



**National Pollutant Discharge Elimination System Permit
issued to**

Permittee:

Plainfield Renewable Energy, LLC
12 Mill Brook Road
Plainfield, CT 06374

Location Address:

12 Mill Brook Road
Plainfield, CT 06374

Permit ID: CT0030473

Effective Date: [1st of the month following signing]

Receiving Waterbody: Quinebaug River

Issuance Date: [date of signature]

Receiving Waterbody ID: CT3700-00_02

Permit Expires: [5 yrs after effective date]

SECTION 1: GENERAL PROVISIONS

- 1.1 This permit is reissued in accordance with Section 22a-430 of Chapter 446k, Connecticut General Statutes ("Conn. Gen. Stat."), and Regulations of Connecticut State Agencies ("Regs. Conn. State Agencies") 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 National Pollutant Discharge Elimination System ("NPDES") permit program.
- 1.2 **Plainfield Renewable Energy, LLC** ("Permittee") shall comply with all conditions of this permit including the following sections of the Regs. Conn. State Agencies which have been adopted pursuant to Section 22a-430 of the Conn. Gen. Stat. 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 to Comply
- (f) Proper Operation and Maintenance
- (g) Sludge Disposal
- (h) Duty to Mitigate
- (i) Facility Modifications; Notification
- (j) Monitoring, Records and Reporting Requirements
- (k) Bypass
- (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
- (s) Treatment Requirements

- 1.3 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 Conn. Gen. Stat. and Regs. Conn. State Agencies.
- 1.4 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 Conn. Gen. Stat. or in accordance with Section 22a-6, under Section 53a-157b of the Conn. Gen. Stat.
- 1.5 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 thirty (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 Conn. Gen. Stat. and Regs. Conn. State Agencies.
- 1.6 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.
- 1.7 Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- 1.8 An annual fee shall be paid for each year this permit is in effect as set forth in Section 22a-430-7 of the Regs. Conn. State Agencies.

- 1.9 The Permittee shall operate and maintain its collection and treatment system in accordance with its Operation and Maintenance Plan and with any approvals issued in accordance with Regs. Conn. State Agencies Section 22a-430-3(i)(3). The Permittee shall revise and maintain the Operation and Maintenance Plan upon the Commissioner's request or to address equipment or operational changes in accordance with Regs. Conn. State Agencies Section 22a-430-3(f)(2).
- 1.10 The Permittee shall implement its Spill Prevention and Control Plan in accordance with Regs. Conn. State Agencies Section 22a-430-3(p) and 22a-430-4(c)(10). The plan shall include practices, procedures and facilities designed to prevent, minimize and control spills, leaks or such other unplanned releases of all toxic or hazardous substances and any other substances to prevent pollution of the waters of the state. Such requirements shall, unless otherwise allowed by the Commissioner, apply to all facilities used for storing, handling, transferring, loading or unloading such substances, including manufacturing areas. The Permittee shall revise and maintain the Spill Prevention and Control Plan upon the Commissioner's request to address equipment or operational changes.

SECTION 2: DEFINITIONS

- 2.1 The definitions of the terms used in this permit shall be the same as the definitions contained in Section 22a-423 of the Conn. Gen. Stat. and Section 22a-430-3(a) and 22a-430-6 of the Regs. Conn. State Agencies.
- 2.2 In addition to the above, the following definitions shall apply to this permit:

“40 CFR” means Title 40 of the Code of Federal Regulations.

“Annually” when used as a sampling frequency in Table A of this permit, means that sampling is required in the month of March, and in Table C, means that sampling is required in the month of July, August or September.

“Average Monthly Limit” means the maximum allowable “Average Monthly Concentration” as defined in Section 22a-430-3(a) of the Regs. Conn. State Agencies 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 Regs. Conn. State Agencies .

“Cooling water intake structure” means the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the state. The cooling water intake structure extends from the point at which water is withdrawn from the surface water source up to, and including, the intake pumps.

Connecticut Water Quality Standards means the regulations adopted under Regs. Conn. State Agencies Sections 22a-426-1 through 22a-426-9, as amended.

“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.

“Dilution Factor” means the inverse of the “Instream Waste Concentration”.

“DMR” means Discharge Monitoring Report.

“IC” means “Inhibition Concentration”.

“IC₂₅” means a point estimate of the toxicant concentration that would cause a twenty-five (25) percent reduction in a non-lethal biological measurement of the test organism, such as reproduction or growth.

“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 (as a percent) of the effluent in the receiving water.

“LC” means Lethal Concentration

“LC₅₀” means the concentration lethal to fifty (50) percent of the test organisms during a specific period.

“Lowest Observed Effect Concentration” (“LOEC”) means the lowest concentration of an effluent or toxicant to which organisms are exposed in a life cycle or partial life-cycle test, which causes 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 Regs. Conn. State Agencies.

“No Observed Effect Concentration” (“NOEC”) means the highest concentration of an effluent or toxicant to which organisms are exposed in a life cycle or partial life-cycle test, that causes no observable adverse effects on the test organisms.

“Quarter” means the calendar quarter beginning at 12:00 AM on the first day of March, June, September, and December and ending at 12:00 AM on the first day of June, September, December, and March, respectively.

“Quarterly”, when used as a sampling frequency in this permit, means that sampling is required in the months of March, June, September, and December.

“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.

“Reporting Frequency” means the frequency at which monitoring results must be provided.

SECTION 3: COMMISSIONER'S DECISION

- 3.1 The Commissioner has issued a final determination and found that 1) with respect to the discharge, DSN 101-1, continuance of the existing system to treat the discharge would protect the waters of the state from pollution; and 2) with respect to discharges, DSN 102-1, DSN 103-1 and DSN 104-1, continuance of the existing discharges would not cause pollution of the waters of the state. The Commissioner's decision is based on Application No. 201801971 for permit reissuance received on February 28, 2018, and the administrative record established in the processing of that application.
- 3.2 Upon the effective date of this permit and continuing until this permit expires or is modified or revoked, the Commissioner hereby authorizes the Permittee to discharge in accordance with the terms and conditions of this permit, the information provided in Application No. 201801971, received by the Commissioner on February 28, 2018, the administrative record established in the processing of that application, and all modifications and approvals issued by the Commissioner or the Commissioner's authorized agent, for the discharge and/or activities authorized by, or associated with this Permit.
- 3.3 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 Conn. Gen. Stat. 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 the Conn. Gen. Stat. or regulations adopted thereunder which are then applicable.
- 3.4 This permit includes an interim determination regarding Section 316(a) of the Federal Water Pollution Control Act 33 U.S.C. § 1326(a) regarding the thermal component of the discharge, and compliance with this permit is sufficient to assure the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife in and on the receiving waters.
- 3.5 This permit also contains a determination under Section 316(b) of the Federal Water Pollution Control Act, 33 U.S.C. § 1326(b) regarding cooling water intake structures and Conn. Gen. Stat. § 22a-430(a), and compliance with this permit is sufficient to assure the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife in and on the receiving waters. Based on the evaluation detailed in the fact sheet, DEEP has determined that the facility employs BTA pursuant to 40 CFR § 125.90(b).
- 3.6 Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act.

SECTION 4: GENERAL EFFLUENT LIMITATIONS

- 4.1 The Permittee shall assure that the surface water affected by the subject discharge shall conform to the *Connecticut Water Quality Standards ("WQS")*.
- 4.2 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.
- 4.3 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.
- 4.4 The temperature of any discharge shall not increase the temperature of the receiving stream above 85 °F, or in any case, raise the temperature of the receiving stream by more than 4 °F.

- 4.5 The Permittee is prohibited from discharging polychlorinated biphenyl compounds such as those commonly used for transformer fluid.
- 4.6 The Permittee is prohibited from using any chemical(s) that contain phosphorus in any process or activity that may result in a discharge to the waters of the state.

SECTION 5: SPECIFIC EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- 5.1 The discharge is restricted by and shall be monitored in accordance with the following tables in this section. The wastewater discharge shall not exceed the effluent limitations in these tables and shall otherwise conform to the specific terms and conditions listed in the tables. The Permittee shall comply with the “Remarks” and “Footnotes” noted in the tables that follow. Such remarks and footnotes are enforceable like any other term or condition of this permit.
- 5.2 The wastewaters authorized/approved by this permit shall be collected, treated, and discharged in accordance with this permit and with any approvals issued by the Commissioner or his/her authorized agent for the discharges and activities authorized by or associated with this permit. Any wastewater discharges not expressly identified in these tables or otherwise approved to be discharged by this permit shall not be authorized by this permit.
- 5.3 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. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Collection of permit-required effluent samples in any location other than the authorized location noted in this permit shall be a violation of this permit.
- 5.4 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 (“DEEP”) personnel, the Permittee, or other parties.
- 5.5 The Permittee shall operate and maintain the outdoor wood storage area in accordance with “Section A.4 Stormwater Management – Outdoor Wood Storage Area” of the response to comment report dated February 19, 2008.

TABLE A										
Discharge Serial Number: DSN 101-1						Monitoring Location: 1 (External outfall)				
Wastewater Description: Treated cooling tower blowdown wastewater						Outfall Location: Latitude (41° 39' 35") and Longitude (71° 57' 49")				
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility						Discharge is to: Quinebaug River				
Allocated Zone of Influence: 137,750 gallons per hour						Instream Waste Concentration for acute criteria: 5.4%				
						Instream Waste Concentration for chronic criteria: 3.67%				
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI- MUM LEVEL ² (µg/l)
			Average Monthly Limit	Maximum Daily Limit	Sample/ Reporting Frequency ¹	Sample Type or Measurement to be Reported	Instantaneous Limit or Required Range	Sample/ Reporting Frequency ¹	Sample Type or Measurement to be Reported	
Aluminum, Total	01105	mg/L	1.42	2.86	Weekly	Daily Composite	4.29	NR	Grab	10.0
Aluminum, Total	01105	kg/d	0.68	1.36	Weekly	Daily Composite	NA	NR	Grab	10.0
Ammonia (as N)	00610	mg/L	---	---	Weekly	Daily Composite	---	NR	NA	
Ammonia (as N)	00610	kg/d	---	---	Weekly	Daily Composite	NA	NR	NA	
Boron	01022	mg/l	---	---	Weekly	Daily Composite	NA	NR	NA	
Chlorine, Total Residual	50060	mg/L	0.14	0.33	Weekly	Grab Sample Average	0.497	NR	Grab	20.0
Chromium, Total	01034	mg/L	---	---	Weekly	Daily Composite	NA	NR	NR	5.0
Copper, Total	01042	mg/L	0.096	0.190	Weekly	Daily Composite	0.288	NR	Grab	3.0
Copper, Total	01042	kg/d	0.046	0.091	Weekly	Daily Composite	NA	NR	NA	3.0
Flow Rate (Average Daily) ³	00056	gpd	126,103	NA	Weekly	Total Daily Flow	NA	NR	NA	
Flow, Maximum during 24-hr period ³	50047	gpd	NA	173,571	Weekly	Total Daily Flow	NA	NR	NA	
Iron, Total	01045	mg/L	---	---	Weekly	Daily Composite	---	NR	NA	100.0
Kjeldahl Nitrogen, Total (as N)	00625	mg/L	---	---	Weekly	Daily Composite	NA	NR	NR	
Lead, Total	01051	mg/L	0.019	0.039	Weekly	Daily Composite	0.058	NR	Grab	1.0
Lead, Total	01051	kg/d	0.009	0.019	Weekly	Daily Composite	NA	NR	NR	1.0
Nitrate (as N)	00620	mg/L	---	---	Weekly	Daily Composite	NA	NR	NR	
Nitrite (as N)	00615	mg/L	---	---	Weekly	Daily Composite	NA	NR	NR	
Nitrogen, Total [See Remark e]	00600	lbs/day	---	---	Weekly	Calculated	NA	NR	NR	
pH, Minimum (Ends 12 months after permit's effective date)	61942	S.U.	NA	NA	NR	NA	6.0	Continuous	Continuous	
pH, Maximum (Ends 12 months after permit's effective date)	61941	S.U.	NA	NA	NR	NA	9.0	Continuous	Continuous	
Phosphorus, Total	00665	mg/l	---	---	Monthly	Daily Composite	NA	NR	NR	100.0
Temperature, Maximum	00011	°F	NA	NA	NR	NA	90	Hourly	Instantaneous	
Temperature, intake/outlet differential	61576	°F	NA	NA	NR	NA	---	Hourly	Instantaneous	
Total Suspended Solids	00530	mg/L	20	30	Weekly	Daily Composite	45	NR	Grab	
Zinc, Total	01092	mg/L	0.64	1.30	Weekly	Daily Composite	1.95	NR	Grab	10.0

TABLE A										
Discharge Serial Number: DSN 101-1						Monitoring Location: 1 (External outfall)				
Wastewater Description: Treated cooling tower blowdown wastewater						Outfall Location: Latitude (41° 39' 35") and Longitude (71° 57' 49")				
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility						Discharge is to: Quinebaug River				
Allocated Zone of Influence: 137,750 gallons per hour						Instream Waste Concentration for acute criteria: 5.4%				
						Instream Waste Concentration for chronic criteria: 3.67%				
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI-MUM LEVEL ² (µg/l)
			Average Monthly Limit	Maximum Daily Limit	Sample/ Reporting Frequency ¹	Sample Type or Measurement to be Reported	Instantaneous Limit or Required Range	Sample/ Reporting Frequency ¹	Sample Type or Measurement to be Reported	
126 Priority Pollutants (resulting from chemical additives for cooling tower maintenance) except chromium and zinc	51168	mg/L	NA	NA	NR	NA	---	Once during permit term ⁴	Grab	
APPLICABLE 12 MONTHS AFTER THE EFFECTIVE DATE OF PERMIT										
pH, Minimum	61942	S.U.	NA	NA	NR	NA	6.5	Continuous	Continuous	
pH, Maximum	61941	S.U.	NA	NA	NR	NA	8.0	Continuous	Continuous	
TABLE A FOOTNOTES AND REMARKS										
Footnotes: ¹ 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'. ² Refer to Section 6.3 of this permit. The minimum levels ("MLs") identified in this table represent the highest acceptable MLs that shall be achieved by the Permittee's analytical methods. Actual MLs reported by the laboratory must be reported as a comment on the DMR. Detected concentrations less than the laboratory ML shall be reported on the DMR in accordance with Section 6.5. ³ For this parameter, the Permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report the Average Daily Flow and the Maximum Daily Flow for each sampling month. ⁴ This monitoring shall be conducted once during the permit term by December 31, 2027, and submitted as an attachment to the December 2027 DMR. 126 Priority Pollutants shall be reported as the sum of the concentrations of any analytes detected above the minimum level. The full lab report, including minimum levels of the analytes determined to be non-detect, and the concentration of the detected analytes, shall be attached to the DMR.										
Remarks: a. Abbreviations used for units are as follows: gpd means gallons per day; kg/day means kilograms per day; mg/L means milligrams per liter; µg/L means micrograms per liter; SU means Standard Units; °F means degrees Fahrenheit; % means percentage. Other abbreviations are as follows: NA means Not Applicable; NR means Not Reportable (unless sampling is conducted relative to Section 5.4 of this permit); RDS means Range During Sampling. b. If "---" is noted in the limit's column in the table, this means that a limit is not specified but a value must be reported on the DMR. c. pH shall be reported to 0.1 SU. All other values shall be reported to the level of precision/accuracy reported by the laboratory. d. "Continuous", used in this table as a "Sample" or "Sample Type", means monitoring that produces one or more data points in fifteen minutes or less. e. Total Nitrogen means the sum of the concentrations of: Total Kjeldahl Nitrogen (Ammonia Nitrogen + Organic Nitrogen) + Nitrate Nitrogen + Nitrite Nitrogen.										

TABLE B – Acute Toxicity Monitoring

Discharge Serial Number: DSN 101-AT							Monitoring Locations: T – Acute toxicity effluent results and chemical analyses			
Wastewater Description: Treated cooling tower blowdown wastewater							Outfall Location: Latitude (41° 39' 35'') and Longitude (71° 57' 49'')			
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility							Discharge is to: Quinebaug River			
Allocated zone of Influence: 137,750 gallons per hour							Instream Waste Concentration for acute criteria: 5.4% Instream Waste Concentration for chronic criteria: 3.67%			
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI- MUM LEVEL ⁵ (µg/l)
			Average Monthly Limit	Minimum Daily Limit or Maximum Daily Limit ¹	Sample/ Reporting Frequency ^{2, 3}	Sample Type or Measurement to be Reported ⁴	Instantaneous Limit or Required Range	Sample/ Reporting Frequency	Sample Type or Measurement to be Reported	
Whole Effluent Toxicity (WET)										
Acute Aquatic Toxicity ⁶ <i>Daphnia pulex</i> , NOAEL = 100%	TDA3D	%	NA	≥ 90 %	Quarterly	Daily Composite	≥ 90 %	NR	Grab	
Acute Aquatic Toxicity ⁶ <i>Pimephales promelas</i> , NOAEL = 100%	TDA6C	%	NA	≥ 90 %	Quarterly	Daily Composite	≥ 90 %	NR	Grab	
Chemical Analyses Required with Acute Whole Effluent Toxicity Monitoring – See Section 7.1.6. for Acute Testing ⁷										
Date of Acute WET Chemistry Sample Collection ⁸	51883	YYYYMMDD	NA	---	Quarterly	Calculated	NA	NR	NA	
Alkalinity	00410	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Aluminum, Dissolved	01106	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	10.0
Aluminum, Total	01105	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	10.0
Boron, Total	01022	mg/l	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Chlorine, Total Residual	50060	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	20.0
Chromium, Total	01034	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	5.0
Copper, Dissolved	01040	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	3.0
Copper, Total	01042	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	3.0
Dissolved Oxygen	00300	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Hardness, Total	00900	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Iron, Total	01045	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	100.0
Lead, Dissolved	01049	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	1.0
Lead, Total	01051	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	1.0
Nitrogen, Ammonia (total as N)	00610	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Nitrogen, Kjeldahl (total as N)	00625	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Nitrogen, Nitrate (total as N)	00620	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Nitrogen, Nitrite (total as N)	00615	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Nitrogen, Total (as N) ⁹	00600	mg/L	NA	---	Quarterly	Calculation	NA	NR	NA	

TABLE B – Acute Toxicity Monitoring

Discharge Serial Number: DSN 101-AT	Monitoring Locations: T – Acute toxicity effluent results and chemical analyses
Wastewater Description: Treated cooling tower blowdown wastewater	Outfall Location: Latitude (41° 39' 35") and Longitude (71° 57' 49")
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility	Discharge is to: Quinebaug River
Allocated zone of Influence: 137,750 gallons per hour	Instream Waste Concentration for acute criteria: 5.4% Instream Waste Concentration for chronic criteria: 3.67%

PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI-MUM LEVEL ⁵ (µg/l)
			Average Monthly Limit	Minimum Daily Limit or Maximum Daily Limit ¹	Sample/ Reporting Frequency ^{2, 3}	Sample Type or Measurement to be Reported ⁴	Instantaneous Limit or Required Range	Sample/ Reporting Frequency	Sample Type or Measurement to be Reported	
pH	00400	SU	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Phosphorus, Total	00665	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	100.0
Specific Conductance	51409	uMhos	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Temperature	00011	Deg. F.	NA	---	Quarterly	Daily Composite	NA	NR	NA	
Total Suspended Solids	00530	mg/L	NA	30	Quarterly	Daily Composite	NA	NR	NA	
Zinc, Dissolved	01090	mg/L	NA	---	Quarterly	Daily Composite	NA	NR	NA	10.0
Zinc, Total	01092	mg/L	NA	1.30	Quarterly	Daily Composite	NA	NR	NA	10.0

TABLE B FOOTNOTES AND REMARKS

Footnotes:

¹ WET limits are expressed as a minimum daily limit, meaning the minimum allowable daily discharge over the course of the 24-hour sampling period. Chemical results analyzed in conjunction with WET tests shall be reported as the max value collected during the 24-hour sampling period.

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".

³ If more than one toxicity sample is collected during a single month, report subsequent WET and chemistry results as an attachment to the DMR in accordance with Section 8.2 of this permit.

⁴ Daily composite samples shall be collected for acute toxicity tests consistent with the methodology outlined in Section 7.1 of this permit.

⁵ Refer to Section 6.3 of this permit. The minimum levels ("MLs") identified in this table represent the highest acceptable MLs that shall be achieved by the Permittee's analytical methods. Actual MLs reported by the laboratory must be reported as a comment on the DMR. Detected concentrations less than the laboratory ML shall be reported on the DMR in accordance with Section 6.5.

⁶ Acute toxicity testing shall be conducted in accordance with Section 7.1 of this permit. The NOAEL results (in % survival) for the acute toxicity testing shall be reported on the DMR. The Aquatic Toxicity Monitoring Report ("ATMR") shall be completed for each toxicity testing event and submitted in accordance with Section 8.2 of this permit.

⁷ Chemical analyses shall be conducted on samples used in the acute toxicity tests. These analyses shall be conducted on all samples used in the acute toxicity test and reported under Monitoring Location T. Results shall also be included on the ATMR and submitted in accordance with Section 8.2 of this permit.

⁸ The Permittee shall report the date of sample collection for the acute toxicity test and associated chemistry data in the format: year month day (YYYYMMDD).

⁹ Total Nitrogen means the sum of the concentrations of: Total Kjeldahl Nitrogen + Nitrate Nitrogen + Nitrite Nitrogen.

Remarks:

- Abbreviations used for units are as follows: kg/day means kilograms per day; mg/L means milligrams per liter; mgd means millions of gallons per day; SU means Standard Units; mg/L means micrograms per liter. Other abbreviations are as follows: NA means Not Applicable; NR means Not Reportable (unless sampling is conducted relative to Section 5.4 of this permit); RDS means Range During Sampling; RDM means Range During Month.
- If "---" is noted in the limits column in the table, this means that a limit is not specified but a value must be reported on the DMR.
- Analyses that indicate that a parameter was not detected or that was detected less than the noted ML shall be reported in accordance with Section 6.6.

TABLE C – Chronic Toxicity Monitoring

TABLE C – Chronic Toxicity Monitoring											
Discharge Serial Number: DSN 101-CT							Monitoring Locations: Y – Chronic toxicity effluent results O – Day 1 chronic toxicity chemical analyses P – Day 3 chronic toxicity chemical analyses Q – Day 5 chronic toxicity chemical analyses R – Day 1 upstream monitoring S – Day 3 upstream monitoring T – Day 5 upstream monitoring				
Wastewater Description: Treated cooling tower blowdown wastewater						Outfall Location: Latitude (41° 39’ 35”) and Longitude (71° 57’ 49”)					
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility						Discharge is to: Quinebaug River					
Allocated zone of Influence: 137,750 gallons per hour						Instream Waste Concentration for acute criteria: 5.4%					
						Instream Waste Concentration for chronic criteria: 3.67%					
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility											
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI-MUM LEVEL ⁵ (µg/l)	MONI-TORING LOCA-TION
			Average Monthly Limit	Minimum Daily Limit or Maximum Daily Limit ¹	Sample/Reporting Frequency ^{2, 3}	Sample Type or Measurement to be Reported ⁴	Instantaneous Limit or Required Range	Sample/Reporting Frequency	Sample Type or Measurement to be Reported		
Whole Effluent Toxicity (WET)											
Chronic Aquatic Toxicity (Survival) ⁶ <i>Ceriodaphnia dubia</i> , C-NOEC	TOP3B	%	NA	---	Annually	Daily Composite	NA	NR	NA		Y
Chronic Aquatic Toxicity (Reproduction) ⁶ <i>Ceriodaphnia dubia</i> , C-NOEC	TPP3B	%	NA	---	Annually	Daily Composite	NA	NR	NA		Y
Chronic Aquatic Toxicity (Survival) ⁶ <i>Pimephales promelas</i> , C-NOEC	TOP6C	%	NA	---	Annually	Daily Composite	NA	NR	NA		Y
Chronic Aquatic Toxicity (Growth) ⁶ <i>Pimephales promelas</i> , C-NOEC	TPP6C	%	NA	---	Annually	Daily Composite	NA	NR	NA		Y
Chemical Analyses Required with Chronic Whole Effluent Toxicity Monitoring – See Section 7.2.7. for Chronic Testing ⁷											
Date of Chronic WET Chemistry Sample Collection ⁸	51883	YYYYMMDD	NA	---	Annually	Calculated	NA	NR	NA		O, P, Q; R, S, T
Alkalinity	00410	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Aluminum, Dissolved	01106	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	10.0	O, P, Q; R, S, T

TABLE C – Chronic Toxicity Monitoring

Discharge Serial Number: DSN 101-CT							Monitoring Locations: Y – Chronic toxicity effluent results O – Day 1 chronic toxicity chemical analyses P – Day 3 chronic toxicity chemical analyses Q – Day 5 chronic toxicity chemical analyses R – Day 1 upstream monitoring S – Day 3 upstream monitoring T – Day 5 upstream monitoring				
Wastewater Description: Treated cooling tower blowdown wastewater						Outfall Location: Latitude (41° 39’ 35”) and Longitude (71° 57’ 49”)					
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility						Discharge is to: Quinebaug River					
Allocated zone of Influence: 137,750 gallons per hour						Instream Waste Concentration for acute criteria: 5.4% Instream Waste Concentration for chronic criteria: 3.67%					
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility											
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI-MUM LEVEL ⁵ (µg/l)	MONITORING LOCATION
			Average Monthly Limit	Minimum Daily Limit or Maximum Daily Limit ¹	Sample/Reporting Frequency ^{2, 3}	Sample Type or Measurement to be Reported ⁴	Instantaneous Limit or Required Range	Sample/Reporting Frequency	Sample Type or Measurement to be Reported		
Aluminum, Total	01105	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	10.0	O, P, Q; R, S, T
Boron, Total	01022	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Chlorine, Total Residual	50060	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	20.0	O, P, Q; R, S, T
Copper, Dissolved	01040	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	3.0	O, P, Q; R, S, T
Copper, Total	01042	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	3.0	O, P, Q; R, S, T
Chromium, Total	01034	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	5.0	O, P, Q; R, S, T
Dissolved Oxygen	00300	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Hardness, Total	00900	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Iron, Total	01045	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Lead, Dissolved	01049	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	1.0	O, P, Q; R, S, T
Lead, Total	01051	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	1.0	O, P, Q; R, S, T

TABLE C – Chronic Toxicity Monitoring

Discharge Serial Number: DSN 101-CT							Monitoring Locations: Y – Chronic toxicity effluent results O – Day 1 chronic toxicity chemical analyses P – Day 3 chronic toxicity chemical analyses Q – Day 5 chronic toxicity chemical analyses R – Day 1 upstream monitoring S – Day 3 upstream monitoring T – Day 5 upstream monitoring				
Wastewater Description: Treated cooling tower blowdown wastewater							Outfall Location: Latitude (41° 39’ 35”) and Longitude (71° 57’ 49”)				
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility							Discharge is to: Quinebaug River				
Allocated zone of Influence: 137,750 gallons per hour							Instream Waste Concentration for acute criteria: 5.4% Instream Waste Concentration for chronic criteria: 3.67%				
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility											
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI-MUM LEVEL ⁵ (µg/l)	MONI-TORING LOCA-TION
			Average Monthly Limit	Minimum Daily Limit or Maximum Daily Limit ¹	Sample/Reporting Frequency ^{2, 3}	Sample Type or Measurement to be Reported ⁴	Instantaneous Limit or Required Range	Sample/Reporting Frequency	Sample Type or Measurement to be Reported		
Nitrogen, Ammonia (total as N)	00610	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Nitrogen, Kjeldahl (total as N)	00625	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Nitrogen, Nitrate (total as N)	00620	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Nitrogen, Nitrite (total as N)	00615	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Nitrogen, Total (as N) ⁹	00600	mg/L	NA	---	Annually	Calculation	NA	NR	NA		O, P, Q; R, S, T
pH	00400	SU	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Phosphorus, Total	00665	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	100.0	O, P, Q; R, S, T
Specific Conductance	51409	uMhos	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Temperature	00011	Deg. F.	NA	---	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Total Suspended Solids	00530	mg/L	NA	30	Annually	Daily Composite	NA	NR	NA		O, P, Q; R, S, T
Zinc, Dissolved	01090	mg/L	NA	---	Annually	Daily Composite	NA	NR	NA	10.0	O, P, Q; R, S, T

TABLE C – Chronic Toxicity Monitoring

TABLE C – Chronic Toxicity Monitoring											
Discharge Serial Number: DSN 101-CT							Monitoring Locations: Y – Chronic toxicity effluent results O – Day 1 chronic toxicity chemical analyses P – Day 3 chronic toxicity chemical analyses Q – Day 5 chronic toxicity chemical analyses R – Day 1 upstream monitoring S – Day 3 upstream monitoring T – Day 5 upstream monitoring				
Wastewater Description: Treated cooling tower blowdown wastewater						Outfall Location: Latitude (41° 39’ 35”) and Longitude (71° 57’ 49”)					
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility						Discharge is to: Quinebaug River					
Allocated zone of Influence: 137,750 gallons per hour						Instream Waste Concentration for acute criteria: 5.4% Instream Waste Concentration for chronic criteria: 3.67%					
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility											
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI-MUM LEVEL ⁵ (µg/l)	MONI-TORING LOCA-TION
			Average Monthly Limit	Minimum Daily Limit or Maximum Daily Limit ¹	Sample/ Reporting Frequency ^{2, 3}	Sample Type or Measurement to be Reported ⁴	Instantaneous Limit or Required Range	Sample/ Reporting Frequency	Sample Type or Measurement to be Reported		
Zinc, Total	01092	mg/L	NA	1.3	Annually	Daily Composite	NA	NR	NA	10.0	O, P, Q; R, S, T

TABLE C – Chronic Toxicity Monitoring

Discharge Serial Number: DSN 101-CT							Monitoring Locations: Y – Chronic toxicity effluent results O – Day 1 chronic toxicity chemical analyses P – Day 3 chronic toxicity chemical analyses Q – Day 5 chronic toxicity chemical analyses R – Day 1 upstream monitoring S – Day 3 upstream monitoring T – Day 5 upstream monitoring				
Wastewater Description: Treated cooling tower blowdown wastewater							Outfall Location: Latitude (41° 39' 35") and Longitude (71° 57' 49")				
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility							Discharge is to: Quinebaug River				
Allocated zone of Influence: 137,750 gallons per hour							Instream Waste Concentration for acute criteria: 5.4% Instream Waste Concentration for chronic criteria: 3.67%				
Monitoring Location Description: At the powerhouse prior to the discharge line exiting the facility											
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI- MUM LEVEL ⁵ (µg/l)	MONI- TORING LOCA- TION
			Average Monthly Limit	Minimum Daily Limit or Maximum Daily Limit ¹	Sample/ Reporting Frequency ^{2, 3}	Sample Type or Measurement to be Reported ⁴	Instantaneous Limit or Required Range	Sample/ Reporting Frequency	Sample Type or Measurement to be Reported		
TABLE C FOOTNOTES AND REMARKS											
Footnotes:											
¹ WET limits are expressed as a minimum daily limit, meaning the minimum allowable daily discharge over the course of the 24-hour sampling period. Chemical results analyzed in conjunction with WET tests shall be reported as the max value collected during the 24-hour sampling period.											
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 monthly.											
³ If more than one toxicity sample is collected during a single month, report subsequent WET and chemistry results as an attachment to the DMR in accordance with Section 8.2 of this permit.											
⁴ Daily composite samples shall be collected for chronic toxicity tests consistent with the methodology outlined in Section 7.2 of this permit.											
⁵ “Minimum Level” refers to Section 6.4 of this permit.											
⁶ Chronic toxicity testing shall be conducted in accordance with Section 7.2 of this permit. The C-NOEC (Chronic-No Observed Effect Concentration) results (in %) for the conditions noted in this table shall be reported on the DMR. The ATMR shall be completed for each chronic toxicity testing event and submitted in accordance with Section 8.2 of this permit.											
⁷ Chemical analyses shall be conducted on all samples used in the chronic toxicity tests. These analyses shall be conducted on an undiluted aliquot of each effluent sample and each sample of upstream receiving water used in the chronic toxicity test. Results for effluent sampling from day 1, day 3, and day 5 of the chronic toxicity test shall be reported under Monitoring Location O, P, and Q, respectively. Receiving water (upstream) results from day 1, day 3, and day 5 of sampling shall be reported under reported under Monitoring Location R, S, and T, respectively. Results for salinity adjusted effluent sampling from day 1, day 3, and day 5 of the chronic toxicity test shall be reported under Monitoring Location U, V, and W, respectively. Results shall also be included on the ATMR and submitted in accordance with Section 8.2 of this permit.											
⁸ The Permittee shall report the dates of sample collection for each day of chronic toxicity test chemistry sampling (days 1, 3, and 5) in the format: year month day (YYYYMMDD).											
⁹ Total Nitrogen means the sum of the concentrations of: Total Kjeldahl Nitrogen + Nitrate Nitrogen + Nitrite Nitrogen.											
Remarks:											
1. Sampling shall be in July, August or September.											
2. Abbreviations used for units are as follows: kg/day means kilograms per day; mg/L means milligrams per liter; mgd means millions of gallons per day; SU means Standard Units; mg/L means micrograms per liter. Other abbreviations are as follows: NA means Not Applicable; NR means Not Reportable (unless sampling is conducted relative to Section 5.4 of this permit); RDS means Range During Sampling; RDM means Range During Month.											
3. If “---” is noted in the limits column in the table, this means that a limit is not specified but a value must be reported on the DMR.											
4. Analyses that indicate that a parameter was not detected or that was detected less than the noted ML shall be reported in accordance with Section 6.6.											

TABLE D

Discharge Serial Number: DSN 102-1							Monitoring Location: 1 (External outfall)			
Wastewater Description: Fire pump test wastewater							Outfall Location: Latitude (41° 39' 42'') and Longitude (71° 55' 28'')			
Monitoring Location Description: Prior to discharging into the in-ground stormwater infiltration system located at the south end the site										
Maximum Frequency of Discharge: Once per year							Discharge is to: Infiltration into the groundwater of the Mill Brook watershed			
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINIMUM LEVEL ² (µg/l)
			Average Monthly Limit	Maximum Daily Limit	Sample/ Reporting Frequency ¹	Sample Type or Measurement to be Reported	Instantaneous Limit or Required Range	Sample/ Reporting Frequency	Sample Type or Measurement to be Reported	
Aluminum, Total	01105	mg/L	NA	NA	NR	NA	---	Annually	Grab	10.0
Boron	01022	mg/L	NA	NA	NR	NA	---	Annually	Grab	
Copper, Total	01042	mg/L	NA	NA	NR	NA	---	Annual	Grab	3.0
Flow, Maximum during 24-hr period	50047	gpd	NA	225,000	Annually	Total Daily Flow	NA	NR	NA	
Iron, Total	01045	mg/L	NA	NA	NR	NA	---	Annually	Grab	
Lead, Total	01051	mg/L	NA	NA	NR	NA	---	Annually	Grab	1.0
pH	00400	S.U.	NA	NA	NR	NA	6.0 – 9.0	Annually	Grab	
Phosphorus, Total	00665	mg/L	NA	NA	NR	NA	---	Annually	Grab	100.0
Zinc, Total	01092	mg/L	NA	NA	NR	NA	---	Annually	Grab	10.0

TABLE D FOOTNOTES AND REMARKS

Footnotes:

¹ 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'.

² Refer to Section 6.3 of this permit. The minimum levels ("MLs") identified in this table represent the highest acceptable MLs that shall be achieved by the Permittee's analytical methods. Actual MLs reported by the laboratory must be reported as a comment on the DMR. Detected concentrations less than the laboratory ML shall be reported on the DMR in accordance with Section 6.5.

³ For this parameter, the Permittee shall maintain at the facility a record of the Total Daily Flow and pH range for each operating day. The Permittee shall report on its DMR the "Average Daily Flow" and the "Maximum Daily Flow" and pH for each month and shall provide the record of the Total Daily Flow and pH range as an attachment to the DMR (Attachment D).

Remarks:

1. Abbreviations used for units are as follows: gpd means gallons per day; mg/L means milligrams per liter; SU means Standard Units; µg/l means micrograms per liter. Other abbreviations are as follows: NA means Not Applicable; NR means Not Reportable (unless sampling is conducted relative to Section 5.4 of this permit).

2. If "---" is noted in the limits column in the table, this means that a limit is not specified but a value must be reported on the DMR.

TABLE E

Discharge Serial Number: DSN 103-1							Monitoring Location: 1 (External outfall)			
Wastewater Description: Fire hydrant test wastewater							Outfall Location: Latitude (41° 39' 42'') and Longitude (71° 55' 28'')			
Monitoring Location Description: Prior to discharging into the in-ground stormwater infiltration system located at the south and north ends of the site (See the remark below)										
Maximum Frequency of Discharge: Once per year							Discharge is to: Infiltration into the groundwater of the Mill Brook watershed			
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINIMUM LEVEL ² (µg/l)
			Average Monthly Limit	Maximum Daily Limit	Sample/ Reporting Frequency ¹	Sample Type or Measurement to be Reported	Instantaneous Limit or Required Range	Sample/ Reporting Frequency	Sample Type or Measurement to be Reported	
Aluminum, Total	01105	mg/L	NA	NA	NR	NA	---	Annually	Grab	10.0
Boron	01022	mg/L	NA	NA	NR	NA	---	Annually	Grab	
Copper, Total	01042	mg/L	NA	NA	NR	NA	---	Annual	Grab	3.0
Flow, Maximum during 24-hr period	50047	gpd	NA	225,000	Annually	Total Daily Flow	NA	NR	NA	
Iron, Total	01045	mg/L	NA	NA	NR	NA	---	Annually	Grab	100.0
Lead, Total	01051	mg/L	NA	NA	NR	NA	---	Annually	Grab	1.0
pH	00400	S.U.	NA	NA	NR	NA	6.0 – 9.0	Annually	Grab	
Phosphorus, Total	00665	mg/L	NA	NA	NR	NA	---	Annually	Grab	100.0
Zinc, Total	01092	mg/L	NA	NA	NR	NA	---	Annually	Grab	10.0

TABLE E FOOTNOTES AND REMARKS

Footnotes: ¹ 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'.

² Refer to Section 6.3 of this permit. The minimum levels ("MLs") identified in this table represent the highest acceptable MLs that shall be achieved by the Permittee's analytical methods. Actual MLs reported by the laboratory must be reported as a comment on the DMR. Detected concentrations less than the laboratory ML shall be reported on the DMR in accordance with Section 6.5.

³ For this parameter, the Permittee shall maintain at the facility a record of the Total Daily Flow and pH range for each operating day. The Permittee shall report on its DMR the "Average Daily Flow" and the "Maximum Daily Flow" and pH for each month and shall provide the record of the Total Daily Flow and pH range as an attachment to the DMR (Attachment D).

Remarks:

1. Abbreviations used for units are as follows: gpd means gallons per day; mg/L means milligrams per liter; SU means Standard Units; µg/l means micrograms per liter. Other abbreviations are as follows: NA means Not Applicable; NR means Not Reportable (unless sampling is conducted relative to Section 5.4 of this permit).

2. If "---" is noted in the limits column in the table, this means that a limit is not specified but a value must be reported on the DMR.

TABLE F

Discharge Serial Number: DSN 104-1							Monitoring Location: 1 (External outfall)			
Wastewater Description: Make-up supply tank drain and overflow wastewaters							Outfall Location: Latitude (41° 39' 56") and Longitude (71° 55' 26")			
Monitoring Location Description: Prior to discharging into the in-ground stormwater infiltration system located at the north end of the site										
Maximum Frequency of Discharge: Once per year							Discharge is to: Infiltration into the groundwater of the Mill Brook watershed			
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			
			Average Monthly Limit	Maximum Daily Limit	Sample/ Reporting Frequency ¹	Sample Type or Measurement to be Reported	Instantaneous Limit or Required Range	Sample/ Reporting Frequency	Sample Type or Measurement to be Reported	MINIMUM LEVEL ² (µg/l)
Aluminum, Total	01105	mg/L	NA	NA	NR	NA	---	Annually	Grab	10.0
Boron	01022	mg/L	NA	NA	NR	NA	---	Annually	Grab	
Copper, Total	01042	mg/L	NA	NA	NR	NA	---	Annual	Grab	3.0
Flow, Maximum during 24-hr period	50047	gpd	NA	250,000	Annually	Total Daily Flow	NA	NR	NA	
Iron, Total	01045	mg/L	NA	NA	NR	NA	---	Annually	Grab	
Lead, Total	01051	mg/L	NA	NA	NR	NA	---	Annually	Grab	1.0
pH	00400	S.U.	NA	NA	NR	NA	6.0 – 9.0	Annually	Grab	
Phosphorus, Total	00665	mg/L	NA	NA	NR	NA	---	Annually	Grab	100.0
Zinc, Total	01092	mg/L	NA	NA	NR	NA	---	Annually	Grab	10.0

TABLE F FOOTNOTES AND REMARKS

Footnotes: ¹ 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'.

² Refer to Section 6.3 of this permit. The minimum levels ("MLs") identified in this table represent the highest acceptable MLs that shall be achieved by the Permittee's analytical methods. Actual MLs reported by the laboratory must be reported as a comment on the DMR. Detected concentrations less than the laboratory ML shall be reported on the DMR in accordance with Section 6.5.

³ For this parameter, the Permittee shall maintain at the facility a record of the Total Daily Flow and pH range for each operating day. The Permittee shall report on its DMR the "Average Daily Flow" and the "Maximum Daily Flow" and pH for each month and shall provide the record of the Total Daily Flow and pH range as an attachment to the DMR (Attachment D).

Remarks:

1. Abbreviations used for units are as follows: gpd means gallons per day; mg/L means milligrams per liter; SU means Standard Units; µg/l means micrograms per liter. Other abbreviations are as follows: NA means Not Applicable; NR means Not Reportable (unless sampling is conducted relative to Section 5.4 of this permit).

2. If "---" is noted in the limits column in the table, this means that a limit is not specified but a value must be reported on the DMR.

TABLE G

Intake Serial Number: DSN 101-H							Monitoring Location: 0 (Intake for Cooling Water Intake Structure)			
Wastewater Description: Intake cooling water							Intake Location: Latitude (41° 39' 40'') and Longitude (71° 57' 41'')			
Monitoring Location Description: Prior to the intake cooling water treatment at the pH/temperature/turbidity monitoring location							Intake is from: Quinebaug River			
BTA Determination on Cooling Water Intake Structure in accordance with 40 CFR 125.90(b): Cylindrical wedgewire screen through screen design velocity of 0.25fps, and operation of a cooling tower, a closed cycle recirculating system as defined in 40 CFR 125.83.										
PARAMETER	NET DMR CODE	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			MINI-MUM LEVEL ² (µg/l)
			Average Monthly Limit	Maximum Daily Limit	Sample/Reporting Frequency ¹	Sample Type or Measurement to be reported	Instantaneous Limit or Required Range	Sample/Reporting Frequency	Sample Type or Measurement to be Reported	
Aluminum, Total	01105	mg/L	NA	NA	NR	NA	---	Monthly	Grab	10.0
Boron	01022	mg/L	NA	NA	NR	NA	---	Monthly	Grab	
Chromium, Total	01034	mg/L	NA	NA	NR	NA	---	Monthly	Grab	5.0
Copper, Total	01042	mg/L	NA	NA	NR	NA	---	Monthly	Grab	3.0
Flow rate (Average daily flow)	00056	gpd	---	NA	Monthly	Total Daily Flow	NA	NR	NA	
Flow, Maximum during 24-hr period	50047	gpd	NA	893,000	Monthly	Total Daily Flow	NA	NR	NA	
Iron, Total	01045	mg/L	NA	NA	NR	NA	---	Monthly	Grab	100.0
Lead, Total	01051	mg/L	NA	NA	NR	NA	---	Monthly	Grab	1.0
pH, Minimum	61942	SU	NA	NA	NR	NA	---	Monthly	Grab	
pH, Maximum	61941	SU	NA	NA	NR	NA	---	Monthly	Grab	
Phosphorus, Total	00665	mg/L	NA	NA	NR	NA	---	Monthly	Grab	100.0
Temperature	00011	°F	NA	NA	NR	NA	---	Monthly	Instantaneous	
Zinc, Total	01092	mg/L	NA	NA	NR	NA	---	Monthly	Grab	10.0

TABLE G FOOTNOTES AND REMARKS

Footnotes:

¹ 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'.

² Refer to Section 6.3 of this permit. The minimum levels ("MLs") identified in this table represent the highest acceptable MLs that shall be achieved by the Permittee's analytical methods. Actual MLs reported by the laboratory must be reported as a comment on the DMR. Detected concentrations less than the laboratory ML shall be reported on the DMR in accordance with Section 6.5.

³ For this parameter, the Permittee shall maintain at the facility a record of the Total Daily Flow and pH range for each operating day. The Permittee shall report on its DMR the "Average Daily Flow" and the "Maximum Daily Flow" and pH for each month and shall provide the record of the Total Daily Flow and pH range as an attachment to the DMR (Attachment D).

Remarks:

1. Abbreviations used for units are as follows: gpd means gallons per day; mg/L means milligrams per liter; SU means Standard Units; °F means degrees Fahrenheit; µg/l means micrograms per liter. Other abbreviations are as follows: NA means Not Applicable; NR means Not Reportable (unless sampling is conducted relative to Section 5.4 of this permit).

2. If "----" is noted in the limits column in the table, this means that a limit is not specified but a value must be reported on the DMR.

SECTION 6: SAMPLE COLLECTION, HANDLING AND ANALYTICAL TECHNIQUES

- 6.1 All samples shall be collected, handled, and analyzed in accordance with the methods approved under 40 CFR 136, unless another method is required under 40 CFR subchapter N or unless an alternative method has been approved in writing pursuant to 40 CFR 136.5. To determine compliance with limits and conditions established in this permit, monitoring must be performed using sufficiently-sensitive methods approved pursuant to 40 CFR 136 for the analysis of pollutants having approved methods under that part, unless a method is required under 40 CFR subchapter N or unless an alternative method has been approved in writing pursuant to 40 CFR 136.5.
- 6.2 All metals analyses identified in this permit shall refer to analyses for Total Recoverable Metal as defined in 40 CFR 136, unless otherwise specified.
- 6.3 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 of 3. The MLs specified in Section 5 Tables A - G represent the minimum concentrations at which quantification must be achieved and verified during the chemical analyses for the parameters identified in Section 5 Tables A – G. 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.
- 6.4 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.
- 6.5 Analyses for which quantification was verified to be below a ML, including non-detect, shall be reported as zero on the DMR for purposes of determining compliance with effluent limitations or conditions specified in this permit. The Permittee shall attach documentation demonstrating the ML of the analysis as an attachment to the DMR and identify the ML as a comment on the DMR.
- 6.6 It is a violation of this permit for a Permittee or his/her designated agent, to manipulate test samples in any manner, to delay sample shipment, or to terminate or to cause to terminate a toxicity test. Once initiated, all toxicity tests must be completed.
- 6.7 Analyses required under this permit shall be performed in accordance with Conn. Gen. Stat. Section 19a-29a. An “environmental laboratory”, as that term is defined in the referenced section, that is performing analyses required by this permit, shall be registered and have certification acceptable to the Commissioner, as such registration and certification is necessary.

SECTION 7: AQUATIC TOXICITY TESTING

- 7.1 **ACUTE TESTING REQUIREMENTS.** The Permittee shall conduct acute aquatic toxicity testing for DSN 101-1 as follows:
- 7.1.1 **TEST METHOD:** Acute aquatic toxicity shall be performed as prescribed in the reference document *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.

7.1.2 SAMPLE COLLECTION AND HANDLING:

7.1.2.1 Composite samples shall be chilled as they are collected. Grab samples shall be chilled immediately following collection. Samples shall be held at 0-6 °C until aquatic toxicity testing is initiated.

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

7.1.2.3 Tests for acute aquatic toxicity shall be initiated within 36 hours of sample collection.

7.1.3 TEST SPECIES AND TEST DURATION: Monitoring for aquatic toxicity to determine compliance with the acute toxicity limits in this permit shall be conducted as follows:

7.1.3.1 For 48-hours utilizing neonatal *Daphnia pulex* (less than 24-hours old).

7.1.3.2 For 48-hours utilizing larval *Pimephales promelas* (1-14 days old with no more than 24-hours range in age).

7.1.4 ACUTE ENDPOINT: Survival at 48-hours measured by NOAEL.

7.1.5 TEST CONDITIONS:

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

7.1.5.2 Pass/fail and single concentration tests shall be conducted at a specified Critical Test Concentration (CTC) equal to the acute toxicity effluent limit, or 100% in the case of monitoring only conditions, as prescribed in Section 22a-430-3(j)(7)(A)(i) of the RSCA. Five replicates of undiluted effluent and five replicates of effluent diluted to the CTC shall be employed in the test. Three replicate control test chambers containing dilution water only shall also be employed in the test.

7.1.5.3 Synthetic freshwater prepared with deionized water adjusted to a hardness of 50 mg/L (± 5 mg/L) as CaCO_3 shall be used as dilution water.

7.1.5.4 Organisms shall not be fed during the tests.

7.1.5.5 Copper nitrate shall be used as the reference toxicant.

7.1.5.6 Dissolved oxygen, pH, and temperature shall be measured in the control and in all test concentrations at the beginning of the test, daily thereafter, and at test termination.

7.1.5.7 Specific conductance, pH, alkalinity, hardness, and total residual chlorine shall be measured in the undiluted effluent sample 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.

- 7.1.6 **CHEMICAL ANALYSIS:** All effluent samples used in the acute toxicity test shall, at a minimum, be analyzed and results reported in accordance with the provisions listed in Section 5 Table B and Section 6.1 of this permit for the following parameters identified on Section 5 Table B of the permit.
- 7.1.7 **TEST ACCEPTABILITY CRITERIA:** For the test results to be acceptable, control survival must equal or exceed 90%. If the laboratory control fails to meet test acceptability criteria for either of the test organisms at the end of the respective test period, then the test is considered invalid and the test must be repeated with a newly collected sample in accordance with Section 9.4.
- 7.1.8 **TEST COMPLIANCE:** Compliance with limits on Acute Toxicity shall be determined as follows:
- 7.1.8.1 For limits expressed as ~~aaa~~ NOAEL value, compliance shall be demonstrated when the results of a valid single concentration or pass/fail acute aquatic toxicity test indicates there is greater than 50% survival in the undiluted effluent and 90% or greater survival in the effluent at the specified CTC.
- 7.1.9 **REPORTING:** Results of acute toxicity monitoring shall be documented on an Aquatic Toxicity Monitoring Report (“ATMR”) and reported to the Commissioner by the last day of the month following the month in which samples are collected in accordance with Section 8.2 of this permit. The report shall include the items identified in Section 8.2 of this permit. Endpoints to be reported are: 48-hour LC50 and NOAEL.
- 7.2 **CHRONIC TESTING REQUIREMENTS.** The Permittee shall conduct chronic toxicity testing for DSN 001-1 as follows:
- 7.2.1 **TEST METHOD:** Chronic aquatic toxicity testing shall be performed as prescribed in the reference document *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms*, EPA-821-R-02-013, or the most current version, with the following exceptions or clarifications noted below.
- 7.2.2 **SAMPLE COLLECTION AND HANDLING:**
- 7.2.2.1 Composite samples shall be chilled as they are being collected. Samples shall be held at 0-6 °C until chronic aquatic toxicity testing is initiated.
- 7.2.2.2 Effluent samples shall not be dechlorinated, filtered, or modified in any way prior to testing for chronic aquatic toxicity unless specifically approved in writing by the Commissioner for monitoring at this facility.
- 7.2.2.3 Tests for chronic aquatic toxicity shall be initiated within 36 hours of sample collection.
- 7.2.3 **TEST SPECIES AND TEST DURATION:** Monitoring for chronic aquatic toxicity to determine compliance with the chronic toxicity limits/conditions in the permit shall be conducted as follows:
- 7.2.3.1 For seven days utilizing neonatal *Ceriodaphnia dubia* (less 24-hours old)
- 7.2.3.2 For seven days utilizing newly-hatched *Pimephales promelas* (less 24-hours old).

7.2.4 **CHRONIC ENDPOINTS:**

7.2.4.1 *Ceriodaphnia dubia*: Survival and Reproduction

7.2.4.2 *Pimephales promelas*: Survival and Growth

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

7.2.6 **TEST CONDITIONS:**

7.2.6.1 Testing for chronic aquatic toxicity shall be conducted as prescribed in the reference document for static daily renewal tests.

7.2.6.2 Daily composite samples of the discharge and grab samples of the Quinebaug River for use as site water 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, Day 6, and Day 7 of the test). Samples shall not be dechlorinated, pH or hardness adjusted, or chemically altered in any way.

7.2.6.3 Test concentrations shall be comprised of a minimum of five dilutions (100%, 64%, 32%, 16%, 8%, and 4% effluent), laboratory control water, and site dilution water.

7.2.6.4 Dissolved oxygen, pH, and temperature shall be measured in each sample of effluent and the Quinebaug River water sample prior to and immediately following renewal of the test solutions.

7.2.6.5 Synthetic freshwater prepared with deionized water adjusted to a hardness of 50 mg/l (± 5 mg/l) as CaCO₃ prepared as described in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA-821-R-02-013) shall be used as laboratory control water.

7.2.7 **CHEMICAL ANALYSIS:** Chemical analysis for the parameters identified in Section 5 Table C and Section 6.1 of the permit shall be conducted on an undiluted aliquot of each effluent sample and each sample of Quinebaug River used in the test. The chemical analysis shall be analyzed, and results reported in accordance with the provisions listed in Section 5 Table C and Section 6.1 of the permit.

7.2.8 **TEST ACCEPTABILITY CRITERIA:** If the laboratory control fails to meet test acceptability criteria specified in the reference document for either of the test organisms at the end of the respective test period, then the test is considered invalid and the test must be repeated.

7.2.9 **REPORTING:** A report detailing the results of the chronic toxicity monitoring shall be documented on an ATMR and submitted to the Commissioner by the last day of the month following the month in which samples are collected in accordance with Section 8.2 of this permit. The report shall include the items identified in Section 8.2 of this permit. Endpoints to be reported are: 48-hour LC50 (survival), 7-day LC50 (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 (reproduction), 7-day C-LOEC (reproduction), 7-day IC25 (growth and reproduction).

SECTION 8: REPORTING REQUIREMENTS

- 8.1 The results of chemical analyses and any aquatic toxicity test required by this permit shall be submitted electronically using NetDMR. Monitoring results shall be reported at the monitoring frequency specified in this permit. 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 another method required for an industry-specific waste stream under 40 CFR subchapter N, or other methods approved by the Commissioner, shall also be included on the DMR, or as an attachment, if necessary, and the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Commissioner in the permit. All aquatic toxicity reports shall also be included as an attachment to the DMR. A report shall also be included with the DMR which includes a detailed explanation of any violations of the limitations specified. DMRs, attachments, and reports, shall continue to be submitted electronically in accordance with Section 8.5 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

- 8.2 The ATMR associated with aquatic toxicity monitoring shall include all applicable items identified in Section 12 of EPA-821-R-02-012 and in Section 10 of EPA-821-R-02-013 (Freshwater), including complete and accurate aquatic toxicity test data, including percent survival of test organisms in each replicate test chamber, LC₅₀ 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. The ATMR shall be submitted electronically as an attachment to the DMR and via email to: DEEP.IndustrialWETReports@ct.gov, by the last day of the month following the month in which the samples are collected.
- 8.3 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.

8.4 NetDMR Reporting Requirements:

The Permittee shall report electronically using NetDMR, a web-based tool that allows permittees to electronically submit DMRs and other required reports through a secure internet connection. The Permittee and/or the signatory authority shall electronically submit DMRs required under this permit to the Commissioner using NetDMR in satisfaction of the DMR submission requirements of Sections 5, 6, and 9 of this permit. All sampling and monitoring records 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 Commissioner as an electronic attachment to the DMR in NetDMR. The Permittee shall also electronically file any written report of noncompliance described in Section 9 of this permit as an attachment in NetDMR. DMRs shall be submitted electronically to the Commissioner no later than the last day of the month following the completed reporting period. NetDMR is accessed from: <http://www.epa.gov/netdmr>.

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

9.1 Noncompliance Notifications:

9.1.1 In accordance with Section 22a-430-3(j)(8), 22a-430-3(j)(11)(D), 22a-430-3(k)(4), and 22a-430-3(i)(3) of the RSCA, the Permittee shall notify the Commissioner of the following actual or anticipated noncompliance with the terms or conditions of this permit within two hours of becoming aware of the circumstances. All other actual or anticipated violations of the permit shall be reported to the Commissioner within 24 hours of becoming aware of the circumstances:

9.1.1.1 A noncompliance that is greater than two times an effluent limitation;

9.1.1.2 A noncompliance of any minimum or maximum daily limitation or excursion beyond a minimum or maximum daily range;

9.1.1.3 Any condition that may endanger human health or the environment, including but not limited to noncompliance with whole effluent toxicity WET limitations;

9.1.1.4 Any condition that may endanger the operation of a POTW, including sludge handling and disposal;

9.1.1.5 A failure or malfunction of monitoring equipment used to comply with the monitoring requirements of this permit;

9.1.1.6 Any actual or potential bypass of the Permittee's collection system or treatment facilities; or

9.1.1.7 Expansions or significant alterations of any wastewater collection, treatment facility, or its method of operation for the purpose of correcting or avoiding a permit violation.

9.1.2 Notifications shall be submitted via the Commissioner's online Noncompliance Notification Form:

<https://portal.ct.gov/deep/water-regulating-and-discharges/industrial-wastewater/compliance-assistance/notification-requirements>.

9.1.3 Within five days of any notification of noncompliance in accordance with Sections 9.1.1.1 through 9.1.1.6 of this permit, the Permittee shall submit a follow-up report using the Commissioner's online Noncompliance Follow-up Report Form:

<https://portal.ct.gov/deep/water-regulating-and-discharges/industrial-wastewater/compliance-assistance/notification-requirements>.

The follow-up report shall contain, at a minimum, the following information: (i) A description of the noncompliance and its cause; (ii) the period of noncompliance, including

exact dates and times; (iii) if the noncompliance has not been corrected, the anticipated time it is expected to continue; and (iv) steps taken or planned to correct the noncompliance and reduce, eliminate and prevent recurrence of the noncompliance.

- 9.1.4 Within 30 days of any notification of facility modifications reported in accordance with Section 9.1.1.7 of this permit, the Permittee shall submit a written follow-up report by submitting a “Facility and Wastewater Treatment System Modification Request for Determination” for the review and approval of the Commissioner. The report shall fully describe the changes made to the facility and reasons therefor.
- 9.1.5 Notification of an actual or anticipated noncompliance or facility modification does not stay any term or condition of this permit.
- 9.2 In accordance with Section 22a-430-3(j)(11)(E) of the RSCA, the Permittee shall notify the Commissioner within 72 hours and in writing within 30 days when he or she knows or has reason to believe that the concentration in the discharge of any substance listed in the application, or any toxic substance as listed in Appendix B or D of RSCA Section 22a-430-4, has exceeded or will exceed the highest of the following levels: (1) One hundred micrograms per liter; (2) Two hundred micrograms per liter for acrolein and acrylonitrile, five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter for antimony; (3) An alternative level specified by the Commissioner, provided such level shall not exceed the level which can be achieved by the Permittee’s treatment system; or (4) A level two times the level specified in the Permittee’s application.
- 72 hour initial notifications shall be submitted via the Commissioner’s online Noncompliance Notification Form. 30 day follow-up reports shall be submitted via the Commissioner’s online Noncompliance Follow-up Report Form. The Forms are available at the Commissioner’s website, here: <https://portal.ct.gov/deep/water-regulating-and-discharges/industrial-wastewater/compliance-assistance/notification-requirements>.
- 9.3 In addition to any other written reporting requirements, the Permittee shall report any instances of noncompliance with this permit with its DMR. Such reporting shall be due no later than the last day of the month following the reporting period in which the noncompliant event occurred. The information provided in the DMR shall include, at a minimum: the type of violation, the duration of the violation, the cause of the violation, and any corrective action(s) or preventative measure(s) taken to address the violation.
- 9.4 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 and 7. The exceedance or invalid test shall be reported to Commissioner in accordance with Section 9.1. The results shall be submitted to the Commissioner within 30 days of the exceedance or invalid test. The results and the associated ATMR shall be reported in accordance with Sections 5 and 8.2 of the permit. Results of all tests, whether valid or invalid, shall be reported. If more than one toxicity sample is collected during a single month, report subsequent WET and chemistry results as an attachment to the month’s DMR.
- 9.5 If any two consecutive test results or any three test results in a twelve-month period indicate that an aquatic toxicity limit has been exceeded, the Permittee shall immediately take all reasonable steps to eliminate toxicity wherever possible and shall also submit a report, for the review and written approval of the Commissioner, which describes in detail the steps taken or that shall be taken to eliminate the toxic impacts of the discharge on the receiving water and it shall also include a

proposed schedule for implementation. Such report shall be submitted in accordance with the timeframe set forth in Section 22a-430-3(j)(10)(C) of the Regs. Conn. State Agencies. The Permittee shall implement all actions in accordance with the approved report and schedule.

SECTION 10: COMPLIANCE SCHEDULE

10.1 pH EFFLUENT LIMITATIONS COMPLIANCE. The Permittee shall achieve compliance with the pH effluent limitations and in Table A of Section 5 of this permit, as soon as possible, but in no event later than 12 months after the effective date of this permit in accordance with the following:

10.1.1 SCOPE OF STUDY. On or before 90 days after the date of issuance of this permit, the Permittee shall submit for the Commissioner's review and written approval a comprehensive plan and thorough report which describes and evaluates alternative actions which may be taken by the Permittee to achieve compliance with the pH limitations in Section 5 of this permit. Such report shall:

10.1.1.1 Evaluate alternative actions to achieve compliance with Section 5 limits including, but not limited to, pollutant source reduction, process changes/innovations, chemical substitutions, recycle and zero discharge systems, water conservation measures, and other internal and/or end-of-pipe treatment technologies; upstream and downstream sampling locations;

10.1.1.2 State in detail the most expeditious schedule for performing each alternative;

10.1.1.3 List all permits and approvals required for each alternative, including but not limited to any permits required under Sections 22a-32, 22a-42a, 22a-342, 22a-361, 22a-368 or 22a-430 of the CGS;

10.1.1.4 Propose a preferred alternative or combination of alternatives with supporting justification; and

10.1.1.5 Propose a preferred alternative or combination of alternatives with supporting justification; and

10.1.1.6 Propose a detailed program and schedule, including the start and anticipated end dates, to perform all actions required by the preferred alternative including but not limited to a schedule for submission of engineering plans and specifications on any internal and/or end of pipe treatment facilities, start and completion of any construction activities related to any treatment facilities, and applying for and obtaining all permits and approvals required for such actions.

10.2 THERMAL VERIFICATION STUDY. Pursuant to Section 316(a) of the Federal Water Pollution Control Act, 33 U.S.C. § 1326(a) regarding the thermal component of the discharge, the Permittee shall comply with the following to verify that the thermal discharge from DSN 101-1 will not cause or contribute to an instream water quality violation of the ambient daily maximum and maximum allowable increase in temperature of 4°F:

10.2.1 SCOPE OF STUDY. On or before six (6) months after the effective date of the permit, the Permittee shall submit for the Commissioner's review, a scope of study for the thermal verification required in Section 10.2 of this permit. The scope of study shall provide all necessary details on how the study will be performed and shall include a schedule that identifies study commencement and completion dates. The scope of study shall include at a

minimum:

10.2.1.1 In situ sampling during summer (July – September) and winter (January – March) with vertical plume monitoring, and summer mapping occurring at or near 7Q10 conditions;

10.2.1.2 Upstream and downstream sampling locations;

10.2.1.3 Hydrographic and real time temperature surveys; and

10.2.1.4 Thermal plume mappings.

10.2.1.5 Record of both the rate of discharge (gph) during the study, and total daily flow for each mapping;

10.2.1.6 Record of the river flow during the mapping obtained from the USGS Streamgage No. 0112700 in Jewett City, including the hydrographs; and.

10.2.1.7 Identification of representative important species (“RIS”). RIS are species which are representative, in terms of their biological needs, of a balanced, indigenous community of shellfish, fish, and wildlife in the body of water into which the thermal discharge is made. Below is a list of recommended criteria for identifying RIS:

1. Species listed in the WQS as requiring protection.
2. Species listed as threatened and endangered.
3. Thermally sensitive species in the local area, including those species near the northern or southern boundaries of their natural ranges.
4. Species that are valuable for commercial or recreational activities.
5. Species that are critical to the structure and function of the ecological system, i.e., those that are necessary in the food chain or as habitat formers for the species included in the criteria above.
6. Species that are potentially capable of becoming nuisance species
7. Species that are representative of the thermal requirements of important species but which themselves are not important.

10.2.2 **FIELD VERIFICATION.** On or before two (2) years after the Department’s concurrence of the scope of study, the Permittee shall conduct a field verification study of the thermal discharge impact to the Quinebaug River.

10.2.3 **REPRESENTATIVE IMPORTANT SPECIES.** On or before two (2) years after the Department’s concurrence of the scope of study, the Permittee shall determine the thermal thresholds such as the acute and chronic lethal thermal sensitivity limits, and the optimal temperature ranges, for the different life stages of the selected RIS.

10.2.4 **REPORT SUBMITTAL.** On or before four (4) months from completing the field verification study, the Permittee shall submit a Thermal Verification Report describing the results of this study for the Commissioner’s review. The study shall include but not be limited to all in situ data collected and analyzed in an electronic and editable format, thermal plume mapping reflecting the current outfall release cross-sectional area, identification of RIS and the applicable thermal thresholds, and potential aquatic impacts within wetlands and watercourse in the thermal plume. The thermal plume mapping shall include, at a minimum:

- 10.2.4.1 Map of the nearfield area, circumscribed by a radial distance extending outward from the location of the discharge (DSN001-1) into the receiving water body, at a scale of no greater than 750 feet per inch. Such map shall also delineate the location of any watercourses, discharges, designated tidal wetlands, and structural features such as bridges and culverts. The cross-sectional bathymetry of the Quinebaug River shall be plotted, including bathymetry for any areas where the thermal data is different than expected;
- 10.2.4.2 Thermal isotherms delineating the areal extent of the plume equivalent to a ΔT of 4°F and a maximum temperature of 85°F or ambient temperature, if ambient temperature is above 85°F in increments of 1°F. Isotherms shall be labeled for both maximum temperature and maximum temperature increase beginning at the outfall and at ΔT of 1.5 °F and 4°F intervals. Isotherms should be labeled from point of discharge until the thermal component of that plume has been reduced to ambient temperatures. Nearfield temperature increases should be well documented to determine the localized effect of high temperature discharges; and
- 10.2.4.3 Measurements will be taken during the summer months (July – September) and winter months (January - March), during a normal operating day;
- 10.2.4.4 The report should compare conditions on the days of the study to 7Q10 and extrapolate the plume contours expected under 7Q10 conditions; and
- 10.2.4.5 Sampling and water quality data should be provided as a excel spreadsheet, and contour lines, monitoring locations, and bathymetry should be provided as an Arc GIS Pro geospatial project using the State Plane Connecticut FIPS coordinate system.

10.3 **STATUS REPORTS.** The Permittee shall submit to the Commissioner semi-annual status reports on June 30th and December 31st of each year, beginning sixty days after the date of concurrence of the reports referenced in Sections 10.1.1 and 10.2.1 above. Status reports shall include the following:

- 10.3.1 A description of the work performed by the Permittee during the past six (6) months towards compliance with Sections 10.1, 10.2.2 and 10.2.3 above;
- 10.3.2 An assessment of whether the Permittee is on schedule to comply with the compliance deadline;
- 10.3.3 If the Permittee is not on-track to comply with the compliance deadline, the steps the Permittee will take to comply; and
- 10.3.4 Status reports of Sections 10.1, 10.2.2 and 10.2.3 shall include the start and anticipated end dates of the studies fieldwork and anticipated report submission date.

10.4 **PROJECT COMPLETION CERTIFICATION.** The Permittee shall perform the approved actions in accordance with the approved schedule. Within fourteen (14) days after completing such actions, the Permittee shall certify to the Commissioner in writing that the actions have been completed as reviewed/approved.

10.5 **COMMISSIONER APPROVAL.** 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 resubmit 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.

- 10.6 **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.
- 10.7 **NOTIFICATION OF NONCOMPLIANCE.** Except as otherwise provided in this permit, 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 or of any document required hereunder, 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.
- 10.8 **NOTICE TO COMMISSIONER OF CHANGES.** Within fifteen (15) 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.
- 10.9 **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:

DEEP.IndustrialNPDESCompliance@ct.gov with the subject line "Plainfield Renewable Energy, LLC. – CT0030473 and SP0002464"

This permit is hereby issued on

JENNIFER PERRY, P.E.
Bureau Chief

JP/OF

National Pollutant Discharge Elimination System Permit Factsheet

NPDES Permit Summary	
Applicant	Plainfield Renewable Energy, LLC
Permit No.	CT0030473
Application No.	201801971
Date Application Received	February 28, 2018
Location Address	12 Mill Brook Road, Plainfield, CT 06374
Facility Contact	Mark Boucher, EHS Compliance Coordinator Office Phone: (860) 457-9307 Email: mboucher@plainfieldre.com
Mailing Address	12 Mill Brook Road, Plainfield, CT 06374
DMR Contact	Mark Boucher, EHS Compliance Coordinator Office Phone: (860) 457-9307 Email: mboucher@plainfieldre.com
Secretary of State Business ID	0853528
Permit Term	5 Years
Permit Category	National Pollutant Discharge Elimination System ("NPDES") Minor ("MI")
SIC & NAICS Code(S)	4911 & 221112 (Biomass Electric Power Generation)
Applicable Effluent Guidelines	None
Permit Type	Reissuance
Ownership	Private
Receiving Water	DSN 101: Quinebaug River DSN 102, 103 & 104: Groundwater in the Mill Brook watershed
Waterbody Segment Id's	CT3700-00_02
Waterbody Classification	DSN 101: Surface water Class B DSN 102 & 103: Ground water Class GA-Impaired DSN 104: Ground water Class GA
Discharge Locations (Latitude, Longitude)	DSN 101: 41° 39' 35", -71° 57' 49" DSN 102 & 103: 41° 39' 42", -71° 55' 28" DSN 104: 41° 39' 56", -71° 55' 26"
Water Intake Location (Latitude, Longitude)	Intake SN 101H: 41° 39' 40", -71° 57' 41"
Compliance Schedule/Actions	Yes (Thermal verification study)
Staff Engineer	Oluwatoyin Fakilede, Environmental Engineer 3 Phone: (860) 418-5986; E-Mail: Oluwatoyin.fakilede@ct.gov

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Section 1 Facility Summary

1.1 Permit Fees

1.1.1 Application Fee:

Filing Fee	Invoice No.: DEP297437	Amount: \$ 1,300.00	Date Paid: 2/28/2018
Processing Fee	Invoice No.: DEP299637	Amount: \$ 10,225.00	Date Paid: 4/24/2018
Processing Fee	Invoice No.: DEP310412	Amount: \$ 7,350.00	Date Paid: 4/25/2018

1.1.2 Annual Fee:

Wastewater Category (per Regs. Conn. State Agencies sec. 22a-430-7)	Fee Flow Category Gallons per day ("gpd")	DSN	Annual Fee (per Regs. Conn. State Agencies sec. 22a-430-7 and CGS sec. 22a-6f)
Non-contact cooling water ("NCCW") from steam generating power plant	> 50,000	101	\$ 8,425.00
Hydrostatic pressure testing wastewater	> 50,000	102	\$ 2,290.00
Hydrostatic pressure testing wastewater	> 50,000	103	---
NCCW make up supply tank drain	> 50,000	104	
TOTAL AMOUNT			\$ 10,715.00

1.2 Application Submittal Information

On February 28, 2018, the Department of Energy and Environmental Protection ("DEEP") received an application (Application No. 201801971) from Plainfield Renewable Energy, LLC ("the Permittee", "the Applicant", "the facility") located in Plainfield, CT06374, for the renewal of its NPDES permit (Permit No. CT0030473) and state permit (Permit No. SP0002464), expiring on August 29, 2018 ("the previous permits").

Consistent with the requirements of Section 22a-6g of the Connecticut General Statutes ("Conn. Gen. Stat."), the Permittee published a Notice of Permit Application in the Norwich Bulletin on February 20, 2018. On April 26, 2018, the application was determined to be timely and administratively sufficient.

The Permittee seeks authorization for the following in Application No. 201801971:

DSN	Proposed Average Daily Flow (gpd)	Proposed Maximum Daily Flow (gpd)	Proposed Waste Streams	Treatment Type	Discharge to
101	126,103	173,571	NCCW (cooling tower blowdown)	Filtration, chlorine removal using sodium bisulfite and pH adjustment	Quinebaug River

DSN	Proposed Average Daily Flow (gpd)	Proposed Maximum Daily Flow (gpd)	Proposed Waste Streams	Treatment Type	Discharge to
102	NA	225,000	Fire pump test wastewater	No treatment	Infiltration into groundwater
103	NA	225,000	Fire hydrant test wastewater	No treatment	Infiltration into groundwater
104	NA	250,000	Make up supply tank drain	No treatment	Infiltration into groundwater

Intake	Design Intake Flow (gpd)	Intake Water Description	Source Water
001-H	893,000	Intake cooling water	Quinebaug River

This permit was previously assigned two permit numbers: Permit Nos. CT0030473 and SP0002464. Groundwater discharges from DSNs 102, 103, and 104 were associated with Permit No. SP0002464. Permit No. SP0002464 has been terminated and removed from this permit. All discharges, including DSNs 102, 103, and 104 are now covered under Permit No. CT0030473.

1.3 Other Permits

The Permittee has permit coverage for other wastewater and stormwater discharges under the following permitting mechanisms:

- Stormwater from the site is permitted under the “General Permit for Stormwater Activity Associated with Industrial Activities” (GSI002655); and
- Air compressor condensate, boiler blowdown and building maintenance wastewaters from the site are discharged to the Plainfield Publicly Owned Treatment Works (“POTW”) under coverage of the “General permit for Discharges from Miscellaneous Industrial Users (MIU GP)”.

The Permittee also has a water diversion permit (DIV-200603081) that authorizes the withdrawal of 893,000 gallons per day water from the Quinebaug River.

1.4 Facility Description

Plainfield Renewable Energy, LLC (“PRE”) is a 37.5 MW (megawatt) wood gasification biomass power plant facility in Plainfield. The power plant is located at 12 Mill Brook Road in Plainfield, Connecticut, at the intersection of Mill Brook Road and Norwich Road. The pumphouse for the intake is located at 114 Packer Road in Canterbury, Connecticut, about two miles away from the power plant. The Permittee has maintained a NPDES permit since 2008.

The Mill Brook facility consists of two (3) separate operational units:

1. A "volume reduction plant" (VRP) where wood chips are received through a double truck scale system, unloaded into hoppers, conveyed, handled, stored in piles located in a dedicated

area (outdoors and/or under a canopy structure), screened and subsequently conveyed for gasification at the adjacent "power block facility" (PBF). The outdoor storage incorporates: a truck emergency access; a storage buffer zone; a sealed pavement; curbs; and a stormwater control system (catch basins; a pump station; and underground and above ground storage tanks);

2. A "power block facility" (PBF) housing various ancillary equipment, including: a fluidized bed gasification and boiler system designed to process biomass (wood); a bottom ash residue collection system; a fly ash residue collection system; an air pollution system; an induced (ID) fan/stack system; a storage silo for bottom and fly ash residue; steam turbine generator system; a water treatment system designed to filter, clarify and store cooling water; and a transformer connected to the electrical distribution grid; and
3. An office building that houses the system control/monitoring room.

1.5 Description of Industrial Process

When in operation, the Permittee operates for 24 hours a day. The facility is fueled solely by wood (biomass) and utilizes a fluidized bed gasification process with a single close-coupled boiler to power the steam turbine generator. Using a network of conveyors, biomass is fed into a bubbling-bed gasifier under tightly controlled, sub-stoichiometric oxygen conditions, to produce a high-quality synthetic gas ("syngas"). The syngas is combusted to transfer heat to water-filled tubes, thereby generating steam. The steam is then superheated by capturing residual thermal energy from the flue-gas stream before directing it into a steam turbine. The rotation of the turbine drives the on-site generator, producing renewable electricity that is sent to the power grid, which supports local as well as regional energy needs.

The biomass fuel comes from various sources, which includes forest management residues, land clearing debris, and waste wood from industries and construction and demolition (C&D) waste. Bio-diesel (B100) is also used to supplement the solid fuel supply during startup, refractory curing, and for process stabilization.

The following intake and discharges are associated with the electricity producing process.

1.5.1 DSN 101-1

The water withdrawn from the Quinebaug River is treated when necessary to reduce solids and then runs through a tube and shell condenser to condense the extremely pure high-pressure steam generated from the process described above. The steam is condensed back into water for reuse in the process. There is no contact between the steam and the NCCW.

The NCCW goes into a three-cell cooling tower to reduce heat by evaporation and is recycled approximately five times prior to discharge to the Quinebaug River at the pump house on Packer Road in Canterbury. Each cell includes a cooling tower bypass valve and manual isolation valve that is used during extreme cold weather months to avoid freezing in the cooling tower. During normal operations all three fans are operated. The discharge is comprised of a maximum flow of 173,571 gpd of treated cooling tower blowdown wastewater.

1.5.2 DSN 102-1

This is an intermittent discharge of 225,000 gpd of fire suppression pump test wastewater. The discharge is generated from the required annual testing of fire suppression pumps. Water pumped from the Quinebaug River is stored in an on-site service water storage tank. During testing of the fire suppression pumps, the water is discharged by infiltration into groundwater via the underground stormwater infiltration system at the power plant. No chemicals are added to the water.

1.5.3 DSN 103-1

This is an intermittent discharge of 225,000 gpd of fire hydrant test wastewater. The discharge is generated from the required annual testing of fire hydrant pumps. Water pumped from the Quinebaug River is stored in an on-site service water storage tank. During testing of the fire hydrant pumps, the water is discharged by infiltration into groundwater via the underground stormwater infiltration system at the power plant. No chemicals are added to the water.

1.5.4 DSN 104-1

This is an intermittent discharge of 250,000 gpd of make-up supply tank drain and overflow wastewaters. City water or water pumped from the Quinebaug River is stored in an on-site service water storage tank. In the event of an overflow, or draining for maintenance, the water by infiltration into groundwater via the underground stormwater infiltration system at the power plant. In recent years, the Permittee has not discharged makeup supply tank drain.

1.5.5 Intake SN 101H

The maximum intake cooling water flow is 893,000 gallons per day. Intake cooling water undergoes cylindrical wedge wire screening to minimize impingement and entrainment. Intake cooling water also undergoes neutralization, coagulation, flocculation, clarification and filtration on an as needed basis before it is used for non-contact cooling on site. The waste from the water treatment is hauled off site for disposal.

1.5.6 DSN 105-1

The demineralized water tank is now situated inside the power generating facility and overflows will discharge via floor drains to the sanitary sewer system. The discharge is covered under the “General Permit for Discharges from Miscellaneous Industrial Users (MIU GP)” and therefore has removed from the permit.

1.6 Treatment System Description

DSN 101-1 – The cooling tower blowdown undergoes filtration in two in-line 55 microns filters. Post filtration, the wastewater is dechlorinated using sodium bisulfite, and pH adjusted before discharge to the Quinebaug River. The treatment system is fully automated with continuous flow, pH, ORP and temperature monitoring. The Permittee has a preventative measure built into the logic of the wastewater control system configured to close the effluent valve at 88°F and prevent it from re-opening until the measured temperature is below 88 °F. This is to ensure that the Permittee will not discharge at a temperature that is higher than the temperature limit in the permit. The temperature data is transferred to a spreadsheet during discharge events only.

The effluent monitoring is conducted at the power plant using an automatic sampler with flow proportional capacities prior to the discharge travelling about two miles to the discharge location at the pump house via underground piping system.

DSNs 102-1, 103-1 and 104-1 – There is no treatment for these wastewaters.

Intake SN 101-H – The Permittee withdraws water from Quinebaug River and treats as necessary to reduce solids to meet the water quality necessary for facility production use. The treatment of the intake water prior to use at the facility includes neutralization, coagulation, flocculation, clarification, and filtration. The waste from the water treatment is hauled off site for disposal.

1.7 Facility Changes

The Regulations of the Connecticut State Agencies (“Regs. Conn. State Agencies”) require that permittees notify DEEP and obtain written approval of any facility expansion or process change that may result in an increased or new discharge or constitute a new source, and of any expansion or significant changes made to a wastewater collection system, treatment system, or its method of operation in accordance with Regs. Conn. State Agencies Section 22a-430-3(i). These regulatory provisions are commonly referred to as “3(i) determinations”. DEEP will review the notification and determine if the change can be implemented under the current permit or if the requested change requires a permit modification to protect waters of the State in accordance with Regs. Conn. State Agencies Section 22a-430-4(p).

The following are a list of 3(i) determinations since the previous permit:

3(i) Application No.	Date Issued	Change Implemented
201806852	May 23, 2018	Ability to interchange intake water treatment chemicals, ChemTreat P899L with NALCO 8136, ChemTreat P813E with NALCLEAR 7766 and interchange cooling tower treatment chemicals ChemTreat CL5688 with NALCO 3DT138, ChemTreat CL-41 with NALCO Acti-brom 1338, and ChemTreat BL-1258 with NALCO 7408.
201808200	July 27, 2018	The re-use of part of the demineralized water production system effluent as partial source water for non-contact cooling. The remaining effluent from demineralized water production system will continue to discharge to the sanitary sewer and is permitted under the miscellaneous general permit, while the portion used for NCCW will be discharged to the Quinebaug River via DSN 101-1.
201904464	April 10, 2019	Replacement of the 55 microns cooling water blowdown discharge filter elements with 25 microns, to improve filtration.
202200807	April 19, 2022	In addition to the already authorized chemicals, ability to use NCCW treatment chemicals, Klaraid IC1172, Polyfloc AS 1002, E.C.O Film EF 2503, Spectrus DT 1404 and Spectrus OX 1201, supplied by GE Suez, to provide flexibility with regards to supplier’s costs and product availability.

3(i) Application No.	Date Issued	Change Implemented
202306179	November 22, 2023	The use of BetzDearborn DCL30, Hypersperse MDC 714 and Optisperse ADJ5050 to improve the performance of the reverse osmosis system at the facility and Foamtrol AF3566 for defoaming in the cooling tower.

1.8 Compliance History

1.8.1 Discharge Monitoring Report Review

Based on the Permittee's Discharge Monitoring Reports ("DMR"), data evaluated from January 2020 to December 2024, the Permittee reported the following effluent violation, which has been corrected.

Table 1.8.1: Effluent violations in the past 5 years					
Month/ Year	DSN	Parameter	Type of Limit	Permitted Limit	Exceedence
7/30/2021	101-1	Total Suspended Solids	MDL	30 mg/l	48 mg/l

MDL: Maximum daily limit

1.8.2 Notice of Violation

A Notice of Violation (NOV WR IN 14014) ("NOV") was issued on June 17, 2014, for the exceedance of effluent limitations at DSN 101-1 from Jan. 2014 - Mar. 2014 (see Table 1.8.2 below). The exceedances were investigated, and corrective actions were taken to prevent future recurrence. The corrective actions taken included reduction of the pore size of inline filters from 110 to 55 microns, and implementation of periodic inspections.

Table 1.8.2: DSN 101-1 NOV Effluent violations				
Month/ Year	Parameter	Type of Limit	Permitted Limit	Exceedence
1/2014	Lead	AML	0.019 mg/l	0.04 mg/l
	Lead	MDL	0.019 mg/l	0.06 mg/l
	Total suspended solids	MDL	33 mg/l	30 mg/l
	Temperature	MDL	90 °F	94 °F
	Aluminum, total	AML	1.42 mg/l	1.51mg/l
2/2014	Lead	AML	0.019 mg/l	0.06 mg/l
	Lead	MDL	0.019 mg/l	0.06 mg/l
	Total suspended solids	AML	40.5 mg/l	20 mg/l
	Total suspended solids	MDL	114 mg/l	30 mg/l
	Aluminum, total	MDL	3.11 mg/l	2.86mg/l
3/2014	Lead	AML	0.019 mg/l	0.03 mg/l
	Lead	MDL	0.019 mg/l	0.05 mg/l
	Total suspended solids	AML	28 mg/l	20 mg/l
	Total suspended solids	MDL	65 mg/l	30 mg/l

For the temperature exceedance, the high temperature reported was not an actual exceedance because, as reported by the permittee the discharge valve was closed, and the Permittee was not discharging at that time. Rather, it was a false reading due to the temperature sensor location. The control system is now configured to close the discharge valve at 88°F and prevent it from re-opening until the measured temperature is below 88 °F.

The NOV was closed on July 10, 2015.

1.8.3 Previous NPDES Permit Compliance Schedule

The previous permit issued on August 30, 2013, contained a compliance schedule that required the Permittee to submit a complete Attachment O (Part B discharge analysis of the permit application). The Permittee submitted the required Attachment O with the permit renewal application submitted on February 28, 2018.

The compliance schedule in the previous permit also required the Permittee to submit for the Commissioner's review and written approval, a scope of study and schedule for (1) performing seasonal thermal field monitoring verification of its discharge into the Quinebaug River, (2) a one-year impingement study, and (3) a two-year entrainment monitoring and evaluation of the cooling water intake structure. The studies were to be performed when the Commissioner provided written notification to the Permittee that anadromous fish population were restored in the Quinebaug River, upstream of the Aspinook Pond.

The Permittee submitted "Scopes of Study for Impingement and Entrainment Monitoring and Thermal Field Monitoring" dated February 18, 2014. The Permittee proposed not to conduct an impingement study because of the following reasons.

1. The design through screen velocity of 0.25 feet per second ("fps") should preclude the impingement of nearly all organisms with even rudimentary swimming abilities;
2. There is no practical method to collect quantitative impingement data, based on the intake structure's passive design; and
3. Previous evaluations indicate that impingement is exceedingly rare on this type of screen.

The U.S. Environmental Protection Agency ("EPA") has determined that a through screen velocity of 0.5 fps adequately reduces impingement; therefore, CT DEEP accepts the Permittee's request and is no longer requiring the impingement study (EPA. 2014. Technical Development Document for the Final Section 316(b) Existing Facilities Rule (EPA-821-R-14-002). pp 8-3).

The impingement, entrainment, and thermal verification studies were not completed because the Permittee did not receive DEEP approval of the scope of studies in advance of this permit renewal. As part of this renewal, DEEP is no longer requesting an impingement and entrainment study because of the 316(b) final rule promulgation on August 15, 2014, which shows that closed-cycle recirculating system adequately addresses entrainment (see Section 3.16 of this fact sheet). The thermal verification study will be conducted under the renewed permit and has been included as a compliance schedule.

1.9 General Issues Related to the Application

1.9.1 Federally Recognized Indian Land

As provided in the permit application, the site is not located on federally-recognized Indian land.

1.9.2 Coastal Area/Coastal Boundary

The activity is not located within a coastal boundary as defined in Conn. Gen. Stat. 22a-94(b).

1.9.3 Endangered Species

There are state listed species documented within the proposed discharges areas according to the June 2025 *State and Federal Listed Species and Natural Communities Map*. However, the discharges are not anticipated to have adverse impact to state listed species.

1.9.4 Aquifer Protection Areas

As provided in the permit application, the site is not located within a protected area identified on a Level A or B map.

1.9.5 Conservation or Preservation Restriction

As provided in the permit application, the property is subject to a conservation or preservation restriction. The Permittee implements invasive plant management and monitoring on conservation easements to mitigate impact to state listed species and submits an annual report to the Natural Diversity Data Base.

1.9.6 Public Water Supply Watershed

As provided in the permit application, the site is not located within a public water supply watershed.

Section 2 Receiving Water Body Information

The receiving waterbody, Quinebaug River, is identified as CT3700-00_02. The Segment of the Quinebaug River is an un-impaired class “B” water. [FINAL-2022-IWQR-Connecticut-305b-Assessment-Results-for-Rivers-and-Streams.pdf](#)

Figure 2.1. Image of Applicable Section of 2022 Connecticut Integrated Water Quality Report

Waterbody Segment ID	Waterbody Name	Location	Miles	Aquatic Life	Recreation
CT3700-00_02	Quinebaug River (Canterbury)-02	Aspinook Pond INLET (at Butts Bridge Road crossing), US to confluence Mill Brook, Canterbury.	2.98	Insufficient Information	Fully Supporting

2.1 Designated Uses

The designated uses for Class B waters as defined in the Regulations of Connecticut State Agencies [Regs. Conn. State Agencies 22a-426-4\(h\)](#) are: 1) habitat for fish other aquatic life and wildlife; 2) recreation; 3) harvesting; and 4) industrial and agricultural water supply.

2.2 Applicable Total Maximum Daily Load (“TMDL”)

“A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound” (December 2000) ([Long Island Sound TMDL](#)) applies to this segment of the Quinebaug River. This TMDL is based on the control of total nitrogen. The Permittee’s discharge has not been assigned a waste load allocation for nitrogen as part of this TMDL. Therefore, nitrogen monitoring requirements without numeric limitations have been included in the permit.

2.2.1 Phosphorus

DEEP developed a final report, “Recommendations for Phosphorus Strategy Pursuant to PA 12-155” (February 16, 2017) ([Phosphorus Strategy PA12-155](#)), for freshwater in 2017. The Phosphorus Strategy applies to the Quinebaug River. The Permittee’s discharge did not exist at the time the Phosphorus Strategy was developed; therefore, the current permit prohibited the discharge of phosphorus. Specifically, the permit prohibits the Permittee from using any chemicals that contain phosphorus in any process or activity that may result in a discharge to waters of the state.

The Quinebaug River has been identified as a priority water and is listed on the 2022-2024 priority list of waters for action plan development for phosphorus. The action plan titled “Connecticut Advance Restoration Plan For Total Phosphorus in Non-Tidal Surface Waters” ([Connecticut Advance Restoration Plan for Total Phosphorus in Non-Tidal Waters](#)) was approved on September 19, 2024. The plan carried forward the conditions that pertain to Quinebaug River in the Phosphorus Strategy PA12-155. Therefore, the prohibition of the use of phosphorus in any process or activity that may result in a discharge to the waters of the state is being carried forward in the permit renewal.

Figure 2.2. Images of discharge locations

114 Packer Road, Canterbury, CT 06331: Intake and discharge to Quinebaug River

12 Mill Brook Road, Plainfield, CT 06374: Infiltration to groundwater

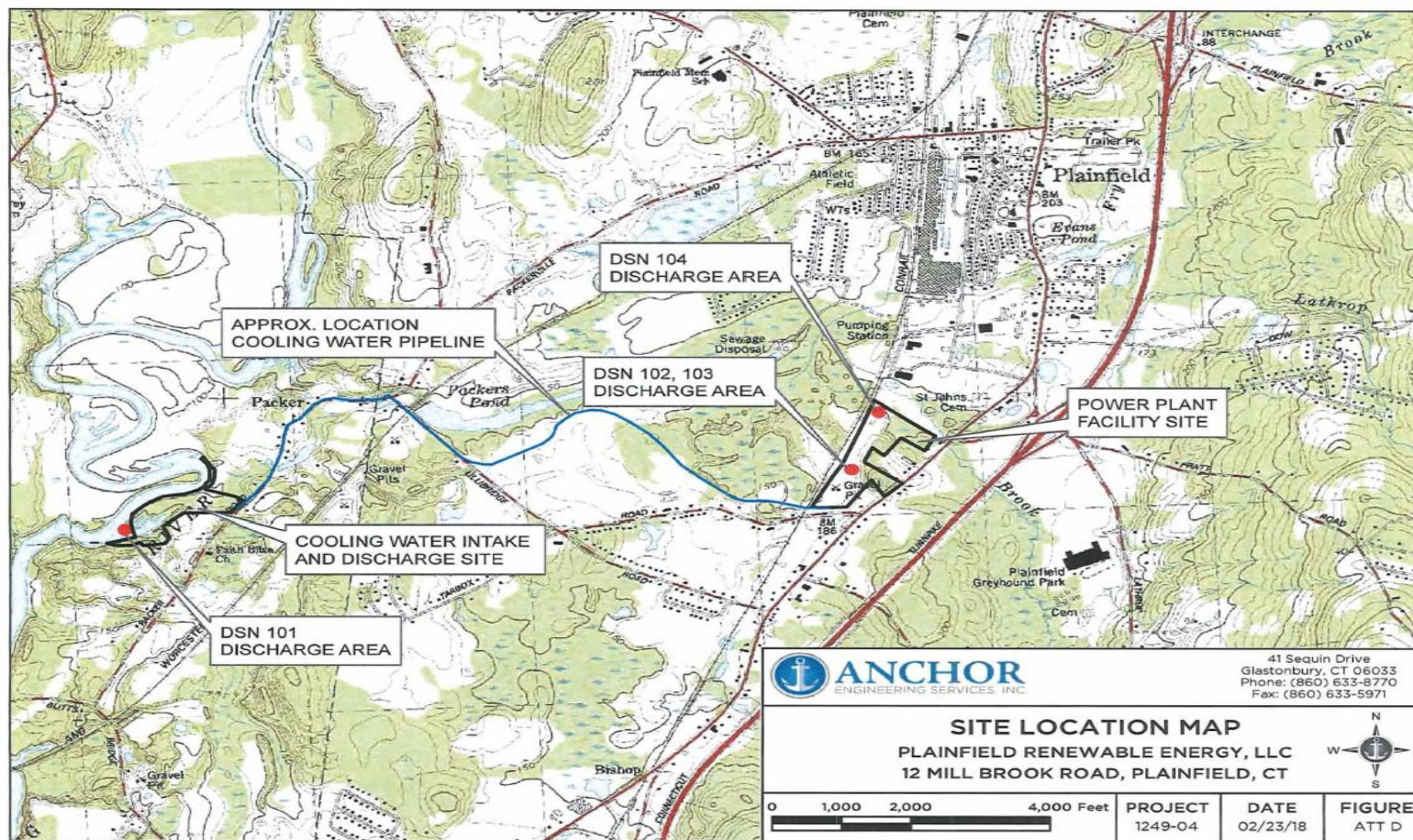


Figure 2.3. Applicable Section of 2022 Integrated Water Quality Report (“IWQR”) Waterbodies with Impairments

2022-2024 IWQR Priority List of Waters for Action Plan Development (including TMDL development)					
Plan Name	Waterbody ID	Waterbody ID	Cause	Plan Type	Status
Interim Phosphorus Strategy	CT3700-00_02	Quinebaug River -02	Phosphorus, total	Alternative Restoration Approach	Approved September 19, 2024

[final-2022-iwqr-appendix-c-1-priority-list-for-action-plan-development-2022-2024.pdf](#)

A review of the discharge monitoring data from 1/1/2020 – 12/31/2024 showed that 2,300 µg/l of phosphorus was discharged on 11/30/2021, 2,900 µg/l was discharged on 3/31/2023, and an average daily concentration of 382 µg/l of phosphorus was discharged within the five-year period. The effluent phosphorus is likely associated with the facility’s intake water. The Permittee has reviewed the cooling tower chemicals used on site and certified that none contain phosphorus.

Section 3 Permit Conditions and Effluent Limitations

3.1 Basis for Limits

Technology and water-quality based requirements are considered when developing permit limits. Technology-based effluent limits (“TBELs”) represent the minimum level of control imposed under the Clean Water Act (“CWA”). Industry-specific technology-based limits are set forth in 40 CFR Sections 405 – 471 (EPA’s Effluent Limitation Guidelines) and in Regs. Conn. State Agencies Section 22a-430-4(s)(2). Water quality-based limits are designed to protect water quality and are determined using the procedures set forth in EPA’s *Technical Support Document for Water Quality-Based Toxics Control*, 1991 (“TSD”). When both technology and water quality-based limits apply to a particular pollutant, the more stringent limit would apply. In addition, water quality-based limits are required when any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) is or may be discharged at a level that causes, has reasonable potential to cause, or contributes to an excursion above any water quality criteria. Numeric water quality criteria are found in Regs. Conn. State Agencies Section 22a-429-9 of the *Connecticut Water Quality Standards* (“WQS”).

3.2 Pollutants of Concern

The following pollutants are included as monitoring pollutants in the permit for DSN 101-1 for the reasons noted below:

Pollutant	Reason for Inclusion		
	Pollutant with a Waste Load Allocation from a TMDL	Pollutant Identified as Present in the Effluent Through Sampling	Pollutant Otherwise Expected to be Present in the Effluent
Aluminum		✓	
Ammonia		✓	
Boron		✓	
Chlorine, Total Residual		✓	
Chromium, Total		✓	
Copper, Total		✓	
Iron, Total		✓	
Lead		✓	
Kjeldahl Nitrogen, Total (as N)		✓	
Nitrate (as N)		✓	
Nitrite (as N)		✓	
Nitrogen, Total		✓	
Phosphorus, Total		✓	
Temperature		✓	
Total Suspended Solids		✓	
Zinc		✓	
126 Priority pollutants except chromium and zinc			✓

Pollutant	Reason for Inclusion		
	Pollutant with a Waste Load Allocation from a TMDL	Pollutant Identified as Present in the Effluent Through Sampling	Pollutant Otherwise Expected to be Present in the Effluent
Acute and chronic toxicity monitoring requirements are also included in the permit consistent with Section 22a-430-3(j)(3) of the Regs. Conn. State Agencies. pH monitoring was included in the permit consistent with Section 22a-426-9(a)(1).			

The following pollutants are included as monitoring pollutants in the permit for DSN 102-1 for the reasons noted below:

Pollutant	Reason for Inclusion		
	Pollutant with a Waste Load Allocation from a TMDL	Pollutant with a Waste Load Allocation from a TMDL	Pollutant with a Waste Load Allocation from a TMDL
Aluminum		✓	
Boron		✓	
Copper, Total		✓	
Iron, Total		✓	
Lead		✓	
Phosphorus, Total		✓	
Zinc		✓	
pH monitoring is included in the permit.			

The following pollutants are included as monitoring pollutants in the permit for DSN 103-1 for the reasons noted below:

Pollutant	Reason for Inclusion		
	Pollutant with a Waste Load Allocation from a TMDL	Pollutant with a Waste Load Allocation from a TMDL	Pollutant with a Waste Load Allocation from a TMDL
Aluminum		✓	
Boron		✓	
Copper, Total		✓	
Iron, Total		✓	
Lead		✓	
Phosphorus, Total		✓	
Zinc		✓	
pH monitoring is included in the permit.			

The following pollutants are included as monitoring pollutants in the permit for DSN 104-1 for the reasons noted below:

Pollutant	Reason for Inclusion		
	Pollutant with a Waste Load Allocation from a TMDL	Pollutant with a Waste Load Allocation from a TMDL	Pollutant with a Waste Load Allocation from a TMDL
Aluminum		✓	
Boron		✓	
Copper, Total		✓	
Iron, Total		✓	
Lead		✓	
Phosphorus, Total		✓	
Zinc		✓	
pH monitoring is included in the permit.			

3.2.1 Priority Pollutant Monitoring

While the facility does not fall within the Steam Electric Power Generating Point Source Category because it uses biomass for its fuel source rather than a fossil or nuclear fuel, it meets the other criteria for classification under this industrial category. The cooling tower maintenance and operation at the facility is similar to that of fossil fuel power plants cooling towers. Therefore, a monitoring requirement for chromium and 126 priority pollutants limits, once during the term of the permit, was added the permit.

3.3 Technology Based Effluent Guidelines

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 and Regs. Conn. State Agencies Section 22a-430-4(l)(4)(A).

Subpart A of 40 CFR § 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.

The Steam Electric Power Generating Point Source Category at 40 CFR § 423 was reviewed to determine its applicability to the facility’s discharges. This regulation is applicable to wastewater discharges from the operation of a generating unit by an establishment whose generation of electricity is the predominant source of revenue or principal reason for operation, and whose generation of electricity results primarily from a process utilizing fossil-type fuel (coal, oil, or gas), fuel derived from fossil fuel (*e.g.*, petroleum coke, synthesis gas), or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium. The Permittee derives its

fuel from synthesis gas from wood biomass. Therefore, 40 CFR § 423 is not applicable to the facility's discharges.

In the absence of published technology-based effluent guidelines, the permit writer is authorized under CWA § 402(a)(1)(B) and Regs. Conn. State Agencies Section 22a-430-4(m) to establish effluent limitations on a case-by-case basis using best professional judgment ("BPJ").

3.4 Zone of Influence

A zone of influence ("ZOI") of 137,760 gallons per hour was determined on November 29, 2007, during the processing of the previous permit (see Appendix A). The previously assigned ZOI of 137,760 gallons per hour is carried forward.

3.5 Reasonable Potential Analysis

Pursuant to CWA Section 301(b)(1)(C) and 40 CFR Section 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under Section 303 of the CWA. See also 33 United States Code (USC) Section 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 Section 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 Section 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 Water Quality Based Effluent Limits ("WQBELs") or require additional monitoring if there is insufficient data to develop a WQBEL, for that pollutant. See 40 CFR Section 122.44(d)(1)(i).

The reasonable potential analysis was conducted using procedures consistent with EPA's TSD. For each pollutant of concern, DEEP determines the project maximum concentration ("PMC") of the pollutant in the receiving stream and compares it to the applicable flow adjusted water quality criteria ("WQC"). When the PMC is lower than the flow adjusted WQC, there is no potential for the discharge to exceed the WQC. When the PMC is higher than the flow adjusted WQC, there is a potential for the discharge to exceed the WQC (and permit limits are needed).

In the reasonable potential analysis, the PMC is calculated by multiplying maximum reported concentration with a statistical multiplier. The statistical multiplier is determined using the equation $C_{99} = \exp(2.326\sigma - 0.5\sigma^2)$, where $\sigma^2 = \ln(Cv^2 + 1)$ or from Table 3-1 of the TSD for 20 data set or less.

The reasonable potential analysis indicates that limits are required for aluminum, chlorine, copper, and lead. The reasonable potential analysis results are included in Sections B2 and B4 of Appendix B.

3.6 Whole Effluent Toxicity

The Permittee shall comply with effluent standards or prohibitions established by CWA Section 307(a) and Regs. Conn. State Agencies Section 22a-430-4(l) and may not discharge toxic pollutants in concentrations or combinations that are harmful to humans, animals, or aquatic life.

If toxicity is suspected in the effluent, DEEP may require the Permittee to perform acute or chronic whole effluent toxicity testing.

The Permittee's previous permit required quarterly acute toxicity testing using *Daphnia Pulex* and *Pimephales promelas* and annual chronic toxicity testing using *Ceriodaphnia dubia* and *Pimephales promelas*. The previous permit had a no observable acute effect level ("NOAEL") limit of 90% or greater survival in an undiluted effluent, consistent with Regs. Conn. State Agencies 22a-430-4(l)(5)(A). During the last permit cycle, the Permittee had no exceedances of its NOAEL acute toxicity limit. The review of DMR data (January 2020 – December 2024) for acute toxicity tests, showed a range of 98% - 100% survival of test organisms in an undiluted effluent which shows the discharge is not toxic.

A review of the Permittee's chronic toxicity testing results also showed that the discharge was not chronically toxic, because the 48-hour LC₅₀ (lethal concentration 50), 7-Day LC₅₀, 7-Day C-NOEC (no observed effect concentration), 7-Day C-LOEC (lowest observed effect concentration), 7-Day IC₂₅ (inhibition concentration 25) were 100% in all tests conducted during the period of January 2020 and December 2024.

A reasonable potential analysis was not performed on toxicity because toxicity was not demonstrated beyond acute permit limits or in chronic tests. Consistent with Regs. Conn. State Agencies 22a-430-4(l)(5)(A), the acute toxicity limit is maintained in the permit.

3.7 Water Quality Based Effluent Limitations ("WQBELS")

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 Section 301(b)(1)(C) and 40 CFR Section 122.44(d)(1), 122.44(d)(5), 125.84(e) and 125.94(i).

WQBELS were established by DEEP for pollutants that demonstrated the reasonable potential to cause or contribute to an excursion above any water quality standard using the methodology in EPA's TSD. Wasteload allocations ("WLA") based on applicable WQC are calculated using a mass balance equation. Long-term averages ("LTA") are calculated by multiplying the WLA by a 99th percentile statistical factor, as shown below:

$$LTA_{\text{acute}} = WLA_{\text{acute}} \times e^{(0.5\sigma^2 - z\sigma)} \text{ and } LTA_{\text{chronic}} = WLA_{\text{chronic}} \times e^{(0.5\sigma_4^2 - z\sigma_4)}$$

To be protective of the most sensitive beneficial use, the most limiting of the acute, chronic or health LTA is selected and used for the effluent limits calculation.

$$AML = LTA \times e^{(Z\sigma_n - 0.5\sigma_n^2)} \text{ and } MDL = LTA \times e^{(Z\sigma - 0.5\sigma^2)}$$

Where $\sigma^2 = \ln(CV^2 + 1)$, $Z = 1.645$ for 95th percentile probability basis, and

$Z = 2.326$ for 99th percentile probability basis and n = number of samples per month, for sampling frequency that is less than 4 times a month, use $n = 4$.

The calculated WQBELs are in Section B-3 of Appendix B.

3.8 Comparison of Limits

After preparing and evaluating applicable TBELs and WQBELs, the most stringent limits are applied in the permit. Pollutants of concern that only require monitoring without limits are not included in the below table.

Table 3.8.1: Comparison of Limits Based on Different Criteria				
Parameters	Water Quality Limits Based on EPA/505/2-90-001	Regs. Conn. State Agencies 22a-430-4(l)(5)(A)	Previous permit limits	Case by case determination
Acute Aquatic toxicity, <i>Daphnia pulex</i>	---	NOAEL $\geq$ 90%	NOAEL $\geq$ 90%	---
Acute Aquatic toxicity, <i>Pimephales promelas</i>	---	NOAEL $\geq$ 90%	NOAEL $\geq$ 90%	---
Aluminum, total	AML = 1.768 mg/l MDL = 4.075 mg/l	---	AML = 1.420 mg/l MDL = 2.860 mg/l MIL = 4.290 mg/l Mass AML = 0.68 kg/d Mass MDL = 1.36 kg/d	---
Total Residual Chlorine	AML = 0.139 mg/l MDL = 0.331 mg/l	---	AML = 0.180 mg/l MDL = 0.360 mg/l MIL = 0.540 mg/l	MIL = 0.497 mg/l
Copper, total	AML = 0.253 mg/l MDL = 0.632 mg/l	---	AML = 0.096 mg/l MDL = 0.190 mg/l MIL = 0.280 mg/l Mass AML = 0.046 kg/d Mass MDL = 0.091 kg/d	---
Lead, total	AML = 0.026 mg/l MDL = 0.055 mg/l	---	AML = 0.019 mg/l MDL = 0.039 mg/l MIL = 0.058 mg/l Mass AML = 0.68 kg/d Mass MDL = 1.36 kg/d	---

Table 3.8.1: Comparison of Limits Based on Different Criteria				
Parameters	Water Quality Limits Based on EPA/505/2-90-001	Regs. Conn. State Agencies 22a-430-4(l)(5)(A)	Previous permit limits	Case by case determination
pH, minimum	6.5 S.U.	---	6.0 S.U.	---
pH, maximum	8.0 S.U.	---	9.0 S.U.	---
Temperature		---	90°F	
Total Suspended Solids	---	---	AML = 20.0 mg/l MDL = 30.0 mg/l MIL = 45.0 mg/l	AML = 20.0 mg/l MDL = 30.0 mg/l MIL = 45.0 mg/l
Zinc, total	---	---	AML = 0.640 mg/l MDL = 1.300 mg/l MIL = 1.950 mg/l	---
Note: The highlighted numbers represent the most stringent effluent limits. AML: Average Monthly Limit, MDL: Maximum Daily Limit and MIL: Maximum Instantaneous Limit, Mass limits in kg/d = concentration limits (mg/l) X 0.126103 X 10 ⁶ X 3.785 liter/d				

The MIL for total residual chlorine is calculated by multiplying the MDL by a factor 1.5, consistent with Regs. Conn. State Agencies Section 22a-430-4(s).

3.9 Sampling Frequency, Type, and Reporting

The permit proposes quarterly acute toxicity consistent with Regs. Conn. State Agencies Section 22a-430-3(j). The permit also proposes sampling for chronic toxicity and 126 priority pollutants except chromium and zinc, and weekly sampling for other parameters based on case-by-case determination using best professional judgement.

The proposed sample types are consistent with Regs. Conn. State Agencies Section 22a-430-4(c)(20).

3.10 Effluent Limitations and Monitoring Requirements

Table 3.10.1: Effluent Limitations and Monitoring Requirements				
Pollutants	Limit	Basis for Limit	Monitoring /Reporting Frequency	Sample Type
DSN 101-1:				
Acute Aquatic Toxicity, <i>Daphnia pulex</i> , NOAEL = 100%	≥ 90% Survival	Regs. Conn. State Agencies 22a-430-4(l)(5)(A) Anti-backsliding regulations	Quarterly	Daily Composite
Acute Aquatic Toxicity	≥ 90% Survival	Regs. Conn. State Agencies	Quarterly	

Table 3.10.1: Effluent Limitations and Monitoring Requirements				
Pollutants	Limit	Basis for Limit	Monitoring /Reporting Frequency	Sample Type
<i>Pimephales promelas</i> , NOAEL = 100%		22a-430-4(l)(5)(A) Anti-backsliding regulations		
Chronic Aquatic Toxicity (Survival) <i>Ceriodaphnia dubia</i>	Monitoring only requirement for pollutant of concern		Annually	
Chronic Aquatic Toxicity (Reproduction) <i>Ceriodaphnia dubia</i>	Monitoring only requirement for pollutant of concern		Annually	
Chronic Aquatic Toxicity (Survival) <i>Pimephales promelas</i>	Monitoring only requirement for pollutant of concern		Annually	
Chronic Aquatic Toxicity (Growth) <i>Pimephales promelas</i>	Monitoring only requirement for pollutant of concern		Annually	
Aluminum, Total	AML = 1.48 mg/l MDL = 2.86 mg/l MIL = 4.29 mg/l	Anti-backsliding regulations (the previous permit limits are WQBELs)	Weekly	
Aluminum, Total	AML = 0.68 kg/d MDL = 1.36 kg/d	Conversion of WQBELs to mass limits	Weekly	
Ammonia (as N)	Monitoring only requirement for pollutant of concern		Weekly	
Boron	Monitoring only requirement for pollutant of concern		Weekly	
Chlorine, Total Residual	AML = 0.139 mg/l MDL = 0.331 mg/l MIL = 0.497 mg/l	WQBELs	Weekly	Grab sample Average
Chromium, Total	Monitoring only requirement for pollutant of concern		Weekly	Daily Composite

Table 3.10.1: Effluent Limitations and Monitoring Requirements				
Pollutants	Limit	Basis for Limit	Monitoring /Reporting Frequency	Sample Type
Copper, Total	AML = 0.096 mg/l MDL = 1.90 mg/l MIL = 2.88 mg/l	Anti-backsliding regulations (the previous permit limits are WQBELs)	Weekly	
Copper, Total	AML = 0.046 kg/d MDL = 0.091 kg/d	Conversion of WQBELs to mass limits	Weekly	
Flow Rate (Average Daily)	126,103 gpd	Permitted discharge flow per application	Continuous	Total Daily Flow
Flow, Maximum during 24-hr period	173,571 gpd	Permitted discharge flow per application	Continuous	
Iron, Total	Monitoring only requirement for pollutant of concern		Weekly	Daily Composite
Kjeldahl Nitrogen, Total (as N)	Monitoring only requirement due to TMDL		Weekly	
Lead, Total	AML = 0.019 mg/l MDL = 0.039 mg/l MIL = 0.058 mg/l	Anti-backsliding regulations (the previous permit limits are WQBELs)	Weekly	
Lead, Total	AML = 0.009 kg/d MDL = 0.019 kg/d	Conversion of WQBELs to mass limits	Weekly	
Nitrate (as N)	Monitoring only requirement due to TMDL		Weekly	
Nitrite (as N)	Monitoring only requirement due to TMDL		Weekly	
Nitrogen, Total	Monitoring only requirement due to TMDL		Weekly	
pH, Minimum (Interim)	6.0	WQC	Continuous	Continuous
pH, Maximum (Interim)	9.0	WQC		
pH, Minimum (Final)	6.5	WQC	Continuous	Continuous
pH, Maximum (Final)	8.0	WQC		

Table 3.10.1: Effluent Limitations and Monitoring Requirements				
Pollutants	Limit	Basis for Limit	Monitoring /Reporting Frequency	Sample Type
Phosphorus, Total	Monitoring only requirement due to Phosphorus Strategy		Weekly	Daily Composite
Temperature, Maximum	90°F	Anti-backsliding regulations (the previous permit limits are WQBELs)	Continuous	Instantaneous
Temperature, intake/outlet differential	Monitoring only requirement due to Regs. Conn. State Agencies 22a-426-9(a)(1)		Continuous	Calculated
Total Suspended Solids	AML = 20 mg/l MDL = 30 mg/l MIL = 45 mg/l	Anti-backsliding regulations	Weekly	Daily Composite
Zinc, total	AML = 0.64 mg/l MDL = 1.30 mg/l MIL = 1.95 mg/l	Anti-backsliding regulations (the previous permit limits are WQBELs)	Weekly	
126 Priority Pollutants (resulting from chemical additives for cooling tower maintenance) except chromium and zinc	Monitoring only requirement for pollutant of concern		Once during the permit term	Grab
DSN 102-1:				
Aluminum, Total	Monitoring only requirement for pollutant of concern		Annually	Grab
Boron	Monitoring only requirement for pollutant of concern		Annually	
Copper, Total	Monitoring only requirement for pollutant of concern		Annually	
Flow, Maximum during 24-hr period	225,000 gpd	Permitted discharge flow per application	Annually	Total Daily Flow
Iron, Total	Monitoring only requirement for pollutant of concern		Annually	Grab
Lead, Total	Monitoring only requirement for pollutant of concern		Annually	

Table 3.10.1: Effluent Limitations and Monitoring Requirements				
Pollutants	Limit	Basis for Limit	Monitoring /Reporting Frequency	Sample Type
pH	6.0 – 9.0	Anti-backsliding regulations	Annually	
Phosphorus, Total	Monitoring only requirement for pollutant of concern		Annually	
Zinc, Total	Monitoring only requirement for pollutant of concern		Annually	
DSN 103-1:				
Aluminum, Total	Monitoring only requirement for pollutant of concern		Annually	Grab
Boron	Monitoring only requirement for pollutant of concern		Annually	
Copper, Total	Monitoring only requirement for pollutant of concern		Annually	
Flow, Maximum during 24-hr period	225,000 gpd	Permitted discharge flow per application	Annually	Total Daily Flow
Iron, Total	Monitoring only requirement for pollutant of concern		Annually	Grab
Lead, Total	Monitoring only requirement for pollutant of concern		Annually	
pH	6.0 – 9.0	Anti-backsliding regulations	Annually	
Phosphorus, Total	Monitoring only requirement for pollutant of concern		Annually	
Zinc, Total	Monitoring only requirement for pollutant of concern		Annually	
DSN 104-1:				
Aluminum, Total	Monitoring only requirement for pollutant of concern		Annually	Grab
Boron	Monitoring only requirement for pollutant of concern		Annually	
Copper, Total	Monitoring only requirement for pollutant of concern		Annually	
Flow, Maximum during 24-hr period	250,000 gpd	Permitted discharge flow per application	Annually	Total Daily Flow
Iron, Total	Monitoring only requirement for pollutant of concern		Annually	Grab
Lead, Total	Monitoring only requirement for pollutant of concern		Annually	

Table 3.10.1: Effluent Limitations and Monitoring Requirements				
Pollutants	Limit	Basis for Limit	Monitoring /Reporting Frequency	Sample Type
pH	6.0 – 9.0	Anti-backsliding regulations	Annually	
Phosphorus, Total	Monitoring only requirement for pollutant of concern		Annually	
Zinc, Total	Monitoring only requirement for pollutant of concern		Annually	
Intake SN101H:				
Aluminum, Total	Intake monitoring		Monthly	Grab
Boron			Monthly	
Copper, Total			Monthly	
Flow Rate (Average Daily)			Total daily flow	Total daily flow
Flow, Maximum during 24-hr period	893,000 gpd	Permitted discharge flow per application	Total daily flow	
Iron, Total	Intake monitoring		Monthly	Grab
Lead, Total			Monthly	
pH, Minimum			Monthly	Instantaneous
pH, Maximum			Monthly	
Phosphorus, Total			Monthly	Grab
Temperature			Monthly	Instantaneous
Zinc, Total			Monthly	Grab
AML: Average Monthly Limit MDL: Maximum Daily Limit MIL: Maximum Instantaneous Limit BPJ: Best Professional Judgment RP: Reasonable Potential WQC: Water Quality Criteria WQBELs: Water Quality Based Effluent Limits				

3.10.1 Sufficiently Sensitive Methods

EPA at [40 CFR 122.21\(e\)\(3\)](#) and [40 CFR 122.44\(i\)](#) requires sufficiently sensitive test methods to be utilized for all parameters in a NPDES permit. A method approved under 40 CFR 136 or required through other regulations is sufficiently sensitive when:

- The method minimum level (“ML”) is at or below the level of the applicable water quality criterion or effluent limitation (if below the water quality criterion), whichever is more stringent, for the measured pollutant or pollutant parameter; or
- The method 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 pollutant 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 (effluent limit guidelines) or O (sewage sludge) for the measured pollutant or pollutant parameter. Note some effluent limit guidelines (ELGs) will specify a required ML for certain analyses.

DEEP has specified ML requirements in the permit to ensure compliance with the sufficiently sensitive test method regulations. The MLs listed in the NPDES permit are the minimum concentration at which quantification must be achieved and verified during the laboratory analysis of the parameter. These values are not necessarily equivalent to the MLs that would be formally established by a lab under the ML definition at 40 CFR 136. In other words, at a minimum, the permittee's analytical method must achieve the ML listed in the permit. This may vary from the actual ML established by the lab for the analysis, using the MDL, lowest calibration point, or other acceptable method under 40 CFR 136.

3.11 Other Permit Conditions

- The permit prohibits the discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid under Section 4 of the permit.
- The permit prohibits the use of any chemicals that contain phosphorus in any process or activity that may result in a discharge to the waters of the state under Section 4 of the permit (see Section 2.2.1 of this fact sheet).
- The permit requires the Permittee to operate and maintain the outdoor wood storage area in accordance with “Section A.4 Stormwater Management – Outdoor Wood Storage Area” of the response to comment report dated February 19, 2008.

3.12 Compliance Schedule

The permit has a compliance schedule that follows the requirements found under 40 CFR Section 122.47 and RSCA Section 22a-430-4(l)(3).

- The Permittee is required to perform a thermal verification study, see Section 3.16 of this fact sheet.
- The previous permit pH limits were changed from 6.0 – 9.0 S.U. to 6.5 – 8.0 S.U. consistent with the water quality criteria for a class “B” waterbody. A review of discharge monitoring data shows the Permittee may not be able to immediately comply with the proposed limits. As such, this permit contains a compliance schedule requiring the Permittee to evaluate alternate actions to achieve compliance with the proposed pH limits.

3.13 Antidegradation

Implementation of the Antidegradation Policy follows a tiered approach pursuant to the federal regulations (40 CFR Section 131.12) and consistent with the Connecticut Antidegradation Policy included in the Connecticut Water Quality Standards (Section 22a-426-8(b-f) of the Regulations of Connecticut State Agencies). Tier 1 Antidegradation review applies to all existing permitted discharge activities to all waters of the state. Tiers 1 and 2 Antidegradation reviews apply to new or increased discharges to high quality waters and wetlands, while Tiers 1 and 3 Antidegradation reviews apply to new or increased discharges to outstanding national resource waters.

This discharge is an existing discharge, and the Permittee does not propose an increase in volume or concentration of constituents. Therefore, only the Tier 1 Antidegradation Evaluation and

Implementation Review was conducted to ensure that existing and designated uses of surface waters and the water quality necessary for their protection are maintained and preserved, consistent with Connecticut Water Quality Standards, Regs. Conn. State Agencies Sec.22a-426-8(a)(1). This review involved:

- An evaluation of narrative and numeric water quality standards, criteria and associated policies;
- The discharge activity both independently and in the context of other dischargers in the affected waterbodies; and
- Consideration of any impairment listed pursuant to Section 303d of the federal Clean Water Act or any TMDL established for the waterbody.

DEEP has determined that the discharges or activities are consistent with the maintenance, restoration, and protection of existing and designated uses assigned to the receiving water body by considering all relevant data. Compliance with all the terms and conditions in the new permit would ensure that existing and designated uses of surface waters and the water quality necessary for their protection are maintained and preserved.

3.14 Anti-Backsliding

This permit has effluent limitations, standards or conditions that are at least as stringent as the final effluent limitations, standards, or conditions in the previous permit as required in 40 CFR Section 122.44(l) and Regs. Conn. State Agencies Section 22a-430-4(l)(4)(A)(xxiii).

3.15 Categorical Discharge Conditions

Consistent with 40 CFR § 423.15, the permit prohibits the discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid under Section 4.5 of the permit.

3.16 Cooling Water Intake Structure Section 316(b)

Section 316(b) of the Federal Water Pollution Control Act, U.S.C. Section 1326(b) states that “any standard established pursuant to Section 301 or 306 of this Act and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available (“BTA”) for minimizing adverse environmental impact”.

The federal regulations establish requirements under Section 316(b) of the CWA for existing power generating facilities and existing manufacturing and industrial facilities with a cooling water intake structure having a design intake flow greater than two million gallons per day of water from waters of the United States and use at least 25 percent of the water they withdraw exclusively for cooling purposes. 40 CFR 125.92 defines “Cooling water intake structure” as “the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the United States. The cooling water intake structure extends from the point at which water is first withdrawn from waters of the United States up to and including the intake pumps.”

The August 15, 2014, 316(b) final rule was promulgated which applies to existing facilities that withdraw more than two MGD of water and use at least 25% of the actual intake flow exclusively for cooling purposes. However, 40 CFR 125.90(b), states “Cooling water intake structures not subject to requirements under parts 125.94 through 125.99 or subparts I or N of this part must meet requirements

under Section 316(b) of the CWA established by the Director on a case-by-case, best professional judgment (“BPJ”) basis.”

3.16.1 Cooling Water Intake Structure (“CWIS”) Description

The Permittee’s intake is identified as DSN 001-H in the permit. The Permittee has a water diversion permit associated with the intake and is authorized to withdraw 893,000 gpd from the Quinebaug River. The intake structure is located on 114 Packer Road, Canterbury, about two miles from the power plant. The water withdrawn for non-contact cooling is recycled about five times using a cooling tower before it is discharged back into the Quinebaug River. The cooling tower removes heat from the hot water by evaporation and recycles the cooler water.

The intake is comprised of two pumps with maximum capacities of 1,320 gallons per minute (“gpm”) but set to operate 200 - 750 gpm. The facility operates the pumps almost continuously during plant operation, which is 24 hours per day. The intake is also comprised of a horizontal intake pipe with a single cylindrical wedge-wire screen. The cylindrical wedge-wire screen is located near the river bottom approximately 100 feet from the riverbank. The Johnson Model T-12 HCE cylindrical wedge-wire screen is 12 inches in diameter and 38 inches long. It has a slot opening size of 0.125 inches (3.2 mm) and a design through screen velocity of 0.25 fps.

The screen is equipped with an air burst system to clear the screen of accumulated debris. Additionally, the CWIS is equipped with a water backflushing system which uses a reserve tank of raw river water to backflush the screen as an alternative to the air burst system.

3.17.2 Best Technology Available (“BTA”) Determination on CWIS

Since the Permittee withdraws less than two MGD, DEEP has made a case-by-case BPJ determination consistent with 40 CFR 125.90(b), as follows:

Impingement mortality: The Permittee’s intake has a design intake through-screen velocity below 0.5 fps. This is an acceptable means for existing units to comply with the BTA standards for impingement mortality as defined by 40 CFR 125.94(c)(2).

In addition, the Permittee operates a cooling tower, which is considered a closed-cycle recirculating system as defined by 40 CFR 125.83. To supplement this, the permit requires actual intake flows to be measured daily from DSN 001-H. The monitoring is representative of normal operating conditions, and includes measuring cooling water withdrawals, make-up water, and blowdown volume. This technology also meets BTA for impingement mortality for existing units consistent with 40 CFR 125.94(c)(2), and new units consistent with 40 CFR 125.94(e).

DEEP has determined that consistency with the federal regulations for existing and new units is an acceptable means for meeting BTA standards to reduce impingement mortality.

Entrainment: As discussed above, the Permittee employs a closed-cycle recirculating system. This technology satisfies the BTA standards for entrainment for new units at existing facilities as defined by 40 CFR 125.94(e). Consistency with the federal regulations for new units is an acceptable means for meeting BTA standards for impingement.

3.18 Variances and Waivers

The Permittee requested alternative effluent limits for thermal discharges consistent with Regs. Conn. State Agencies Section 22a-430-4(q)(2)(A)(ii) and 40 CFR 125 Subpart H.

THERMAL EVALUATION

Section 316(a) of the federal Water Pollution Control Act, U.S.C. § 1326(a) requires that the thermal component of any discharge assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the receiving water body. The segment of Quinebaug River where the discharge is located is classified as "B" under the WQS. The applicable WQS for a class "B" surface water is: "There shall be no changes from natural conditions that would impair any existing or designated uses assigned to this class and, no case exceed 84°F, or in any case raise the temperature of surface water more than 4°F. (Regs. Conn. State Agencies 22a-426-9(a)(1)).

The Permittee discharges a heat load to the Quinebaug River from NCCW (DSN 101-1). The permit issued on August 30, 2013, contained a temperature limitation of 90°F which is proposed to be carried forward. For the previous permit issuance, EPA's modeling software "Visual Plumes" was used to model the characteristics of the expected thermal plume associated with the discharge of heat load to the Quinebaug River. The software generated a three-dimensional model of the geometry of the thermal plume under the assumption that the discharge and ambient flow conditions are in a steady state.

The submerged discharge pipe is six inches in diameter and has a single port diffuser, which results in the discharge favoring rapid mixing. The location of the single port outfall pipe was selected and designed so the discharge occurs at the center of the river, where the water depths are at a maximum, and located approximately 100 ft downstream from the intake pipe. This is consistent with EPA's recommendations that cooling water systems should optimize the dissipation of heat and minimize the area affected by excessive temperatures. Furthermore, the design is consistent with EPA's emphasis that thermal discharges should be in areas with good flushing characteristics and should minimize the addition of heat into receiving waters (U.S. Environmental Protection Agency (U.S. EPA). 2023. Thermal Discharges in NPDES Permits, Overview of Resources and Tools (EPA-833-F-23-007). pp 163, 188-189).

A review of temperature data for the past five years showed a discharge temperature range of 60.79 – 89.99°F, with an average of 83.07°F. The intake temperature ranged from 49.01 – 86.59°F, with an average of 66.98°F. The temperature difference between the intake and the discharge ranged from 7.39 – 71.94°F, with an average differential temperature of 27.95°F.

A new thermal model was performed using EPA's PLUMES2.0 software, designed to simulate effluent plume dilution. The result showed the areas of modeled thermal plumes are comparable to the areas of the previously modeled thermal plumes, though a little smaller. The percentages of the cross-sectional areas of the thermal plume under low flow (84 cfs) and mean flow (1,030 cfs) conditions are less than 1% of the cross-sectional area of the receiving river, as shown in Tables 3.16.1 and 3.16.2. The CT WQS allows for a "zone of influence for assimilation of a thermal discharge shall be no greater than 25% of the cross-sectional area or volume of flow of the receiving water" (Regs.

Conn. State Agencies 22a-426-4(l)(8)). The thermal cross-sectional areas in the thermal model are well below the allowable thermal zone of influence of 25%.

The Permittee was required to conduct a thermal verification study to confirm the thermal modeling under the previous permit, but the Permittee did not receive DEEP approval of the scope of studies by the time of this permit renewal (see Section 1.8.3 of this fact sheet). The thermal modeling results from the previous permit are presented in Tables 3.16.1 and 3.16.2. They show a differential temperature (discharge – ambient) of 57.4°F. As stated above, the actual differential temperatures ranged from 7.39 – 71.94°F, with an average differential temperature of 27.95°F.

While the cross-sectional areas of thermal plumes in the model are about 1% of the cross-sectional area of the river, the actual maximum differential temperature (intake – discharge) from discharge monitoring data is about 15°F higher than the differential temperature used in the model. Therefore, it is necessary to verify that the thermal plume is representative of a higher differential temperature situation, and the discharge will not cause an increase higher than 4°F outside of the thermal zone of influence. A thermal verification study is incorporated in this permit renewal as a compliance schedule, to confirm the actual thermal plume size, and ensure that the discharge is consistent with the thermal model result.

Quinebaug River Low Flow Conditions

Table 3.16.1: Thermal Plume Modeling under Quinebaug River Low Flow Conditions						
Parameter	Scenario 1: Plume Boundary Condition of 85°F ¹		Scenario 2: Plume Boundary Condition of Δ4°F of the Ambient Temperature ¹		Scenario 3: Plume Boundary Condition with Ambient Temperature ²	
	Minimum Observed Ambient Temperature (32.6°F)	Maximum Observed Ambient Temperature (85.9°F)	Minimum Observed Ambient Temperature (32.6°F)	Maximum Observed Ambient Temperature (85.9°F)	Minimum Observed Ambient Temperature (32.6°F)	Maximum Observed Ambient Temperature (85.9°F)
River Flow (cfs)	84	84	84	84	84	84
Discharge Temp. (°F)	90	90	90	90	90	90
River depth (ft.)	10	10	10	10	10	10
Discharge port diameter (inches)	6	6	6	6	6	6
Discharge port depth (ft.)	8	8	8	8	8	8
Maximum flow (MGD)	0.173	0.173	0.173	0.173	0.173	0.173
Temp.at the end of plume (°F)	85	85	36.6	89.9	35.37	86.04
Plume length (ft)	0.16	---	20.9	0.2	26.48	31.73
Plume diameter (ft.)	0.54	---	2.88	0.54	3.51	4.21
Depth to center line of plume (ft.)	4.0	---	3.83	4.0	4.28	2.19
Cross- sectional Area of plume (sq ft) ³	0.2	---	6.53	0.23	9.7	13.94
% River Width ⁴	0.25%	---	1.34%	0.25%	1.63%	1.97%
% of River cross- sectional Area ⁵	0.02%	---	0.45%	0.02%	0.68%	0.97%

¹ Modeled plume data are based on interpolation of the two temperature data points bounding the targeted boundary plume temperature.

² Data provided represents the model output closet to the river ambient temperature.

³ Model assumed that the cross-sectional area of the plume is circular hence, area was calculated using the formula = πr^2 .

⁴ River width was assumed to be 215 ft. at the point of discharge.

⁵ Cross-sectional area of the river was estimated to be 1435 sq ft.

Quinebaug Mean Low Flow Conditions

Table 3.16.2: Thermal Plume Modeling under Quinebaug River Mean Flow Conditions						
	Scenario 1: Plume Boundary Condition of 85°F ¹		Scenario 2: Plume Boundary Condition of Δ4°F of the Ambient Temperature ¹		Scenario 3: Plume Boundary Condition with Ambient Temperature ²	
	Minimum Observed Ambient Temperature (32.6°F)	Maximum Observed Ambient Temperature (85.9°F)	Minimum Observed Ambient Temperature (32.6°F)	Maximum Observed Ambient Temperature (85.9°F)	Minimum Observed Ambient Temperature (32.6°F)	Maximum Observed Ambient Temperature (85.9°F)
River Flow (cfs)	1030	1030	1030	1030	1030	1030
Discharge Temp. (°F)	90	90	90	90	90	90
River depth (ft.)	10	10	10	10	10	10
Discharge port diameter (inches)	6	6	6	6	6	6
Discharge port depth (ft.)	8	8	8	8	8	8
Maximum flow (MGD)	0.173	0.173	0.173	0.173	0.173	0.173
Temp.at the end of plume (°F)	85	85	36.6	89.9	35.16	86.05
Plume length (ft)	0.17	---	22.89	0.06	30.22	32.61
Plume diameter (ft)	0.53	---	2.71	0.51	3.39	3.86
Depth to center line of plume (ft)	8.0	---	7.8	8.0	- 8.29	- 6.34
Cross- sectional Area of plume (sq ft) ³	0.22	---	5.75	0.2	9.04	11.67
% River Width ⁴	0.25%	---	1.3%	0.2%	1.58%	1.79%
% of River cross- sectional Area ⁵	0.02%	---	0.4%	0.01%	0.63%	0.81%

¹ Modeled plume data are based on interpolation of the two temperature data points bounding the targeted boundary plume temperature.

² Data provided represents the model output closet to the river ambient temperature.

³ Model assumed that the cross-sectional area of the plume is circular hence, area was calculated using the formula = πr^2 .

⁴ River width was assumed to be 215 ft. at the point of discharge.

⁵ Cross-sectional area of the river was estimated to be 1435 sq ft.

3.19 E-Reporting

The Permittee is required to electronically submit documents in accordance with 40 CFR Section 127.

DRAFT

Section 4 Summary of New Permit Conditions and Limits from the Previous Permit

The following changes were made from the previous permit:

- This permit was previously assigned two permit numbers: Permit Nos. CT0030473 and SP0002464. Groundwater discharges from DSNs 102, 103, and 104 were associated with Permit No. SP0002464. Permit No. SP0002464 has been terminated and removed from this permit. All discharges, including DSNs 102, 103, and 104 are now covered under Permit No. CT0030473.
- DSN 105 – The demineralized water tank is now situated inside the power generating facility and overflows will discharge via floor drains to the sanitary sewer system. The discharge is covered under the “General Permit for Discharges from Miscellaneous Industrial Users (MIU GP)”, and therefore removed from the permit.
- Monitoring requirements for chromium were added for DSN 101-1 because chromium is present in the wastewater.
- A one-time monitoring requirement for 126 priority pollutants, except chromium and zinc, was added for DSN 101-1 because the 126 priority pollutants include contaminants potentially contained in chemicals added for cooling tower maintenance. Routine chromium and zinc monitoring are required on a weekly basis and therefore not included in this priority pollutant scan.
- Monitoring tables for acute and chronic toxicity testing (DSN 101-AT and DSN 101-CT) have been added to the permit. This table does not change the testing requirements, rather it changes the way the acute and chronic toxicity monitoring data is reported by the Permittee. The Permittee is now required to electronically report toxicity results and paired chemical and receiving water data through NetDMR with the monthly DMR report.
- Monitoring requirements for aluminum at DSN 103-1 were added because the water discharged is the same quality as DSN 102-1, and aluminum is a pollutant of concern.
- With the exception of chlorine, mass limits were included for aluminum, copper and lead because a reasonable potential analysis showed that water quality-based limits are needed for these pollutants.
- Turbidity monitoring requirement was removed from the permit because the average turbidity was 2.84 Nephelometric Turbidity Unit (“NTU”), showing that the discharge is not exceeding 5 NTU over ambient levels and not exceeding levels necessary to protect and maintain all designated uses, consistent with CT WQS (Regs. Conn. State Agencies 22a-426-9(a)(1).
- Effluent limits where applicable are expressed in Table A, while Table B now contains toxicity limits and monitoring requirements (without limits) for other pollutants.
- A compliance schedule to perform a thermal verification study was added to the permit.
- Section 5(A)(5) of the permit that required the Permittee to construct, operate and maintain the cooling water intake structure in accordance with the submitted mitigation and monitoring plan has been removed. This is because the Permittee completed the required mitigation and monitoring in December 2021.
- The effluent limits for pH were changed from 6.0 – 9.0 S.U. to 6.5 – 8.0 S.U. consistent with the water quality criteria for a class “B” waterbody.
- A compliance schedule requiring the Permittee to evaluate alternate actions to achieve compliance with the proposed pH limits was added to the permit.

Section 5 Public Participation Procedures

5.1 Information Requests

The application has been assigned the following numbers by the Department of Energy and Environmental Protection. Please use these numbers when corresponding with this office regarding this application.

Application No. 201801971

Permit No. CT0030473

Interested persons may obtain copies of the application from Mark Boucher, Plainfield Renewable Energy, LLC, 12 Mill Brook Road, CT 06374.

The application is available for inspection by contacting Oluwatoyin Fakilede at Oluwatoyin.fakilede@ct.gov, at the Department of Energy and Environmental Protection, Bureau of Materials Management and Compliance Assurance, 79 Elm Street, Hartford, CT 06106-5127 from 8:30 - 4:30, Monday through Friday.

Any interested person may request in writing that his or her name be put on a mailing list to receive notice of intent to issue any permit to discharge to the surface waters of the state. Such request may be for the entire state or any geographic area of the state and shall clearly state in writing the name and mailing address of the interested person and the area for which notices are requested.

5.2 Public Comment

Prior to making a final decision to approve or deny any application, the Commissioner shall consider written comments on the application from interested persons that are received within 30 days of this public notice. Written comments should be directed to Oluwatoyin Fakilede, Environmental Engineer 3, Bureau of Materials Management and Compliance Assurance, Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106-5127 or DEEP.IndustrialNPDESPublicComments@ct.gov and should indicate the Permit ID No. CT0030180 in the subject line. The Commissioner may hold a public hearing prior to approving or denying an application if in the Commissioner's discretion the public interest will be best served thereby, and shall hold a hearing upon receipt of a petition signed by at least twenty five (25) persons. Notice of any public hearing shall be published at least thirty (30) days prior to the hearing.

Petitions shall be submitted within thirty (30) days from the date of publication of this public notice and should include the application number noted above and also identify a contact person to receive notifications. Petitions may also identify a person who is authorized to engage in discussions regarding the application and, if resolution is reached, withdraw the petition. Upon receipt of a petition, the Commissioner shall take action as required by relevant laws, including Public Act 25-84, which was effective upon passage in June 2025. The Office of Adjudications will accept electronically-filed petitions for hearing in addition to those submitted by mail or hand-delivered. Petitions with required signatures may be sent to deep.adjudications@ct.gov; those mailed or delivered should go to the DEEP Office of Adjudications, 79 Elm Street, Hartford, CT 06106. If the signed original petition is only in an electronic format, the petition must be submitted with a statement signed by the petitioner that the petition exists only in that form. Original petitions that were filed electronically must also be mailed or delivered to the Office of Adjudications within 30 days of electronic submittal. Additional information can be found at www.ct.gov/deep/adjudications.

Draft NPDES Permit No. CT0030473

Draft Fact sheet

December 2025

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act (ADA). If you are seeking a communication aid or service, have limited proficiency in English, wish to file an ADA or Title VI discrimination complaint, or require some other accommodation, including equipment to facilitate virtual participation, please contact the DEEP Office of Diversity and Equity at 860-418-5910 or by email at deep.accommodations@ct.gov. Any person needing an accommodation for hearing impairment may call the State of Connecticut relay number - 711. In order to facilitate efforts to provide accommodation, please request all accommodations as soon as possible following notice of any agency hearing, meeting, program, or event.

Appendix A: Zone of Influence Determination Memo

Interoffice Memo

Date: November 29, 2007
To: Charles Neziyanya, Sanitary Engineer III
Cc: Traci Iott, Supervising Environmental Analyst
From: Rosemary Gatter-Evarts, Environmental Analyst III
RE: Plainfield Renewable Energy...Permit Application

Charles,

I have reviewed the application for Plainfield Renewable Energy's proposed discharges. There are five discharges listed in their permit application. The cooling tower effluent will discharge to the Quinebaug River. Two discharges of fire protection wastewater and an emergency cooling water back up drain will discharge into the onsite stormwater system. This storm water system should eventually discharge to Mill Brook and not to any onsite wetlands or vernal pools. The last proposed discharge is demineralization wastewater, which will be directed to Mill Brook in Plainfield.

The cooling tower effluent is to discharge into the Quinebaug River downstream of Kitts Brook and Mill Brook in Plainfield Connecticut. The 7Q10 for the Quinebaug River is 84.4 cfs. The maximum dilution available for any discharge into a river this size would be either 1/4 of the 7Q10 or 100:1 whichever is stricter. In some situations, especially where a 100:1 dilution could be expected, a dye study is required after the discharge is initiated to validate or confirm the zone of influence. This dye study would have to conform to the requirements set forth in Section 22a-430-4(C) 21 of the Regulations of Connecticut State Agencies. The dye study would be conducted at low flow conditions for freshwater streams and dilution contours from 100% to 1% would be delineated in a detailed site plan.

Discharge 101 consists of cooling tower blowdown and is the only discharge which enters the Quinebaug River directly. The flow listed in the permit application is approximately 174,000 gpd or 7250 gph. A simulated sample of effluent for DSN 101 was analyzed for toxicity, metals and phosphorus. This simulated effluent was non-acutely toxic and contained minimal concentrations of metals. Based on this information submitted in the application a portion of the Quinebaug River will need to be allocated to assimilate this discharge. In order to accommodate a small margin of safety I recommend an allocated zone of influence equivalent to an IWC of 5%. This zone of influence is more restrictive than the maximum IWC of 1.4% (See September 17 memo). This zone of influence can be calculated as follows:

$$IWC = 0.05 = (7250 \text{ gph eff}) / (7250 \text{ gph eff} + ZOI \text{ gph stream})$$

$$0.05(ZOI) = 7250 - .05(7250)$$

$$.05(ZOI) = 7250 - 362.5 \text{ or } 6887.5 \text{ gph}$$

$$ZOI = 137750 \text{ gph}$$

November 29, 2007
Application

Interoffice Memo: Plainfield Renewable Energy...Permit

Please see the attached spreadsheet for proposed limits on copper, lead, zinc total residual chlorine. The discharge should also be limited for aquatic toxicity, total suspended solids, aluminum (treatment chemical), iron, ammonia, and boron. The aquatic toxicity limit for this discharge should be an NOAEL of 100% based on the simulated effluent and performance based data for other power plants.

The discharge did contain high concentrations of phosphorus from the chemical additives the whole effluent toxicity limit for Plainfield Renewable Energy would be. As stated in a previous memo the addition of phosphorus to the Quinebaug River would not be acceptable. I have reviewed the phosphorus data for the Quinebaug River from the USGS gages at both Putnam and Jewett City/ Hard phosphorus limits could be included in the permit based on the long-term average of phosphate in the Quinebaug River and the coefficient of variation for those values. Utilizing this data and assuming the actual average equal to the LTA, average monthly and maximum daily limits can be calculated.

The long-term average for phosphorus at the Quinebaug River in Putnam is 0.051 mg/l. The coefficient of variation is 0.48. The multiplication factor associated with one sample a month, a coefficient of variation of 0.48 and a probability of 95% from Table 5-2 of the Technical Support Document for Water Quality Based Toxics Control (EPA/505/2-90-001) is 1.96.

The proposed AML would be the 0.051 mg/l (LTA) * 1.96 or 0.099 mg/l assume a 5X concentration and the average monthly limit for P = 0.495 mg/l.

The Maximum Daily Limit = 0.051 * 2.68 = 0.136 * assume a 5 X concentration = 0.683 mg/l

The long term average for phosphorus at the Quinebaug River in Jewett City is 0.081 mg/l. The coefficient of variation is 0.8. The multiplication factor associated with one sample a month, a coefficient of variation of 0.80 and a probability of 95% from Table 5-2 of the Technical Support Document for Water Quality Based Toxics Control (EPA/505/2-90-001) is 2.68

The proposed AML would be the 0.081 mg/l (LTA) * 2.68 or 0.217 mg/l. If we assume a 5X concentration then an appropriate average monthly limit for P = 1.08 mg/l.

The Maximum Daily Limit = 0.081mg/l * 4.01 = 0.324 assume a 5 X concentration = 1.62 mg/l

Alternatively, PRE would have to certify annually that they do not and will not add any compounds containing phosphorus. The intake should be monitored for phosphorus and the effluent limit not to exceed 5x the influent concentration.

This discharge also has the potential to discharge a thermal loading into the Quinebaug River. According to their thermal study the discharge will be exiting the cooling tower during the summer at 84°F. The effluent will then discharge approximately two miles via an underground stormwater drainage system before entering the Quinebaug through a single port diffuser. The thermal study submitted with their application indicates that the thermal impacts will be minimal during summer low flow conditions with the discharge complying with ambient temperatures within 22 feet of the discharge location. The discharge plume will be larger in the winter months because more of the stream will be needed to assimilate heat to return the discharge to a lower ambient temperature. This thermal plume analysis should be verified as a compliance step in their NPDES permit. This confirmation step should include a detailed site plan of the discharge location as specified in Section 22a-430-4(C)(21) in the Regulations of Connecticut State Agency. Thermal isopleths delineating the temperature at point of discharge and then (delta)) 2° F intervals should be clearly outlined on this map instead of effluent dilution concentrations. The area encompassed by the (delta)) 4° F above ambient and the point at which it returns to ambient conditions should be emphasized.

November 29, 2007
Application

Interoffice Memo: Plainfield Renewable Energy...Permit

DSN 102 contains 225,000 gpd of fire protection water this discharge should be sampled annually for Aquatic toxicity, total suspended solids, total residual chlorine, boron, iron, manganese, copper, lead zinc and aluminum. This discharge should be directed away from any vernal pools on the property.

DSN 104 contains 250,000 gallons of Non contact cooling water make up and tank drain. This discharge should be monitored on a per event basis for cooling water parameters and aquatic toxicity. If this discharge contains biocides and chlorines the emergency discharge should be directed away from any vernal pools or wetlands in the area.

DSN 105 contains 10,000 gpd of demineralization wastewater that will discharge into a tributary of mill brook. This type of discharge is generally non acutely toxic and contains low levels of contaminants. Annual monitoring for toxicity, total suspended solids, total dissolved solids, total residual chlorine, dissolved oxygen, aluminum, copper, lead and zinc, these are the same parameters listed in another NPDES discharge for this type of effluent.

Rosemary

Appendix B: Reasonable Potential Analysis and Water Quality Based Limits Calculations

Section B1: Facility Information

Instructions & Abbreviations	Facility Information	Reasonable Potential Report	WQ Limit Report	WQC	Reasonable Potential	WQBLs
Facility Information						
Discharger	Plainfield Renewable Energy					
Permit Number	CT0030473					
DSN	101-1					
Receiving Water	Select Water Type	Select Segment				
Average Flow per Day (gpd)	River	CT3700-00_02				
Avg Hours of Discharge (hrs/d)	126,103					
Allocated ZOI (gph)	16					
Date of Analysis (mm/dd/yyyy)	137,760					
IWC % (1 Hour)	2/26/2025					
IWC % (24 Hours)	5.411535093					
Average Dshg Flow (gph)	3.673962655					
CT Site Specific Copper (Y/N)	7881.4375					
	No					
						
Receiving Water Details						
Segment Name Quinebaug River (Canterbury)-02						
Salinity Regime Freshwater						
Water Class B Fish and wildlife habitat, recreational use, agricultural and industrial supply and other legitimate uses including navigation.						

[Return: Facility Info - Included Chemicals](#)

Chemical Type	Chemical Name	CASRN	Maximum Value	Number of results >20=20	Coefficient of Variance	Number of Samples / Month for Permit Limit
Metals & Inorganics	Aluminum	7429905	1100	20	0.9	4
Metals & Inorganics	Ammonia	7664417	7700	20	2	4
Metals & Inorganics	Boron	7440428	1100	20	0.9	4
Metals & Inorganics	Chlorine	7782505	360	20	1	4
Metals & Inorganics	Copper	7440508	190	20	1.4	4
Metals & Inorganics	Lead	7439921	24	20	0.7	4
Metals & Inorganics	Zinc	7440666	180	20	0.6	4

Section B2: Reasonable Potential Analysis Result

[Return to: Reasonable Potential Report](#)

Chemical Type	Chemical Name	CASRN	Estimated Maximum Concentration in Effluent	Waste Load Allocation	Limit Needed?	Governing WLA
Metals & Inorganics	Aluminum	7429905	3,520	2,368	Yes	Chronic
Metals & Inorganics	Ammonia	7664417	52,360		WQ Group	
Metals & Inorganics	Boron	7440428	3,520	195,974	No	Chronic
Metals & Inorganics	Chlorine	7782505	1,260	299	Yes	Chronic
Metals & Inorganics	Copper	7440508	912	131	Yes	Chronic
Metals & Inorganics	Lead	7439921	62	33	Yes	Chronic
Metals & Inorganics	Zinc	7440666	414	1,201	No	Acute
Metals & Inorganics	Iron	7439896	16,960	27,219	No	Chronic

Section B3: Water Quality Based Limits

[Return to: Water Quality Limit Report](#)

Chemical Type	Chemical Name	CASRN	Governing Criteria	AML (ug/L)	MDL (ug/L)	AML (kg/d)	MDL (kg/d)
Metals & Inorganics	Aluminum	7429905	Chronic	1,768	4,075	1	2
Metals & Inorganics	Boron	7440428	Chronic	146,283	337,211	70	161
Metals & Inorganics	Chlorine	7782505	Acute	139	331	0	0
Metals & Inorganics	Copper	7440508	Acute	253	632	0	0
Metals & Inorganics	Lead	7439921	Chronic	26	55	0	0
Metals & Inorganics	Zinc	7440666	Acute	599	1,182	0	1
Metals & Inorganics	Iron	7439896	Chronic	20,317	46,835	10	22

Section B4: Reasonable Potential Analysis for Ammonia

Section 22a-426-9 of the Regs. Conn. State Agencies specifies water quality criteria for ammonia based on the presence or absence of salmonids. Upstream of the Permittee's discharge is Moosup River. The Moosup River discharges to Quinebaug River and is under the Trout Management Area. Therefore, salmonids may be present in the Quinebaug River. The criteria for ammonia when salmonids are present is used below.

Criteria for ammonia, (mg/L as Nitrogen) vary in response to ambient surface water temperature (T in °C) and pH. Biological integrity is considered impaired when:

A) One-hour average concentration of total ammonia exceeds:

$$\left(\left[\frac{0.275}{1+10^{7.204-\text{pH}}} \right] + \left[\frac{39}{1+10^{\text{pH}-7.204}} \right] \right) \text{ when salmonids are present or}$$

$$\left(\left[\frac{0.411}{1+10^{7.204-\text{pH}}} \right] + \left[\frac{58.4}{1+10^{\text{pH}-7.204}} \right] \right) \text{ when salmonids are absent.}$$

B) Four-day average concentration of total ammonia exceeds: 30-day average x 2.5

C) 30-day average concentration of total ammonia exceeds:

$$\left[\frac{0.0577}{1+10^{7.688-\text{pH}}} \right] + \left[\frac{2.487}{1+10^{\text{pH}-7.688}} \right] \times \left[\text{MIN}(2.85, 1.45 \times (10^{0.028(25-T)})) \right] \text{ when early life stages are present, or}$$

$$\left[\frac{0.0577}{1+10^{7.688-\text{pH}}} \right] + \left[\frac{2.487}{1+10^{\text{pH}-7.688}} \right] \times \left[1.45 \times (10^{0.028(25-\text{MAX}(T,7))}) \right] \text{ when early life stages are absent.}$$

Ambient monitoring data collected by the US Geological Survey for the Quinebaug River at Jewett City (USGS-01127000) for the period of January 2020 – December 2024 was used to calculate the water quality criteria at the Quinebaug River. ([How's My Waterway - Water Monitoring Report](#))

Table B4.1: Ambient data for pH and Temperature				
Parameter	Months	Average	Minimum	Maximum
pH (S.U.)	April - October	7.4	7.1	7.8
	November - March	7.26	7.0	7.5
Temperature (° Celsius)	April - October	20.8	13.6	28.2
	November - March	5.9	1.1	14.6

Spawning can occur in the spring, summer or fall depending on the salmon species. Therefore, the criteria for early stages are used for the reasonable potential analysis.

November – March:

Ammonia Criteria Calculation Worksheet		mg/L as N
pH	7.23	
Temp	5.90	
		WQC
Acute		
Salmonids Present		19.06
Salmonids Absent		28.54
4 day average		
Early Life Stage Present		13.25
Early Life Stage Absent		21.51
30 day average		
Early Life Stage Present		5.30
Early Life Stage Absent		8.60

April - October:

Ammonia Criteria Calculation Worksheet		mg/L as N
pH	7.40	
Temp	20.8	
		WQC
Acute		
Salmonids Present		15.34
Salmonids Absent		22.97
4 day average		
Early Life Stage Present		11.83
Early Life Stage Absent		19.22
30 day average		
Early Life Stage Present		4.73
Early Life Stage Absent		7.69

Table B4.2: Ammonia Criteria Summary

Months	Acute	30 Day Average	4 Day Average
November - March	19.06 mg/l	5.3 mg/l	13.25 mg/l
April - October	15.34 mg/l	4.73 mg/l	11.83 mg/l

The maximum reported total ammonia from November – March is 7,700 µg/l. The maximum reported total ammonia from April – October is 7,000 µg/l. The coefficient of variance was calculated to be 2.0.

Table B4.3: Reasonable Potential Evaluation

(This analysis compares the projected maximum concentration (PMC) in the receiving stream with the applicable water quality criteria (WQC). When the PMC is lower than the WQC, there is no potential for the discharge to exceed the WQC. When the PMC is higher than the WQC, there is a potential for the discharge to exceed the WQC and permit limits are therefore needed.)

Q = Flow, C = Concentration, (QC)_u = Upstream data, (QC)_d = Downstream data, (QC)_e = Effluent data, Q_d = Q_u + Q_e. Q_{e,ac} = 126,103 gpd ÷ 16 = 7,881 gph, Q_{e,ch} = 126,103 gpd ÷ 24 = 5,254 gph, Q_u = 137,750 gph, Q_{d,ac} = 145,631 gph and Q_{d,ch} = 143,004 gph

Pollutants	PMC in effluent = Maximum measured concentration X multiplier in Table 3-1 of the TSD	PMC in the waterbody C _d = $\frac{(QC)_u + (QC)_e}{Q_d}$ (µg/l)	Connecticut Water Quality Criteria (WQC) (Freshwater)		Is there potential to exceed WQC?
			Aquatic Life (Acute) (µg/l)	Aquatic Life (Chronic) (µg/l)	
Ammonia (Nov.– Mar.)	7,700 X 7.1 = 54,670	Acute: 2,959 Chronic: 2,008	19,060	5,300	No
Ammonia (Apr. – Oct.)	7,000 X 6.8 = 47,600	Acute: 2,576 Chronic: 1,749	15,340	4,730	No



**NOTICE OF TENTATIVE DETERMINATION
INTENT TO RENEW A NATIONAL POLLUTANT DISCHARGE ELIMINATION
SYSTEM PERMIT FOR THE FOLLOWING DISCHARGES INTO THE WATERS OF
THE STATE OF CONNECTICUT**

1.0 TENTATIVE DECISION

The Commissioner of the Department of Energy and Environmental Protection (“the Commissioner”) hereby gives notice of a tentative determination to renew a permit based on an application and administrative record submitted by **Plainfield Renewable Energy, LLC** (“the Applicant”) under Section 22a-430 of the Connecticut General Statutes (“CGS”) for a permit to discharge into the waters of the state. The proposed permit authorizes discharges to the Quinebaug River and the groundwaters in the Mill Brook watershed under National Pollutant Discharge Elimination System (“NPDES”) Permit No. CT0030473.

The tentative determination includes a termination of Permit No. SP0002464. The groundwater discharges from DSNs 102, 103, and 104 were previously associated with Permit No. SP0002464. Reference to Permit No. SP0002464 has been removed from the proposed permit, and all discharges, including DSNs 102, 103, and 104, are proposed to be covered under Permit No. CT0030473.

The tentative decision to renew the permit also includes the following determinations:

- The permit will assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the receiving waters under Section 316(a) of the Clean Water Act, 33 U.S.C. § 1326(a);
- A determination of best technology available under Section 316(b) of the Federal Water Pollution Control Act, 33 U.S.C. § 1326(b); and
- In accordance with applicable federal and state law, the Commissioner has made a tentative determination that continuance of the existing system to treat the discharge would protect the waters of the state from pollution.

The proposed permit, if issued by the Commissioner, will require that some wastewaters are treated to meet the applicable effluent limitations and periodic monitoring to demonstrate that the discharge will not cause pollution.

2.0 APPLICANT'S PROPOSAL

Plainfield Renewable Energy, LLC presently discharges wastewater from operations associated with an electricity power generating facility. The Applicant discharges 173,571 gallons per day of cooling water blowdown directly to the Quinebaug River.

In addition, once per year, the Applicant discharges 225,000 gallons per day of fire pump test water, 225,000 gallons per day of fire hydrant test water, and 250,000 gallons per day of make-up supply tank drain and overflow wastewater to the groundwater in the Quinebaug River watershed.

The name and mailing address of the permit Applicant are: Plainfield Renewable Energy, LLC, 12 Mill Brook Road, Plainfield, CT 06374

The activity takes place at: 12 Mill Brook Road, Plainfield, CT 06374 and the pump house is at 114 Packer Road, Canterbury, CT 06331.

3.0 REGULATORY CONDITIONS

3.1 Type of Treatment

DSN 101: Cooling tower blowdown – Treatment includes filtration, dechlorination using sodium bisulfite and pH adjustment.

DSN 102: Fire pump test wastewater - Wastewater is not treated.

DSN 103: Fire hydrant test wastewater - Wastewater is not treated.

DSN 104: Make-up supply tank drain and overflow wastewaters - Wastewater is not treated.

Water Intake 101-H: Cooling Water Intake Structure – Cylindrical wedge wire screen to minimize impingement and entrainment; and

Water Intake 101-H: Intake cooling water – Neutralization, coagulation, flocculation, clarification, filtration of intake water treatment to meet required process water quality, on as needed basis.

3.2 Effluent Limitations

This permit contains effluent limitations consistent with a Case-by-Case Determination using the criteria of Best Professional Judgement and which will protect the waters of the state from pollution when all the conditions of this permit have been met.

In accordance with Section 22a-430-4(l) of the Regulations of Connecticut State Agencies the permit contains effluent limitations for the following types of toxic substances: heavy metals and total residual chlorine.

This permit contains the following variances from the effluent limitations required by Section 22a-430-4(l) of the Regulations of Connecticut State Agencies.

3.3 Compliance Schedule

This permit contains enforceable compliance schedules which require the Applicant to:

1. Conduct a thermal verification study and submit the report for the Commissioner's review and concurrence; and
2. Propose alternative actions and implement the preferred action(s) to achieve compliance with pH effluent limitations contained in the permit.

4.0 COMMISSIONER'S AUTHORITY

The Commissioner is authorized to approve or deny such permits pursuant to Section 402(b) of the Federal Water Pollution Control Act, as amended, 33 USC 1251, et. seq. and Section 22a-430 of the CGS and the Water Discharge Permit Regulations (Section 22a-430-3 and 4 of the RCSA).

5.0 INFORMATION REQUESTS

The application has been assigned the following numbers by the Department of Energy and Environmental Protection. Please use these numbers when corresponding with this office regarding this application.

APPLICATION NO. 201801917

PERMIT ID NO. CT0030473

Interested persons may obtain copies of the application from Mark Boucher, Plainfield Renewable Energy, LLC., 12 Mill Brook Road, Plainfield, CT 06374, mboucher@plainfieldre.com, (860) 457-9307.

The application is available for inspection by contacting Oluwatoyin Fakilede, Environmental Engineer 3, at 860-424-3025 or oluwatoyin.fakilede@ct.gov, at the Department of Energy and Environmental Protection, Bureau of Materials Management and Compliance Assurance, 79 Elm Street, Hartford, CT 061065127 from 8:30-4:30, Monday through Friday.

Any interested person may request in writing that his or her name be put on a mailing list to receive notice of intent to issue any permit to discharge to the surface waters of the state. Such request may be for the entire state or any geographic area of the state and shall clearly state in writing the name and mailing address of the interested person and the area for which notices are requested.

6.0 PUBLIC COMMENT

Prior to making a final decision to approve or deny any application, the Commissioner shall consider written comments on the application from interested persons that are received within 30 days of this public notice. Written comments should be directed to Oluwatoyin Fakilede, Environmental Engineer 3, Bureau of Materials Management and Compliance Assurance, Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 061065127 or DEEP.IndustrialNPDESPublicComments@ct.gov and should indicate Plainfield Renewable Energy, LLC and the Permit ID No. CT0030473 in the subject line. The Commissioner may hold a public hearing prior to approving or denying an application if in the Commissioner's discretion the public interest will be best served thereby, and shall hold a hearing upon receipt of a petition signed by at least twenty -five persons. Notice of any public hearing shall be published at least thirty (30) days prior to the hearing.

7.0 PETITIONS FOR HEARING

Petitions shall be submitted within thirty (30) days from the date of publication of this public notice and should include the application number noted above and also identify a contact person to receive notifications. Petitions may also identify a person who is authorized to engage in discussions regarding the application and, if resolution is reached, withdraw the petition. Upon receipt of a petition, the Commissioner shall take action as required by relevant laws, including Public Act 25-84, which was effective upon passage in June 2025.

The Office of Adjudications will accept electronically-filed petitions for hearing in addition to those submitted by mail or hand-delivered. Petitions with required signatures may be sent to deep.adjudications@ct.gov; those mailed or delivered should go to the DEEP Office of Adjudications, 79 Elm Street, Hartford, CT 06106. If the signed original petition is only in an electronic format, the petition must be submitted with a statement signed by the petitioner that the petition exists only in that form. Original petitions that were filed electronically must also be mailed or delivered to the Office of Adjudications within 30 days of electronic submittal. Additional information can be found at www.ct.gov/deep/adjudications.

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act (ADA). If you are seeking a communication aid or service, have limited proficiency in English, wish to file an ADA or Title VI discrimination complaint, or require some other accommodation, including equipment to facilitate virtual participation, please contact the DEEP Office of Diversity and Equity at 860-418-5910 or by email at deep.accommodations@ct.gov. Any person needing an accommodation for hearing impairment may call the State of Connecticut relay number - 711. In order to facilitate efforts to provide accommodation, please request all accommodations as soon as possible following notice of any agency hearing, meeting, program, or event



Audra Dickson, Director
Water Permitting and Enforcement Division
Bureau of Materials Management and Compliance Assurance
Department of Energy and Environmental Protection

Dated: December 3, 2025