Connecticut Department of
ENERGY & ENVIRONMENTAL PROTECTION

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NPDES PERMIT MODIFICATION
issued to

Pfizer Inc.
Eastern Point Road
Groton, Connecticut 06340

Location Address:

Pfizer Inc.
445 Eastern Point Road
Groton, Connecticut 06340

Facility ID: 059-003

Permit ID: CT0000957

Receiving Stream: Thames River

Permit Expires: May 21, 2019

Receiving Water Body ID: CT-E1_014-SB

SECTION 1: GENERAL PROVISIONS

(A) This permit is re-issued in accordance with Section 22a-430 of Chapter 446k, Connecticut General Statutes ("CGS"), the Regulations of Connecticut State Agencies ("RCSA") adopted thereunder, as amended, and Section 402(b) of the Clean Water Act ("CWA"), as amended, 33 USC 1251, *et. seq*., and pursuant to an approval dated September 26, 1973, by the Administrator of the United States Environmental Protection Agency for the State of Connecticut to administer a NPDES permit program.

(B) **PFIZER INC.** ("Permittee") shall comply with all conditions of this permit including the following sections of the RCSA which have been adopted pursuant to Section 22a-430 of the CGS and are hereby incorporated into this permit. Your attention is especially drawn to the notification requirements of subsections (i)(2), (i)(3), (j)(1), (j)(6), (j)(8), (j)(9)(C), (j)(10)(C), (j)(11)(C), (D), (E), and (F), (k)(3) and (4) and (*l*)(2) of Section 22a-430-3.

Section 22a-430-3: *General Conditions*

(a) Definitions
(b) General
(c) Inspection and Entry
(d) Effect of a Permit
(e) Duty
(f) Proper Operation and Maintenance
(g) Sludge Disposal
(h) Duty to Mitigate
(i) Facility Modifications; Notification
(j) Monitoring, Records and Reporting Requirements
(k) Bypass
(*l*) Conditions Applicable to POTWs
(m) Effluent Limitation Violations (Upsets)
(n) Enforcement
(o) Resource Conservation
(p) Spill Prevention and Control
(q) Instrumentation, Alarms, Flow Recorders
(r) Equalization

Section 22a-430-4: *Procedures and Criteria*

(a) Duty to Apply
(b) Duty to Reapply
(c) Application Requirements
(d) Preliminary Review
(e) Tentative Determination
(f) Draft Permits, Fact Sheets
(g) Public Notice, Notice of Hearing
(h) Public Comments
(i) Final Determination
(j) Public Hearings
(k) Submission of Plans and Specifications. Approval.
(*l*) Establishing Effluent Limitations and Conditions
(m) Case by Case Determinations
(n) Permit issuance or renewal
(o) Permit Transfer
(p) Permit revocation, denial or modification
(q) Variances
(r) Secondary Treatment Requirements
(s) Treatment Requirements for Metals and Cyanide
(t) Discharges to POTWs - Prohibitions

(C) Violations of any of the terms, conditions, or limitations contained in this permit may subject the Permittee to enforcement action including, but not limited to, seeking penalties, injunctions and/or forfeitures pursuant to applicable sections of the CGS and RCSA.

(D) Any false statement in any information submitted pursuant to this permit may be punishable as a criminal offense under Section 22a-438 or 22a-131a of the CGS or in accordance with Section 22a-6, under Section 53a-157b of the CGS.

(E) The authorization to discharge under this permit may not be transferred without prior written approval of the Commissioner of Energy and Environmental Protection ("Commissioner"). To request such approval, the Permittee and proposed Transferee shall register such proposed transfer with the Commissioner, at least 30 days prior to the Transferee becoming legally responsible for creating or maintaining any discharge which is the subject of the permit transfer. Failure, by the Transferee, to obtain the Commissioner's approval prior to commencing such discharge(s) may subject the Transferee to enforcement action for discharging without a permit pursuant to applicable sections of the CGS and RCSA.

(F) No provision of this permit and no action or inaction by the Commissioner shall be construed to constitute an assurance by the Commissioner that the actions taken by the Permittee pursuant to this permit will result in compliance or prevent or abate pollution.

(G) Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.

(H) An annual fee shall be paid for each year this permit is in effect as set forth in Section 22a-430-7 of the Regulations of Connecticut State Agencies.

(I) This permitted discharge is consistent with the applicable goals and policies of the Connecticut Coastal Management Act (Section 22a-92 of the CGS).

SECTION 2: DEFINITIONS

(A) The definitions of the terms used in this permit shall be the same as the definitions contained in Section 22a-423 of the CGS and Section 22a-430-3(a) and 22a-430-6 of the RCSA.

(B) In addition to the above, the following definitions shall apply to this permit:

"---" in the limits column on the monitoring table means a limit is not specified but a value must be reported on the DMR.

"40 CFR" means Title 40 of the Code of Federal Regulations.

"Annual" in the context of any sampling frequency found in Section 5, shall mean the sample must be collected in the month of August.

"Average Monthly Limit" means the maximum allowable "Average Monthly Concentration" as defined in Section 22a-430-3(a) of the RCSA when expressed as a concentration (e.g., mg/l); otherwise, it means "Average Monthly Discharge Limitation" as defined in section 22a-430-3(a) of the RCSA.

"Daily Concentration" means the concentration of a substance as measured in a daily composite sample, or, the arithmetic average of all grab sample results defining a grab sample average.

"Daily Quantity" means the quantity of waste discharged during an operating day.

"Instantaneous Limit" means the highest allowable concentration of a substance as measured by a grab sample, or the highest allowable measurement of a parameter as obtained through instantaneous monitoring.

"In-stream Waste Concentration" (IWC) means the concentration of a discharge in the receiving water after mixing has occurred in the allocated zone of influence. It is the inverse of the dilution factor.

"LC" means Lethal Concentration

"LC_{50}" means the concentration lethal to 50 percent of the test organisms.

"Lowest Observed Effect Concentration" ("LOEC") means the lowest concentration of an effluent or toxicant that results in adverse effects on the test organisms.

"Maximum Daily Limit", means the maximum allowable "Daily Concentration" (defined above) when expressed as a concentration (e.g., mg/l); otherwise, it means the maximum allowable "Daily Quantity" as defined above, unless it is expressed as a flow quantity. If expressed as a flow quantity it means "Maximum Daily Flow" as defined in Section 22a-430-3(a) of the RCSA.

"No Observed Effect Concentration" ("NOEC") means the highest tested concentration of an effluent or toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation.

"Quarterly", in the context of a sampling frequency, means sampling is required in the months of February, May, August, and November.

"Range During Sampling" ("RDS"), as a sample type, means the maximum and minimum of all values recorded as a result of analyzing each grab sample of: 1) a Composite Sample or, 2) a Grab Sample Average. For those Permittees with continuous monitoring and recording pH meters, Range During Sampling means the maximum and minimum readings recorded with the continuous monitoring device during the Composite or Grab Sample Average sample collection.

"Semi-Annually" in the context of a sampling frequency, means the sample must be collected in the months of February and August.

"Weekly" in the context of sampling frequency means that at least one sample will be collected in any week commencing at 12:00 AM on Sunday and ending at 12:00 AM on the following Sunday, during which a discharge occurs.

SECTION 3: COMMISSIONER'S DECISION

(A) On May 22, 2014, the Commissioner issued a final determination based on Application 201207927 for permit re-issuance received on December 24, 2012, and the administrative record established in the processing of that application, and found that: 1) With respect to INTAKE 01H, the location, design, construction, and capacity of the cooling water intake structure reflects the best technology available for minimizing adverse environmental impact. This determination was made in accordance with Section 316(b) of the CWA, 33 U.S.C. § 1326(b), and CGS Section 22a-430. The Commissioner's decision is contingent upon the actions required to be undertaken by the Permittee as set forth in Section 10 of this permit. 2) With respect to DSN 008-1, continuance of the existing system to treat the discharge will protect the waters of the state from pollution. The alternative thermal effluent limitations for DSN 008-1 were established consistent with Section 316(a) of the CWA, 33 U.S.C. § 1326(a), Subpart H of 40 CFR 125, and CGS Section 22a-430. These limitations will assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the receiving water. 3) With respect to DSN 009-1, continuance of the existing discharge will not cause pollution of the waters of the state.

(B) In addition, the Commissioner has issued a final determination based on Application 201505405 for permit modification received on August 17, 2015, and the administrative record established in the processing of that application, and has found that: 1) With respect to DSN 008-1, continuance of the existing system, as modified, to treat the discharge will protect the waters of the state from pollution. The alternative thermal effluent limitations for DSN 008-1 were established consistent with Section 316(a) of the CWA, 33 U.S.C. § 1326(a), Subpart H of 40 CFR 125, and CGS Section 22a-430. These limitations will assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the receiving water.

(C) The Commissioner hereby authorizes the Permittee to discharge in accordance with the provisions of this permit, the above referenced applications, and all approvals issued by the Commissioner or the Commissioner's authorized agent for the discharges and/or activities authorized by, or associated with, this permit.

(D) The Commissioner reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the Federal Clean Water Act or the CGS or regulations adopted thereunder, as amended. The permit as modified or renewed under this paragraph may also contain any other requirements of the Federal Clean Water Act or CGS or regulations adopted thereunder which are then applicable.

(E) This permit modification takes effect on the issuance date identified on the signature page of this permit.

SECTION 4: GENERAL EFFLUENT LIMITATIONS

(A) No discharge shall contain, or cause in the receiving stream, a visible oil sheen or floating solids, or cause visible discoloration or foaming in the receiving stream.

(B) No discharge shall cause acute or chronic toxicity in the receiving water body beyond any zone of influence specifically allocated to that discharge in this permit.

(C) The temperature of any discharge shall not increase the temperature of the receiving stream above 83 ^{o}F, or in any case, raise the temperature of the receiving stream by more than 4 ^{o}F beyond any approved thermal zone of influence. The incremental temperature increase in coastal and marine waters during the period including July, August, and September is limited to 1.5 ^{o}F beyond any approved thermal zone of influence.

SECTION 5: SPECIFIC EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

(A) The discharges shall not exceed and shall otherwise conform to the specific terms and conditions listed in the following tables. The discharges are restricted by, and shall be monitored in accordance with the following tables.

(B) All samples shall be comprised of only the wastewater described in these tables. Samples shall be collected prior to combination with receiving waters or wastewater of any other type, and after all approved treatment units, if applicable. All samples collected shall be representative of the discharge during standard operating conditions.

(C) In cases where limits and sample type are specified but sampling is not required by this permit, the limits specified shall apply to all samples which may be collected and analyzed by the Department of Energy and Environmental Protection ("Department") personnel, the Permittee, or other parties.

Table A

Discharge Serial Number: **008** | Monitoring Location: **1**

Wastewater Description: **The following treated wastewaters:** ***Air Compressor Condensate; Air Conditioner Condensate; Backflow Preventer Wastewater; Boiler Bleed Off/Draining; Boiler Blowdown; Boiler Laboratory Testing Wastewater; Boiler Washdown; Building Maintenance Wastewater; Chilled Water; Cooling Tower Blowdown/Draining; Dewatering Wastewater; Fire Suppression Test Water; Hydrostatic Test Water; Non-Contact Cooling Water; Powerwashing of the Building 84 Metal Fan Deck and Blades, Plastic Tower Media, and Concrete Basin; Pump Seal Water; Resin Regeneration Wastewater; Reverse Osmosis Brine; Sand Filter Backwash; Shell and Tube Heat Exchanger Wastewater; Spill Containment Stormwater; Steam Cleaning and Powerwashing Wastewater; Steam Condensate; Stormwater; Strainer Cleaning Wastewater; Water Softener Regeneration Wastewater***

Monitoring Location Description: **Basin instrument trailer on the west side of the effluent basin**

Receiving Water: **Thames River** | Dilution Factor (Copper, Lead, Nickel, Total Residual Chlorine, and Zinc): **60:1** | In-Stream Waste Concentration: **1.67%**

PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level[3]	Chemical Analysis Required With Toxicity Test
			Average Monthly Limit	Maximum Daily Limit	Sample// Reporting Frequency [2]	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample// Reporting Frequency[2]	Sample Type or measurement to be reported		
Acute Aquatic Toxicity[4] *Americamysis bahia*	TAA3E	%	NA	LC_{50}≥100%	Semi-annually	Daily Composite	LC_{50}≥33%	NR	Grab		
Acute Aquatic Toxicity[4] *Cyprinodon variegates*	TAA6A	%	NA	LC_{50}≥100%	Semi-annually	Daily Composite	LC_{50}≥33%	NR	Grab		
Chronic Aquatic Toxicity (Survival)[5] *Americamysis bahia*	TOP3E	%	NA	---	Semi-annually	Daily Composite	NA	NR	NA		
Chronic Aquatic Toxicity (Growth)[5] *Americamysis bahia*	TPP3E	%	NA	---	Semi-annually	Daily Composite	NA	NR	NA		
Chronic Aquatic Toxicity (Fecundity)[5] *Americamysis bahia*	TVP3E	%	NA	---	Semi-annually	Daily Composite	NA	NR	NA		
Chronic Aquatic Toxicity (Survival)[5] *Cyprinodon variegates*	TOP6A	%	NA	---	Semi-annually	Daily Composite	NA	NR	NA		
Chronic Aquatic Toxicity (Growth)[5] *Cyprinodon variegatus*	TPP6A	%	NA	---	Semi-annually	Daily Composite	NA	NR	NA		
Ammonia (as N)	00610	mg/L	---	---	Monthly	Daily Composite	NA	NR	NA		✔
Bis(2-ethylhexyl) phthalate	39100	µg/L	2.2[6]	3.2[6]	Monthly	Daily Composite	4.8[6]	NR	Grab	5	✔
Bis(2-ethylhexyl) phthalate	39100	g/day	4.2	6.1	Monthly	Daily Composite	NA	NR	NA		
Biochemical Oxygen Demand, 5-Day (BOD_5)	85002	mg/L	---	---	Monthly	Daily Composite	NA	NR	NA		✔
Chlorine, Total Residual	50060	µg/L	---	---	Quarterly	Grab Sample Average	NA	NR	NA	20	✔
Chromium, Total	01034	mg/L	---	---	Quarterly	Daily Composite	NA	NR	NA	0.005	✔
Copper, Total	01042	mg/L	---	---	Quarterly	Daily Composite	NA	NR	NA	0.005	✔
Enterococci[7]	61211	cfus/100ml	NA	NA	NR	NA	---	Quarterly	Grab		
Fecal coliform[8]	74055	cfus/100ml	NA	NA	NR	NA	---	Quarterly	Grab		
Flow, Average Monthly[1]	00056	gpd	500,000	NA	Continuous	Daily Flow	NA	NR	NA		
Flow, Maximum Daily [1]	50047	gpd	NA	750,000	Continuous	Daily Flow	NA	NR	NA		
Flow Rate, Day of Sampling	74076	gpd	NA	750,000	Monthly	Daily Flow	NA	NR	NA		✔
Iron, Total	01045	µg/L	3000	5000	Quarterly	Daily Composite	7500	NR	Grab		✔

Table A

Discharge Serial Number: **008** | Monitoring Location: **1**

Wastewater Description: **The following treated wastewaters:** ***Air Compressor Condensate; Air Conditioner Condensate; Backflow Preventer Wastewater; Boiler Bleed Off/Draining; Boiler Blowdown; Boiler Laboratory Testing Wastewater; Boiler Washdown; Building Maintenance Wastewater; Chilled Water; Cooling Tower Blowdown/Draining; Dewatering Wastewater; Fire Suppression Test Water; Hydrostatic Test Water; Non-Contact Cooling Water; Powerwashing of the Building 84 Metal Fan Deck and Blades, Plastic Tower Media, and Concrete Basin; Pump Seal Water; Resin Regeneration Wastewater; Reverse Osmosis Brine; Sand Filter Backwash; Shell and Tube Heat Exchanger Wastewater; Spill Containment Stormwater; Steam Cleaning and Powerwashing Wastewater; Steam Condensate; Stormwater; Strainer Cleaning Wastewater; Water Softener Regeneration Wastewater***

Monitoring Location Description: **Basin instrument trailer on the west side of the effluent basin**

Receiving Water: **Thames River** | Dilution Factor (Copper, Lead, Nickel, Total Residual Chlorine, and Zinc): **60:1** | In-Stream Waste Concentration: **1.67%**

PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Minimum Level[3]	Chemical Analysis Required With Toxicity Test
			Average Monthly Limit	Maximum Daily Limit	Sample// Reporting Frequency [2]	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample// Reporting Frequency[2]	Sample Type or measurement to be reported		
Kjeldahl Nitrogen, Total (as N)	00625	mg/L	---	---	Monthly	Daily Composite	NA	NR	NA		✔
Lead, Total	01051	mg/L	---	---	Quarterly	Daily Composite	NA	NR	NA	0.005	✔
Nickel, Total	01067	mg/L	---	---	Quarterly	Daily Composite	NA	NR	NA	0.005	✔
Nitrate (as N)	00620	mg/L	---	---	Monthly	Daily Composite	NA	NR	NA		✔
Nitrite (as N)	00615	mg/L	---	---	Monthly	Daily Composite	NA	NR	NA		✔
Nitrogen, Total	00600	lbs/day	331	---	Monthly	Calculation[9]	NA	NR	NA		
Oil and Grease, Total	00556	mg/L	---	5.0	Quarterly	Grab Sample Average	7.5	NR	Grab		✔
Oxygen, Dissolved	00300	mg/L	NA	NA	NR	NA	---	Quarterly	Grab		✔
pH, Day of Sampling	00400	SU	NA	NA	NR	NA	6.0-9.0	Monthly	RDS		✔
pH, Minimum	61942	SU	NA	NA	NR	NA	6.0	Continuous	Continuous		
pH, Maximum	61941	SU	NA	NA	NR	NA	9.0	Continuous	Continuous		
Solids, Total Suspended	00530	mg/L	20.0	30.0	Monthly	Daily Composite	45.0	NA	Grab		✔
Temperature, Maximum	00011	°F	NA	NA	NR	NA	90.0	Continuous	Continuous		✔
Temperature Difference (Sample & Upstream)	00018	°F	NA	32.1	Daily//Monthly	Calculation[10]	NA	NR	NA		
Waste Heat Rejection Rate	00179	MBtus/ day	NA	---	Daily//Monthly	Calculation[11]	NA	NR	NA		
Zinc, Total	01092	mg/L	---	---	Quarterly	Daily Composite	NA	NR	NA	0.010	✔

TABLE A FOOTNOTES AND REMARKS

***Footnotes*:**

[1] For this parameter, the Permittee shall maintain at the facility a record of the total Daily Flow for each day of discharge and shall report the Average Daily Flow and the Maximum Daily Flow for each month.

[2] The first entry in this column is the 'Sample Frequency'. If a 'Reporting Frequency' does not follow this entry and the 'Sample Frequency' is more frequent than monthly then the 'Reporting Frequency' is monthly. If the 'Sample frequency' is specified as monthly, or less frequent, then the 'Reporting Frequency' is the same as the 'Sample Frequency'.

(CONTINUED ON NEXT PAGE)

TABLE A FOOTNOTES AND REMARKS (CONTINUED)

[3] Minimum Level refers to Paragraph (6)(A)(4) of this permit.

[4] The duration of the acute toxicity testing is 48 hours. The LC_{50} results for the acute toxicity testing shall be reported on the DMR.

[5] The duration of the chronic toxicity testing is 7 days. The C-NOEC (Chronic-No Observed Effect Concentration) results for the lethal and specified sub-lethal conditions noted in this table shall be reported on the DMR. Supplemental data collected during the chronic toxicity event shall be provided for those parameters identified on Attachment A of this permit and such data shall be submitted consistent with Section 8(A) of this permit. The supplemental data can be provided in any acceptable format as long as it contains the information identified on Attachment A.

[6] The noted permit limit is below the Minimum Level (ML). Therefore, compliance with this limit will be determined based on the ML. The Permittee shall conduct analysis for this parameter in accordance with a "sufficiently-sensitive" approved test method. If the measured value is less than the ML, the results shall be reported in accordance with Section 6(A)(6) and the results will be considered to be in compliance with the permit limit. If the measured value is greater or equal to the ML, the actual results obtained shall be reported on the DMR and these results will be considered a violation of the permit limit.

[7] Monitoring for *Enterococci* shall be conducted once per quarter from May 1st to September 30th. If less than five samples are collected in a month, the maximum value in that sample set shall be reported on the DMR. If five or more samples are collected in a month, the results of the geometric mean of those samples shall be reported on the DMR for that month.

[8] Monitoring for Fecal coliform shall be conducted once per quarter from May 1st to September 30th. If less than five samples are collected in a month, the maximum value in that sample set shall be reported on the DMR. If five or more samples are collected in a month, the results of the geometric mean of those samples shall be reported on the DMR for that month.

[9] Total Nitrogen concentration means the sum of the concentrations of: Ammonia Nitrogen + Organic Nitrogen + Nitrate Nitrogen + Nitrite Nitrogen. The concentration-based value shall be converted to lbs/day and reported on the DMR.

[10] Temperature Difference (Sample & Upstream) is calculated as follows: Effluent Temperature (Maximum Daily) – Water Temperature @ NOAA Station 8461490 (Maximum Daily). The Permittee shall report the maximum value determined in a month on the DMR.

[11] Waste Heat Rejection Rate is calculated as follows:

$$Waste\ Heat\ Rejection\ Rate\ \left(\frac{Btus}{day}\right) = \left(1.0\ \frac{Btus}{lb\,°F}\right) * \left(Flow\ \frac{gallons}{day}\right) * \left(8.34\ \frac{lbs}{gallon}\right) * (\Delta T, °F)$$

ΔT = Effluent Temperature – Upstream Temperature
Where: Effluent Temperature is the maximum temperature value of the effluent (DSN 008-1) in a 24-hour period
Upstream Temperature is the maximum temperature value of the receiving water measured at NOAA Station 8461490 in a 24 hour period

***Remarks*:**

1. Abbreviations used for units are as follows: MGD means million gallons per day; mg/L means milligrams per liter; µg/L means micrograms per liter; g/day means grams per day; lbs/day means pounds per day; °F means degrees Fahrenheit; SU means Standard Units; MBtus/day means million British thermal units per day; cfus/100 ml means colony forming units per 100 milliliters. Other abbreviations are as follows: NA means Not Applicable; NR means Not Reportable; RDS means Range During Sampling.

2. Flow shall be reported to 0.1 MGD. Temperature (Maximum and Difference) shall be reported to 0.1 °F. Dissolved Oxygen shall be reported to 0.1 mg/L. pH shall be reported to 0.1 SU. Waste Heat Rejection Rate shall be reported to 1 MBtu/day. Total Nitrogen shall be reported to 1 lb/day. All other values shall be reported to the level of precision/accuracy reported by the laboratory.

3. Supplemental data shall be provided, at a minimum, for those monitoring parameters identified on Attachment B of this permit and such data shall be submitted consistent with Section 8(A) of this permit. The supplemental data can be provided in any acceptable format as long as it contains the information identified on Attachment B.

SECTION 6: SAMPLE COLLECTION, HANDLING AND ANALYTICAL TECHNIQUES

(A) Chemical Analysis

(1) Chemical analyses to determine compliance with limits and conditions established in this permit shall be performed using "sufficiently-sensitive" methods approved pursuant to 40 CFR 136 for the analysis of pollutants having approved methods under that part unless an alternative method has been approved in writing pursuant to 40 CFR 136.5 or as provided in Section 22a-430-3(j)(7) of the RCSA. Monitoring parameters which do not have approved methods of analysis defined in 40 CFR 136 shall be analyzed in accordance with "sufficiently-sensitive" methods specified in Section 6(A)(2) of this permit, unless an alternative method had been specifically approved in writing by the Commissioner.

(2) The following test method shall be used to analyze the parameter identified below:

PARAMETER	**METHOD OF ANALYSIS**
Iron, Total	EPA Method 6020 or 1640 with chelation

(3) All metals analyses identified in this permit shall refer to analyses for Total Recoverable Metal as defined in 40 CFR 136, unless otherwise specified.

(4) The term Minimum Level (ML) refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL). MLs may be obtained in several ways: They may be published in a method; they may be sample concentrations equivalent to the lowest acceptable calibration point used by the laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a lab, by a factor. The MLs specified in Table A represent the concentrations at which quantification must be achieved and verified during the chemical analyses for those noted parameters. Analyses for these parameters must include check standards within ten percent of the specified ML or calibration points equal to or less than the specified ML.

(5) The value of each parameter for which monitoring is required under this permit shall be reported to the maximum level of accuracy and precision possible, consistent with the requirements of this section of the permit.

(6) Effluent analyses for which quantification was verified during the analysis at or below the minimum levels specified in this section, and which indicate that a parameter was not detected, shall be reported as "less than x" where 'x' is the numerical value equivalent to the analytical method detection limit for that analysis.

(7) Results of effluent analyses which indicate that a parameter was not present at a concentration greater than or equal to the Minimum Level specified for that analysis shall be considered equivalent to zero (0.0) for purposes of determining compliance with effluent limitations or conditions specified in this permit.

(8) MLs for certain parameters in Table A may be higher than the corresponding permit limit. With respect to these parameters, if a test method/procedure becomes available that will result in a lower ML than the one noted in Table A, then these lower MLs shall supersede the MLs in Table A.

SECTION 7: TOXICITY MONITORING

(A) *Acute Toxicity Monitoring: DSN 008-1 (Grab Samples Only)*: If instantaneous monitoring for acute aquatic toxicity is conducted, it shall be performed in accordance with the following:

(1) **TEST METHOD**: Acute aquatic toxicity monitoring shall be performed as prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA-821-R-02-012), or the most current version, with any exceptions or clarifications noted below.

(2) **SAMPLE COLLECTION & HANDLING**:

(a) Grab samples shall be chilled immediately following collection. Samples shall be held at 4 °C until aquatic toxicity testing is initiated.

(b) Effluent samples shall not be dechlorinated, filtered, or, modified in any way, prior to testing for aquatic toxicity unless specifically approved in writing by the Commissioner for monitoring at this facility.

(c) Tests for aquatic toxicity shall be initiated within 36 hours of sample collection.

(3) **TEST SPECIES & TEST DURATION**: Monitoring for acute aquatic toxicity shall be conducted as follows:

(a) For 48-hours utilizing neonatal *Americamysis bahia* (1-5 days old with no more than 24-hours range in age).

(b) For 48-hours utilizing larval *Cyprinodon variegatus* (1-14 days old with no more than 24-hours range in age).

(4) **TEST CONDITIONS**:

(a) Tests for aquatic toxicity shall be conducted as prescribed for static non-renewal acute tests.

(b) At a minimum, pH, specific conductance, salinity, alkalinity, hardness, and total residual chlorine shall be measured in the highest concentration of effluent test solution and in the dilution (control) water at the beginning of the test and at test termination. If total residual chlorine is not detected at test initiation, it does not need to be measured at test termination. Dissolved oxygen, pH, and temperature shall be measured in the control and all test concentrations at the beginning of the test, daily thereafter, and at test termination. Salinity shall be measured in each test concentration at the beginning of the test and at test termination.

(c) For tests with saltwater organisms that require salinity adjustment of the effluent, chemical analysis of the parameters identified in Section 5, Table A under "Monitoring Required With Toxicity Test" shall be conducted on an aliquot of the effluent sample collected for Aquatic Toxicity testing and on an aliquot of the effluent following salinity adjustment. Both sets of results shall be reported on the Aquatic Toxicity Monitoring Report (ATMR).

(d) Multi-concentration (definitive) testing, with LC_{50} as the endpoint, shall be conducted to determine compliance with limits on Aquatic Toxicity and shall incorporate, at a minimum, the following effluent concentrations: 100%, 75%, 50%, 25%, 12.5%, and 6.25%.

(e) Organisms shall not be fed during the tests.

(f) Aquatic toxicity tests shall be conducted at a salinity of 28 ppt ±2 ppt.

(g) Sodium lauryl sulfate or sodium dodecyl sulfate shall be used as the reference toxicant.

(h) Synthetic seawater for use as dilution water or controls shall be prepared with deionized water and artificial sea salts as described in EPA-821-R-02-012.

(i) If the salinity of the source water is more that 5 ppt, or lower than the culture water used for rearing the organisms, a second set of controls matching the salinity of the culture water shall be added to the test series. Test validity shall be determined using the controls adjusted to match the source water salinity.

(j) The actual effluent concentrations in definitive tests with saltwater organisms shall be used in calculating test results.

(5) **TEST ACCEPTABILITY CRITERIA**: For the test result to be acceptable, control survival must equal or exceed 90%. If the laboratory control fails to meet the test acceptability criteria for either of the organisms at the end of the test period, then the test is considered invalid and the test must be repeated.

(B) *Chronic (and Modified Acute) Toxicity Monitoring: DSN 008-1*. The Permittee shall conduct chronic (and modified acute) toxicity testing semi-annually for DSN 008-1 in accordance with the following:

(1) **TEST METHOD**: Chronic (and modified acute) toxicity monitoring shall be performed as prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, EPA 821-R-02-014, or the most current version, with any exceptions or clarifications noted below or identified in Attachment C.

(2) **SAMPLE COLLECTION & HANDLING**:

(a) Composite samples shall be chilled as they are collected. Samples shall be held at 4 °C until aquatic toxicity testing is initiated.

(b) Effluent samples shall not be dechlorinated, filtered, or, modified in any way, prior to testing for Aquatic Toxicity unless specifically approved in writing by the Commissioner for monitoring at this facility.

(c) Tests for aquatic toxicity shall be initiated within 36 hours of sample collection.

(3) **TEST SPECIES & TEST DURATION**: Monitoring for aquatic toxicity to determine compliance with the chronic (and modified acute) toxicity limits/conditions shall be conducted as follows:

(a) For seven days utilizing neonatal *Americamysis bahia* (7 days old).

(b) For seven days utilizing larval *Cyprinodon variegatus* (less than 24 hours).

Survival results of the first 48 hours for *Americamysis bahia* and the first 48 hours for *Cyprinodon variegatus*, shall be used for determining compliance with acute toxicity limits.

(4) **CHRONIC ENDPOINTS**:

(a) *Americamysis bahia*: Survival, growth, and egg development (fecundity)

(b) *Cyprinodon variegatus*: Larval survival and growth

(5) **DILUTION WATER**: Thames River water collected immediately upstream of the area influenced by the discharge shall be used as site water control (0% effluent) and dilution water in the toxicity tests. The Permittee shall document the dilution water sampling location by providing USGS coordinates and/or a map of the location.

(6) **TEST CONDITIONS**:

(a) Tests for Aquatic Toxicity shall be conducted as prescribed in the referenced test manual for static daily renewal tests and in accordance with Attachment C of the permit. Daily composite samples of the discharge and grab samples of the Thames River for use as site water control and dilution water shall be collected on: Day 1 of the test (for test initiation and renewal on Day 2 of the test); Day 3 of the test (for test solution renewal on Day 3 and Day 4 of the test); and on Day 5 of the test (for test solution renewal on Day 5, 6, and 7 of the test). Samples shall not be dechlorinated, pH or hardness adjusted, or chemically altered in any way.

(b) Tests concentrations shall be comprised of: 100% effluent, 50% effluent, 25% effluent, 12.5% effluent, 6.25% effluent, 1.67% effluent (IWC% concentration), laboratory water control, and site dilution water.

(c) Laboratory control water shall be adjusted to a salinity of 28 ppt ±2 ppt.

(7) **CHEMICAL ANALYSIS**: Each 100% effluent sample and each Thames River water sample used in the chronic toxicity test, shall, at a minimum, be analyzed for those parameters identified in Section 5, Table A under "Chemical Analysis Required With Toxicity Test" and the following parameters: specific conductance, alkalinity, hardness, and salinity. Analysis of the effluent shall be the same sample as the sample tested for aquatic toxicity.

(8) **TEST ACCEPTABILITY CRITERIA**: Test acceptability criteria is summarized in Attachment D. If the laboratory control fails to meet test acceptability criteria for either of the test organisms at the end of the respective test periods, then the test is considered invalid, and the test must be repeated.

(9) **REPORTING**: A report detailing the results of the chronic and modified acute toxicity monitoring shall be submitted no later than 60 days following the day sampling was concluded for that test. The report shall include a summary of the test results which includes, at a minimum, percent survival in each replicate test chamber and all supporting chemical/physical measurements performed in association with the toxicity test. Endpoints to be reported are: 48-hour LC_{50} (survival), 7-day LC_{50} (survival), 7-day C-NOEC (survival), 7-day C-LOEC (survival), 7-day C-NOEC (growth), 7-day C-LOEC (growth), 7 day C-NOEC (fecundity), 7-day C-LOEC (fecundity).

SECTION 8: REPORTING REQUIREMENTS

(A) The results of chemical analyses and any aquatic toxicity test required above shall be entered on the Discharge Monitoring Report (DMR), provided by this office, and reported to the Bureau of Materials Management and Compliance Assurance (Attn: DMR Processing) at the following address or submitted electronically using NetDMR. Except for continuous monitoring, any monitoring required more frequently than monthly shall be reported on an attachment to the DMR, and any additional monitoring conducted in accordance with 40 CFR 136 or other methods approved by the Commissioner shall also be included on the DMR, or as an attachment, if necessary. All aquatic toxicity reports shall also be included as an attachment to the DMR. The report shall also include a detailed explanation of any violations of the limitations specified. DMRs, attachments, and reports, shall continue to be submitted electronically in accordance with Section 8(D)(2) below. However, if the DMRs, attachments, and reports are required to be submitted in hard copy form, they shall be received at this address by the last day of the month following the month in which samples are collected.

Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division (Attn: DMR Processing)
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

(B) Complete and accurate aquatic toxicity test data, including percent survival of test organisms in each replicate test chamber, LC_{50} values and 95% confidence intervals for definitive test protocols, and all supporting chemical/physical measurements performed in association with any aquatic toxicity test, including measured daily flow and hours of operation for the 30 consecutive operating days prior to sample collection, shall be included in the Aquatic Toxicity Monitoring Report (ATMR) and sent to the Bureau of Water Protection and Land Reuse at the following address. The ATMR shall be received at this address in accordance with the timeframe identified in Section 7(B)(9) above:

Bureau of Water Protection and Land Reuse (Attn: Aquatic Toxicity)
Connecticut Department of Energy and Environmental Protection
79 Elm St.
Hartford, CT 06106-5127

(C) If this permit requires monitoring of a discharge on a calendar basis (e.g., monthly, quarterly, etc.), but a discharge has not occurred within the frequency of sampling specified in the permit, the Permittee must submit the DMR and ATMR, as scheduled, indicating "NO DISCHARGE". For those Permittees whose required monitoring is discharge dependent (e.g., per batch), the minimum reporting frequency is monthly. Therefore, if there is no discharge during a calendar month for a batch discharge, a DMR must be submitted indicating such by the end of the following month.

(D) NetDMR Reporting Requirements: The Permittee shall continue reporting electronically using NetDMR, a web-based tool that allows Permittees to electronically submit Discharge Monitoring Reports and other required reports through a secure internet connection. Specific requirements regarding NetDMR, submittal of reports using NetDMR, and submittal of reports in hard copy form, are described below:

(1) Submittal of *NetDMR Subscriber Agreement:* The Permittee has submitted a signed and notarized copy of the *Connecticut DEEP NetDMR Subscriber Agreement* to the Department.

(2) Submittal of Reports Using NetDMR: The Permittee and/or the Signatory Authority shall continue to electronically submit DMRs and reports required under this permit to the Department using NetDMR in satisfaction of the DMR submission requirement of Section 8(A) of this permit.

DMRs shall be submitted electronically to the Department no later than the 30th day of the month following the completed reporting period. All reports required under the permit, including any monitoring conducted more frequently than monthly or any additional monitoring conducted in accordance with 40 CFR 136, shall be submitted to the Department as an electronic attachment to the DMR in NetDMR. Once a Permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to the Department. The Permittee shall also electronically file any written report of non-compliance described in Section 6 of this permit as an attachment in NetDMR. NetDMR is accessed from: http://www.epa.gov/netdmr.

(3) Submittal of NetDMR Opt-Out Requests: If the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for electronically submitting DMRs and reports, the Commissioner may approve the submission of DMRs and other required reports in hard copy form ("opt-out request"). Opt-out requests must be submitted in writing to the Department for written approval on or before fifteen (15) days prior to the date a Permittee would be required under this permit to begin filing DMRs and other reports using NetDMR. This demonstration shall be valid for twelve (12) months from the date of the Department's approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to the Department using NetDMR unless the Permittee submits a renewed opt-out request and such request is approved by the Department.

(4) All opt-out requests and requests for the NetDMR subscriber form should be sent to the following address or by email at: deep.netdmr@ct.gov

Attn: NetDMR Coordinator
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

SECTION 9: RECORDING AND REPORTING OF VIOLATIONS, ADDITIONAL TESTING REQUIREMENTS

(A) If any sample analysis indicates that an Aquatic Toxicity effluent limitation in Section 5 of this permit has been exceeded, or that the test was invalid, another sample of the effluent shall be collected and tested for Aquatic Toxicity and associated chemical parameters, as described above in Sections 5, 6, and 7, and the results reported to the Bureau of Materials Management and Compliance Assurance (Attn: DMR Processing), at the address listed above, within 30 days of the exceedance or invalid test. Results of all tests, whether valid or invalid, shall be reported.

(B) If any two consecutive test results or any three test results in a twelve-month period indicates that an Aquatic Toxicity Limit has been exceeded, the Permittee shall immediately take all reasonable steps to eliminate toxicity wherever possible and shall submit a report to Bureau of Materials Management and Compliance Assurance (Attn: Aquatic Toxicity) for the review and approval of the Commissioner in accordance with Section 22a-430-3(j)(10)(c) of the RCSA describing proposed steps to eliminate the toxic impact of the discharge on the receiving water body. Such a report shall include a proposed time schedule to accomplish toxicity reduction and the Permittee shall comply with any schedule approved by the Commissioner.

(C) The Permittee shall notify the Bureau of Materials Management and Compliance Assurance, Water Permitting and Enforcement Division, within 72 hours and in writing within thirty days of the discharge of any substance listed in the application but not listed in the permit if the concentration or quantity of that substance exceeds two times the level listed in the application.

SECTION 10: COMPLIANCE SCHEDULE

(A) **Requirements Associated with Section 316(a) and 316(b) of the CWA**. By way of documentation dated September 26, 2011, December 21, 2011, January 9, 2012, and February 22, 2013, the Permittee provided the Department with an evaluation of those technologies and/or operational measures that represent the best technology available for minimizing the adverse environmental impact associated with its cooling water intake structure. This evaluation has been reviewed by Department staff and consistent with the requirements of Section 316(b) of the CWA, a determination has been made for this Permittee that closed-cycle cooling is the best technology available to minimize the adverse environmental impact associated with its cooling water intake structure. This 316(b) determination will result in a reduction/elimination of the thermal load associated with DSN 008-1, and consequently, this 316(b) determination affects Section 316(a) requirements also. The Permittee shall implement the 316(b) determination as follows:

(1) Within ninety day of the issuance of this permit, the Permittee shall submit for the review and written approval of the Commissioner, a detailed plan and schedule for the implementation of the expansion/upgrades of the existing cooling tower ("project"). The proposed schedule shall represent the most expeditious time frame to complete the project required by this section of the permit.

(2) The Permittee shall perform the project in accordance with the approved plan and schedule.

(3) Within fifteen days of completion of the project, the Permittee shall certify in writing to the Commissioner that the project has been completed as approved and that the use of the cooling water intake structure at the site has been eliminated.

(4) Until such time as the project is completed, the Permittee shall use best efforts to ensure that the amount of cooling water that it withdraws into its cooling water intake structure is limited to the lowest amount feasible.

(B) Until the project described in Section 10(A) is completed as approved, the Permittee shall submit to the Commissioner quarterly status reports on March 1st, June 1st, September 1st, and December 1st. Status reports shall include, but not be limited to, a detailed description of progress made by the Permittee in performing actions required by this section of the permit in accordance with the approved schedule including, but not limited to, development of engineering plans and specifications, construction activity, contract bidding, operational changes, preparation and submittal of permit applications, and any other actions specified per the applicable sections.

(C) The Permittee shall use best efforts to submit to the Commissioner all documents required by this section of the permit in a complete and approvable form. If the Commissioner notifies the Permittee that any document or other action is deficient, and does not approve it with conditions or modifications, it is deemed disapproved, and the Permittee shall correct the deficiencies and re-submit it within the time specified by the Commissioner or, if no time is specified by the Commissioner, within thirty days of the Commissioner's notice of deficiencies. In approving any document or other action under this Compliance Schedule, the Commissioner may approve the document or other action as submitted or performed or with such conditions or modifications as the Commissioner deems necessary to carry out the purposes of this section of the permit. Nothing in this paragraph shall excuse noncompliance or delay.

(D) Dates. The date of submission to the Commissioner of any document required by this section of the permit shall be the date such document is received by the Commissioner. The date of any notice by the Commissioner under this section of the permit, including but not limited to, notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the Commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" as used in this section of the permit means calendar day. Any document or action which is required by this section only of the permit, to be submitted, or performed, by a date which falls on, Saturday, Sunday, or, a legal Connecticut or federal holiday, shall be submitted or performed on or before the next day which is not a Saturday, Sunday, or legal Connecticut or federal holiday.

(E) Notification of noncompliance. In the event that the Permittee becomes aware that it did not or may not comply, or did not or may not comply on time, with any requirement of this section of the permit, except for final compliance dates, the Permittee shall immediately notify the Commissioner and shall take all reasonable steps to ensure that any noncompliance or delay is avoided or, if unavoidable, is minimized to the greatest extent possible. In so notifying the Commissioner, the Permittee shall state in writing the reasons for the noncompliance or delay and propose, for the review and written approval of the Commissioner, dates by which compliance will be achieved, and the Permittee shall comply with any dates that may be approved in writing by the Commissioner. Notification by the Permittee shall not excuse noncompliance or delay, and the Commissioner's approval of any compliance dates proposed shall not excuse noncompliance or delay unless specifically so stated by the Commissioner in writing.

(F) Notice to Commissioner of changes. Within fifteen days of the date the Permittee becomes aware of a change in any information submitted to the Commissioner under this section of the permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the Commissioner.

(G) Submission of documents. Any document, other than a discharge monitoring report, required to be submitted to the Commissioner under this section of the permit shall, unless otherwise specified in writing by the Commissioner, be directed to:

Christine Gleason, Sanitary Engineer
Department of Environmental Protection
Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division
79 Elm Street
Hartford, CT 06106-5127

(H) The Permittee shall: 1) Investigate the level of Copper in the Thames River. This submittal shall be due to the Department by November 21, 2018; 2) Investigate whether the MLs noted in Table A of the permit are the lowest MLs achievable. This submittal is due to the Department by July 1, 2016.

This permit modification revises and supersedes NPDES Permit No. CT0000957 issued on May 22, 2014.

This permit modification is hereby issued on

DRAFT

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MICHAEL SULLIVAN
Deputy Commissioner

MS/CMG

ATTACHMENT A

Supplemental Monitoring Data: Chronic Toxicity

PARAMETER	UNITS	EFFLUENT SAMPLE RESULTS			THAMES RIVER SAMPLE RESULTS			MINIMUM LEVEL
		DATE SAMPLED	DATE SAMPLED	DATE SAMPLED	DATE SAMPLED	DATE SAMPLED	DATE SAMPLED	
Alkalinity, Total	mg/L							
Ammonia (as N)	mg/L							
Bis(2-ethylhexyl) phthalate	µg/L							
BOD_5	mg/L							
Chlorine, Total Residual	µg/L							
Chromium, Total	mg/L							
Copper, Total	mg/L							
Hardness, Total	mg/L							
Iron, Total	µg/L							
Kjeldahl Nitrogen (as N)	mg/L							
Lead, Total	mg/L							
Nickel, Total	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Oil & Grease, Total	mg/L							
Oxygen, Dissolved	mg/L							
pH	SU							
Salinity	ppt							
Specific Conductance	µmhos							
Temperature	°F							
Total Suspended Solids	mg/L							
Zinc, Total	mg/L							

Indicate the location where the Thames River sample was collected: (USGS coordinates):_____

ATTACHMENT B

Supplemental Monitoring Data: DSN 008-1

Month:_____

DAY	FLOW	pH (min)	pH (max)	MAX DAILY TEMP	NOAA STATION 8461490 TEMP	TEMP CHANGE IN RIVER	HEAT LOAD
	MGD	SU	SU	°F	°F	°F	Btus/day
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
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31							

ATTACHMENT C

TABLE 1: Testing Protocols for DSN 008-1 for: *Americamysis bahia* (48-hour acute and 7-day chronic tests)	
Testing procedure	*Acute*: DEP standard toxicity test procedures, except as modified below. *Chronic*: EPA 821-R-02-014, except as modified below.
Test type	Static renewal
Salinity	28 ± 2 ppt
Temperature	26 °C ± 1 °C. Test temperature must not deviate (i.e., maximum minus minimum temperature) by more than 3 °C during the test
Light quality	Ambient laboratory illumination
Light intensity	10-20μE/m^2/s (50-100 ft-c)
Photoperiod	16-h light, 8-h darkness, with phase in/out period
Test chamber	Glass or plastic (250 – 400 mL capacity) beakers
Test solution volume	200 mL per replicate
Renewal of test solutions	Daily
Age of test organism	7 days old
No. of test organisms per chamber	5 per replicate test chamber
No of replicate test chambers per concentration	8 (per effluent concentration), 8 (control water), 8 (dilution water)
No. larvae per concentration	40
Source of food	Newly hatched *Artemia* nauplii (less than 24-h old)
Feeding regime	Feed 150 24h old nauplii per mysid daily, half after test solution renewal and half after 8-12 h
Cleaning test chambers	Pipette excess food daily, immediately before test solution renewal and feeding.
Aeration	None unless dissolved oxygen falls below 4.0 mg/l, then gently aerate all chambers.
Control/Dilution water	Laboratory control and Thames River water samples. Three separate collections must be made on the following days: Day 1, Day 3, and Day 5.
Effluent	Composite sample collected at DSN 008-1. Three separate sample collections must be made on the following days: Day 1, Day 3, and Day 5.
Test duration	*Acute*: 48 hours *Chronic*: 7 days
Endpoint	*Acute*: Survival *Chronic*: Survival, growth, and egg development
Test acceptability criteria	*Acute:* 90% survival in 48 hours. *Chronic*: 80% survival (averaged) in controls after 7 days. A minimum average dry weight of 0.2 mg per surviving organism in controls is required. Fecundity may be used if 50% of the females in the controls produce eggs.
Mortality observations	Each test chamber is examined for mortality at 24-h intervals. Dead individuals are removed and if any individuals are missing (via cannibalism) they are noted.
Physical- chemical measurements of solutions in test chambers	Dissolved oxygen, temperature, salinity and pH of the effluent and control test solutions are measured at the beginning, at 24-h intervals, and at test termination. These parameters are measured prior to and after test solution renewals. Because of possible harm or stress to the test organisms with meter probes, these parameters are not measured in the test chambers while conducting the test; instead dissolved oxygen and pH measurements are made in separate surrogate chambers without test organisms, prepared from effluent and control water. The surrogate chambers are maintained similar to test chambers (i.e., daily solution renewals). At the end of the chronic test, after the number of live specimens has been determined, measure dissolved oxygen, temperature, salinity, and pH in all effluent and control test chambers.
Physical-chemical measurements of effluent sample and control sample	The parameters identified in Table A under "Chemical Analysis Required With Toxicity Test" and the additional parameters identified in Section 7(B)(7) are measured in each sample of DSN 008-1 and each Thames River sample.
Reference toxicant	Sodium dodecyl sulfate with an acute endpoint (48 hours) and a chronic endpoint (7 days).

(CONTINUED ON THE NEXT PAGE)

ATTACHMENT C

TABLE 2: Testing Protocols for DSN 008-1 for: *Cyprinodon variegatus* (48-hour acute and 7-day chronic tests)	
Testing procedure	*Acute*: DEP standard toxicity test procedures, except as modified below. *Chronic*: EPA 821-R-02-014, except as modified below.
Test type	Static renewal
Salinity	28 ±2 ppt
Temperature	26°C ± 1
Light quality	Ambient laboratory illumination
Photoperiod	16-h light, 8-h dark
Test chamber type	Glass or plastic (1000 mL capacity)
Test solution volume	750 mL per replicate
Renewal of test solutions	Daily
Age of test organism	Less than 24 hours
No. of test organisms per chamber	10 per replicate test chamber
No. of replicate test chambers per concentration	4 (per effluent concentration), 4 (dilution water), 4 (lab control water)
Source of food	Newly hatched (less than 24-h old) *Artemia* nauplii. Concentrate *Artemia* nauplii with a ≤ 150 um sieve mesh and rinse with seawater.
Feeding regime	Feed once a day concentrated *Artemia* nauplii at a rate per replicate of 0.1 mL (2 drops) on days 0-2 and 0.15 mL (3 drops) on days 3–6. Feed after test solution renewal.
Cleaning test chambers	Siphon excess food prior to test solution renewal.
Aeration	None, unless dissolved oxygen falls below 4.0 mg/l, then gently aerate all chambers
Control/Dilution water	Laboratory control and Thames River water samples. Three separate collections must be made on the following days: Day 1, Day 3, and Day 5.
Effluent	Composite sample collected at DSN 008-1. Three separate sample collections must be made on the following days: Day 1, Day 3, and Day 5.
Test duration	*Acute*: 48 hours *Chronic*: 7 days
Endpoint	*Acute*: Survival *Chronic*: Survival, growth
Test acceptability criteria	*Acute*: 90% survival in 48 hours *Chronic*: 80% survival (averaged) in controls after 7 days. A minimum average dry weight of 0.6 mg per surviving organism in controls is required.
Mortality observations	Each test chamber is examined for mortality at 24-h intervals. Dead individuals are removed and if any individuals are missing they are noted.
Physical- chemical measurements of solutions in test chambers	Dissolved oxygen, temperature, salinity and pH of the effluent and control test solutions are measured at the beginning, at 24-h intervals, and at test termination. These parameters are measured prior to and after test solution renewals. Because of possible harm or stress to the test organisms with meter probes, these parameters are not measured in the test chambers while conducting the test; instead dissolved oxygen and pH measurements are made in separate surrogate chambers without test organisms, prepared from effluent and control water. The surrogate chambers are maintained similar to test chambers (i.e., daily solution renewals). At the end of the chronic test, after the number of live specimens has been determined, measure dissolved oxygen, temperature, salinity, and pH in all effluent and control test chambers.
Physical-chemical measurements of effluent sample and control sample	The parameters identified in Table A under "Chemical Analysis Required With Toxicity Test" and the additional parameters identified in Section 7(B)(7) are measured in each sample of DSN 008-1 and each Thames River sample.
Reference toxicant	Sodium dodecyl sulfate with an acute endpoint (48 hours) and a chronic endpoint (7 days).