow	Upstream Conc[2]	Downstream Flow[3]	Downstream Concentration	Chronic Criterion	Chronic Reasonable Potential[4]
Units	**MGD**	**µg/L**	**MGD**	**µg/L**	**MGD**	**µg/L**	**µg/L**	**—**
Total Phosphorus	0.65	358.6	1347	15	1347.65	15	100	N

[1] Values represent the 95th percentile concentration calculated using the monitoring data reported by the Facility (*See* Appendix A).
[2] Median upstream values calculated using monitoring data for the receiving water immediately upstream of the Facility's discharge reported by the Facility (see Appendix B).
[3] Value calculated as the sum of effluent flow and upstream flow.
[4] "Y" is indicated if downstream concentration exceeds the acute criterion. "N" is indicated if downstream concentration exceeds the chronic criterion.

Total Phosphorus does not have a reasonable potential to cause or contribute to an excursion above water quality standards.

Appendix D: Chang Farms – Technical Evaluation of Total Nitrogen Discharge

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APPENDIX D
Technical Evaluation of Total Nitrogen Discharge

A. Background Total N Loading

a) Using information from the MassDEP's *Water Management Act Permit Approval* (12/22/2005), the static (non-pumping condition) groundwater flow across the full width of the western portion of Chang Farm (920 ft) that discharges to Sugarloaf Brook, is calculated by:

Q (flow) = KIA; [6,444 gal/day/ft2 (K) * 0.0096 *ft/ft (I)* * 920 ft (L) * 9 ft (H)]
= 512,221 gals/day.

The average Total N concentration in groundwater measured at the Site in the 12-month period June 2017 through June 2018 is 10.33 mg/L. Total N in groundwater was not regularly measured prior to March 2015. N concentrations in groundwater and wastewater are shown in **Chart 1**.

Convert: $10.33 \text{ mg/L} * \frac{3.78541 \text{ L/gal}}{453592.37 \text{ mg/lb}} = 0.0000862 \text{ lbs/gal.}$

N Loading = flow * concentration = 512,221 gals/day * 0.0000862 lbs/gal = 44.16 lbs/day

Therefore, the naturally occurring groundwater flow contribution of Total N from the western half of the Site only, up to Sugarloaf Brook equals 44.16 pounds per day. Sugarloaf Brook discharges directly to the Connecticut River several thousand feet south of Chang Farm.

b) Adapting the information above with measurements from the eastern half of Chang Farm, the static (non-pumping condition) groundwater flow across the full width of the eastern portion of Chang Farm (1,008 ft) that discharges to the Connecticut River under a gradient of 0.0131 ft/ft (*Water Management Act Permit Application*, Figure 7, NEE 4/28/10), is calculated by:

Q (flow) = KIA; [6,444 gal/day/ft2 (K) * 0.0131 *ft/ft (I)* * 1,008 ft (L) * 9 ft (H)]
= 765,825 gals/day.

The average Total N concentration in groundwater measured at the Site in the 12-month period June 2017 through June 2018 is 10.33 mg/L.

Convert: $10.33 \text{ mg/L} * \frac{3.78541 \text{ L/gal}}{453592.37 \text{ mg/lb}} = 0.0000862 \text{ lbs/gal.}$

N Loading = flow * concentration = 765,825 gals/day * 0.0000862 lbs/gal = 66.01 lbs/day

Therefore, the naturally occurring groundwater flow contribution of Total N from the eastern half of the Site only, discharging directly to the Connecticut River equals approximately 66.01 pounds per day.

Total naturally occurring static groundwater flow contribution of Total N to the Connecticut River from Chang Farm is the sum of the contributions from the a) western and b) eastern portions of the property:

c). Based on the above calculations, the background Total N Loading from groundwater to the Connecticut River is calculated as follows:

$$= N\ Loading_E + N\ Loading_W$$
$$= 44.16\ lbs/day + 66.01\ lbs/day$$
$$Total\ N\ Loading_{Background} = 110.17\ lbs/day$$

B. Chang Farm Pumping/Discharge Contribution

The Chang Farm 2014 NPDES Permit limit for N Loading is 12.4 lbs/day. The average Total N concentration in wastewater measured at the Site in the 12-month period June 2017 through June 2018is 4.70 mg/L. Wastewater from Chang Farm has an average Total N Loading contribution to the Connecticut River via wastewater discharge during this period of:

$$200{,}000\ gal/day * 4.70\ mg/L * \frac{3.78541\ L/gal}{453592.37\ mg/lb} = 7.84 lbs/day$$

When both groundwater and wastewater were analyzed for Total N (June 2017 through June 2018), the effluent averages 18% lower than incoming groundwater, or a reduction of 1.72 lbs/day average N Loading contribution by growing bean sprouts, at the average discharge rate of 200,000 gpd during this period.

If scaled up to full NPDES permit pumping levels of 650,000 gpd, the decreased N Loading contribution by growing sprouts would be approximately -5.6lbs/day. The data clearly shows that growing bean sprouts at Chang Farm reduces the N Loading to the Connecticut River.

C. Reduction of Groundwater Discharge due to Pumping

When groundwater is pumped by Chang Farm for bean sprout irrigation, less groundwater discharges naturally to Sugarloaf Brook and the Connecticut River. How much less is difficult to measure, but estimates are possible to calculate and simulate.

As part of the *Water Management Act Permit Application* completed by New England Environmental, Inc. (NEE, 7/1/2010), a three-dimensional computer model of the Chang Farm area was constructed using MODFLOW. The details of this model were included in the *Prolonged Pumping Test Report* (Appendix A, *WMA Form H*). The calibrated model results were used to simulate long-term impacts to other water users, wetlands, Sugarloaf Brook, and the Connecticut River. An excerpt from the *Water Management Permit Application* is provided below:

> ***7.3.3 Sugarloaf Brook***
>
> *The model can, however, quantify potential impacts to the flow in Sugarloaf Brook because this surface water feature is simulated as stream flow nodes which keep track of water flowing into and out of each adjacent node. Depending on the relationship between the*

water level in the aquifer and the water level in the stream, the stream will either receive water from the aquifer or provide water to the aquifer. Along most of the brook's course it receives groundwater discharge and the accumulated discharge forms the base flow of the brook. This can be seen in the results of the groundwater model as an increase in predicted flow along much of the stream's course.

In order to determine the potential impact of the proposed pumping wells on the flow of the stream, the model was simulated in steady state mode under average recharge conditions (22 inches per year) with and without the proposed wells. The model-predicted flow of the stream was then evaluated at three locations (shown in Figure 10) - 1) upgradient of the upper well field at DP-1, 2) at the point where the brook takes a sharp turn to the south and then 3) immediately downgradient of Chang Farm at DP-8. The model was then run to simulate the proposed wellfields at a combined rate of 454 gpm - the lower wellfield (Well Bank 3) was simulated at a rate of 223 gpm (0.321 MDG), the upper wellfield (Well Bank 4) at a rate of 231 gpm (0.332 MGD).

Under maximum pumping conditions and average groundwater conditions the model predicts a decrease in flow in Sugarloaf Brook as it leaves the Chang Property of approximately 0.18 cfs. This can be attributed to the pumping wells inducing flow from the brook. This is not a large percentage of the flow in the brook. This impact estimate is considered to be conservative because the brook is likely to be underlain by clay in more areas than are assumed in the model. The model assumes a limited connection between groundwater and surface water only in those areas in which the presence of clay has been confirmed.

Under maximum simulated pumping (757,760 gal/day) and average groundwater conditions, the MODFLOW model predicted a decrease in flow in Sugarloaf Brook as it left Chang Farm property of approximately 0.18 cfs. This was attributed to induced flow from Sugarloaf Brook to the pumping wells. A reduction of 0.18 cfs is equal to:

0.18 ft3/sec * 7.48 gal/ft3 * 86400 sec/day = 116,329 gal/day

The June 2017 to June 2018 average pumping rate (209,000 gal/day) is 27.6% of the simulated pumping rate in the MODFLOW model (757,760 gal/day). Assuming that the effects of induced infiltration are proportional to flow, then the pumping would have decreased the flow in Sugarloaf Brook by:

116,329 gal/day * 27.6% = 32,085 gal/day

Assuming that groundwater and Sugarloaf Brook exchange water and have similar Total N concentrations, the reduced surface water flow in Sugarloaf Brook would reduce Total N loading to the Connecticut River as follows:

N Loading = flow * concentration = -32,085 gal/day * 0.000068599 lbs/gal = -2.20 lbs/day

This analysis indicates that pumping the Chang Farm water supply wells (June 2017 to June 2018) induced flow from Sugarloaf Brook, which reduced the flow in Sugarloaf Brook, and therefore reduced the N Loading contribution to the Connecticut River by approximately 2.2 lbs/day.

If scaled up to full NPDES permit pumping levels of 650,000 gpd, the reduced N Loading contribution to the Connecticut River from Sugarloaf Brook would be approximately 7.15 lbs/day.

D. Total N Loading Reduction Summary

With all Total N measurements collected in the past year, the Total N in the Chang Farm wastewater discharge averages 18% lower than incoming groundwater, or -1.72 lbs/day average N Loading contribution by growing bean sprouts, at the average discharge rate of 200,000 gpd during this period.

This same pumping reduced the N Loading contribution of Sugarloaf Brook to the Connecticut River by approximately 2.20 lbs/day. This is a net total reduction in N Loading of 3.92 lbs/day, or more, due to the bean sprout operation under June 2017 to present pumping volumes.

(N in WW – N in GW) + (reduced N contribution of Sugarloaf Brook) = change in N Loading

(7.84 lbs/d – 9.56 lbs/d) + (-2.20 lbs/d) = -3.92 lbs/day.

When scaled up to full NPDES permit pumping levels (650,000 gpd), the reduced Total N Loading contribution to the Connecticut River would be approximately 12.74 lbs/d.

This is roughly 11.56% of the background daily loading calculated in **Section A** above.

It is acknowledged that the above calculations make several assumptions and generalizations. However the result indicates a substantial potential reduction in Total N Loading to the Connecticut River. Even if the assumptions are off by 20-25%, there is still a substantial benefit to the Connecticut River from the bean sprout growing operation.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY – REGION 1 (EPA)
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MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP)
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EPA PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO WATERS OF THE UNITED STATES UNDER SECTION 402 OF THE CLEAN WATER ACT (CWA), AS AMENDED, AND MASSDEP PUBLIC NOTICE OF EPA REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE CWA.

PUBLIC NOTICE PERIOD: **November 9, 2021 to December 8, 2021**

PERMIT NUMBER: **MA0040207**

NAME AND MAILING ADDRESS OF APPLICANT:

Chang Farms, Inc.
P.O. Box 191
South Deerfield, MA 01373

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Chang Farms
301 River Road
Whately, MA 01373

RECEIVING WATER AND CLASSIFICATION:

Connecticut River, MA34-04 (Class B)

PREPARATION OF THE DRAFT PERMIT AND EPA REQUEST FOR CWA § 401 CERTIFICATION:

EPA is issuing for public notice and comment the Draft NPDES Permit for the Chang Farms facility, which discharges process wastewater from bean sprout manufacturing. The effluent limits and permit conditions have been drafted pursuant to, and assure compliance with, the CWA, including EPA-approved State Surface Water Quality Standards at 314 CMR 4.00. MassDEP cooperated with EPA in the development of the Draft NPDES Permit. MassDEP retains independent authority under State law to publish for public notice and issue a separate Surface Water Discharge Permit for the discharge, not the subject of this notice, under the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53.

In addition, EPA has requested that MassDEP grant or deny certification of this Draft Permit pursuant to Section 401 of the CWA and implementing regulations. Under federal regulations governing the NPDES program at 40 Code of Federal Regulations (CFR) § 124.53(e), state certification shall contain conditions that are necessary to assure compliance with the applicable provisions of CWA sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law, including any conditions more stringent than those in the Draft Permit that MassDEP finds necessary to meet these requirements. Furthermore, MassDEP may provide a statement of the extent to which each condition of the Draft Permit can be made less stringent without violating the requirements of State law.

INFORMATION ABOUT THE DRAFT PERMIT:

The Draft Permit and explanatory Fact Sheet may be obtained at no cost at https://www.epa.gov/npdes-permits/massachusetts-draft-individual-npdes-permits or by contacting:

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Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any electronically available documents that are part of the administrative record can be requested from the EPA contact above.

PUBLIC COMMENT AND REQUESTS FOR PUBLIC HEARINGS:

All persons, including applicants, who believe any condition of this Draft Permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by December 8, 2021**,** which is the close of the public comment period. Comments, including those pertaining to EPA's request for CWA § 401 certification, should be submitted to the EPA contact at the address or email listed above. Upon the close of the public comment period, EPA will make all comments available to MassDEP. All commenters who want MassDEP to consider their comments in the state decision-making processes (i.e., the separate state permit and the CWA § 401 certification) must submit such comments to MassDEP during the state comment period for the state Draft Permit and CWA § 401 certification. For information on submitting such comments to MassDEP, please follow the instructions found in the state public notice at: https://www.mass.gov/service-details/massdep-public-hearings-comment-opportunities.

Any person, prior to the close of the EPA public comment period, may submit a request in writing to EPA for a public hearing on the Draft Permit under 40 CFR § 124.10. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice if the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this Draft Permit, the Regional Administrator will respond to all significant comments and make the responses available to the public.

Due to the COVID-19 National Emergency, if comments are submitted in hard copy form, please also email a copy to the EPA contact above.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and notify the applicant and each person who has submitted written comments or requested notice.

KEN MORAFF, DIRECTOR
WATER DIVISION
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY – REGION 1

LEALDON LANGLEY, DIRECTOR
DIVISION OF WATERSHED MGMT
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION