DATA TRACKING AND TECHNICAL FACT SHEET

WPED PRETREATMENT PERMIT ISSUANCE

APPLICANT	NTE Connecticut, LLC
PERMIT NO.	SP0002475
APPLICATION NO.	201615592
DATE APPLICATION RECEIVED	December 19, 2016
LOCATION ADDRESS	Killingly Energy Center 189 Lake Road, Killingly, Connecticut 06241
FACILITY CONTACT	Tim Eves Office Phone: 813-503-2991 Email: teves@nteenergy.com
MAILING ADDRESS	Tim Eves 24 Cathedral Place, Suite 300 Saint Augustine, Florida 32084
DMR CONTACT	Tim Eves Office Phone: : 813-503-2991 Email: teves@nteenergy.com
PERMIT TERM	5 Years
PERMIT CATEGORY	PRETREATMENT SIGNIFICANT INDUSTRIAL USER (SIU)
	PRETREATMENT CATEGORICAL INDUSTRIAL USER (CIU) Steam Electric Power Generating 40 CFR 423.17(b)
SIC CODE(S)	4911
PERMIT TYPE	Issuance
OWNERSHIP	Private
PUBLICLY OWNED TREATMENT WORKS ("POTW") THAT RECEIVES THE DISCHARGE	Killingly POTW via its collection system. The POTW discharges to the Quinebaug River under Permit No. CT0101257
DEEP STAFF ENGINEER	Stephen Edwards
TENTATIVE DECISION FACT SHEET DATE	February 13, 2020

SOLVENT MANAGEMENT PLAN

Is the facility operating under an approved solvent management plan (SMP)? \Box Yes \Box No \boxtimes N/A If yes, indicate date issued:

No Solvent Management Plan shall be more than 5 years old.

PERMIT FEES

Application Fee:

Filing Fee	Cost: \$1,300	Date Paid: December 19, 2016
Processing Fee	Cost: \$13,650	Date Paid: February 2, 2017

Annual Fee:

DISCHARGE CODE	WASTEWATER CATEGORY (per 22a-430-7)	MAXIMUM Gallons Per Day ("GPD") or CATEGORY	DSN	ANNUAL FEE (per 22a-430-7)
501060z	Steam electric power plant	90,000 (1 unit)	201-1	\$8,425
TOTAL		90,000 (1 unit)		\$8,425

I. APPLICANT

NTE Connecticut, LLC (NTE) proposes to construct and operate the Killingly Energy Center (KEC), a 650-MW combined cycle dual fuel combustion turbine electric generating facility. Wastewater from on-site steam power-generating activities will be treated and discharged via one sewer connection point, DSN 201-1, to the Killingly publicly owned treatment works (POTW).

The proposed facility will consist of a (1) Mitsubishi M501JAC combustion turbine generator (CTG), a (1) heat recovery steam generator (HRSG) and a (1) steam turbine generator. An air cooled condenser will be used to condense the exhaust steam from the steam turbines prior to reuse in the HRSG.

On December 19, 2016 the Department of Energy and Environmental Protection (DEEP) received an application (Application No. 201615592) from NTE seeking a permit (Permit No. SP0002475) to authorize the proposed discharge of wastewater associated with steam electric power generation to the Killingly POTW. Application No. 201615592 was public noticed in the Norwich Bulletin on December 10, 2016. On March 7, 2017, the application was determined to be administratively sufficient.

The Siting Council issued its final Opinion Letter in addition to its final Decision Letter on June 6, 2019, Docket No. 470B.

II. NATURE OF THE BUSINESS GENERATING THE DISCHARGE

The applicant seeks authorization for the following:

DSN	PROPOSED MAXIMUM DAILY FLOW (gpd)	PROPOSED WASTESTREAMS	TREATMENT TYPE	DISCHARGE TO
201-1	90,000	Low Volume Waste streams consisting of inlet air evaporative cooling wastewater, demineralized water treatment wastewater, temporary demineralized water treatment trailer wastewater, floor drains (including equipment wash waters), and HRSG blowdown	Floor drain and equipment wash wastewaters treated via o/w separation	Killingly POTW

WASTESTREAMS	DESCRIPTION
Inlet Air Evaporative Cooling Wastewater	During high ambient temperatures and low relative humidity conditions, potable water may be sprayed into the turbine inlet air to improve power output and efficiency. The evaporative cooling system cools the intake air through humidification, raising relative humidity and lowering the inlet air temperature. Cooling the inlet air increases the air mass flow rate and turbine functionality, resulting in higher turbine output power and efficiency. Up to 21,000 gpd of potable water is used, nothing is added to the water, and it only contacts filtered air and the inside of the cooler. The majority of the water, about two thirds, is evaporated during the humidification process. The remaining one third is discharged as part of DSN 201-1.
Demineralized Water	Water treatment wastewater generated from the operations associated with treating the
Treatment Wastewater	incoming water (ion exchange regeneration and reverse osmosis backwash)
Temporary Demineralized Water Treatment Trailer	Portable demineralizer to be used when burning ultra-low sulfur diesel (ULSD)as the primary fuel
Floor Drains	Drains from miscellaneous equipment enclosures, the fuel gas compressor enclosure, control/electrical building, turbine hall, and the admin warehouse/maintenance buildings
HRSG Blowdown	Blowdown from the HRSG steam cycle in order to prevent excess mineral build-up. Demineralized water is used in the HRSG with aqueous ammonia added as an anti-corrosive.
Equipment Washwater	Wastewater generated from cleaning equipment within buildings (e.g., pumps, fans, heat exchangers) at the site to remove dirt or dust and routed to floor drains; no cleaning chemicals or degreasers are used in the process, exclusive of turbine washwater.

III. BACKGROUND/PERMIT HISTORY

Compliance/Enforcement					
Effluent Violations: NA (new discharge)	42 for a sel DCN	T and 1: at all 337	DEDf		:
For the past 5 years provide a violations his	tory for each DSN	and list all wi	PED enforcen	nent actions and tr	ieir
status.					
Is the Permittee subject to an ongoing enfor	cement action?	☐ Yes	▼ No		
If yes, provide a brief explanation; include opermit.		issues relevant	t to the activit	ies regulated unde	r the
	1 1 0	✓ Yes	□ No		
Does the Permit contain a compliance sched	lule?				
If yes, please check all that apply.					
Pollution Prevention	☐ Water Conse	rvation	Reme	diation	
Water Quality Requirement	☐ Treatment Re	equirement	▼ Other	ſ	
The permit contains an enforceable complia commercial operations commence, submit a system once built, and submit a detailed ana	ın updated operati	on and mainten	nance plan for	the wastewater tre	eatment
Modifications					
Within the last five years, have there been a	ny permit modific	cations?	Yes	▼ No	

IV. THE ON-SITE WASTEWATER TREATMENT SYSTEM

201-1 - Wastewater from the plant floor drains is to be passed through a 350 gpm oil/water separator to remove oil and grit prior to discharging to the operational sump that discharges via DSN 201-1. (see attached Water Collection diagram)

V. EFFLUENT GUIDELINES

In Connecticut, all discharges must comply, at a minimum, with the general prohibitions of the federal pretreatment standards and section 22a-430-4(t) of the Regulations of Connecticut State Agencies. State-issued pretreatment permits utilize federal categorical and state regulatory standards and effluent limitations to assure such compliance is achieved. In cases where there exists a risk for a pollutant to have a negative impact on receiving waters and/or the POTW's operations, including sludge handling or disposal, worker health or safety, or ability to comply with its own NPDES permit, state permits may incorporate local limits.

Killingly Energy Center's primary business is the generation of electricity for distribution and sale utilizing fossil fuels. Operations at the facility are expected to begin in 2021. Accordingly, process wastewaters from the facility are subject to 40 CFR 423.17(b) (Steam Electric Power Generating Point Source Category, Pretreatment standards for new sources (PSNS) after June 7, 2013) as low volume waste (40 CFR 423.11(b). Specifically the limits and conditions contained in 40 CFR 423.17(b)(1) (polychlorinated biphenyl compounds ("PCBs").

Chemical metal cleaning wastes regulated under 40 CFR 423.17(b)(2), will be shipped off site.

The facility will be air cooled. Therefore, 40 CFR 423.17(a)(4)(i) (cooling tower blowdown) is not applicable.

40 CFR 423.17(b)(5) through (10) were also assessed and found not applicable to DSN 201-1. These standards apply to coal burning facilities and NTE will use natural gas and oil.

VI. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

	BA	SIS FOR LIMITS, STANDARDS OR CONDITIONS	REGULATION	DISCHARGE POINT(S)
		Federal Effluent Limitation Guideline ("ELG")		
		Pretreatment Standards for Existing Sources ("PSES")		
	\boxtimes	Pretreatment Standards for New Sources ("PSNS")	40 CFR 423.17(b)	201-1
		Performance Standards		
[Section 22a-430-4(s) of the Regulations of Connecticut State Agencies ("RCSA")		
1	\boxtimes	Case-by-Case Determination using Best Professional Judgment ("BPJ")	Section 22a-430-4(m) RCSA and Section 22a- 430-4(l)(4)(D)(iii) RCSA	201-1
	\boxtimes	Killingly Code of Ordinances (local limits)	Section 15-47	201-1

A. MONITORING PARAMETERS & LIMITS:

DSN 201-1

	40 CF	R 423.17(b)	RCSA se	ection 22a-4	130-4(s)(2)		Local Lim	iits		BPJ	
PARAMETER	Average Monthly (mg/l)	Maximum Daily (mg/l)	Average Monthly (mg/l)	Maximum Daily (mg/l)	Instantaneous (mg/l)	Average Monthly (mg/l)	Maximum Daily (mg/l)	Instantaneous (mg/l)	Average Monthly (mg/l)	Maximum Daily (mg/l)	Instantaneous (mg/l)
Ammonia, Total	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA
Copper, Total	NA	NA	NA	NA	NA	NA	NA	1.0	1.0	2.0	3.0
Nickel, Total	NA	NA	NA	NA	NA	NA	NA	1.0	1.0	2.0	3.0
Oil Petroleum, Total Recoverable	NA	NA	NA	NA	NA	NA	NA	100.0	NA	NA	
pH min	NA	NA	NA	NA	NA	NA	NA	<mark>6.0</mark>	NA	NA	6.0
pH max	NA	NA	NA	NA	NA	NA	NA	10.0	NA	NA	10.0
Phosphorus, Total	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA
Solids, Total Suspended	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA
Temperature, Maximum	NA	NA	NA	NA	NA	NA	NA	150	NA	NA	
Zinc, Total	NA	NA	NA	NA	NA	NA	NA	1.0	1.0	2.0	3.0

B. COMMENTS ON SPECIFIC PARAMETERS:

DSN 201-1

Ammonia

Aqueous ammonia will be stored and used at the plant to help control the pH in the HRSG. As stated in its application, NTE predicts an ammonia concentration of 1.7 mg/l in its discharge. Based on this and data from other similar steam electric discharges, staff determined that DSN 201-1 should be monitored for ammonia.

Copper

Copper will be removed from the incoming potable water by the facility's potable water treatment system and concentrated in its regen wastewater. As stated in its application, NTE predicts a copper concentration of 0.069 mg/l in its discharge. Based on this and data from other similar steam electric discharges, staff determined that DSN 201-1 should be monitored for copper. Regulatory and BPJ limits were compared. Local instantaneous limits were found to be the most restrictive (see above table). The local instantaneous limit was used as the maximum daily limit.

Lead

NTE predicts the concentration of lead in its discharge will be 0.0019 mg/l. The source of lead is the potable water supply. Trace amounts of lead in the incoming water will be concentrated in NTE's on site demineralization system when it generates deionized water.

Staff reviewed six years of data (January 2011 to November 2016) of the concentration of lead in the discharge from Lake Road Generating Company (Permit no. SP0002356), a steam electric facility just down the street from the proposed NTE steam electric facility that uses the same technology and water source. The median concentration of lead in Lake Road's discharge was 0.00085 mg/l, with a maximum concentration of 0.0056 mg/l.

Applicable regulatory state, federal, and local lead limits were compared. Killingly's local instantaneous limit of 0.1 mg/l was found to be the most restrictive.

Given the estimated low concentration of lead in the proposed discharge relative to applicable limits and the data form Lake Road, staff determined that lead is not a priority pollutant in the proposed discharge. That the discharge does not need to be monitored for lead.

Nickel

As stated in its application, NTE predicts the discharge will not contain a measurable concentration of nickel. However, sampling data from an existing steam electric facility in Killingly with a similar water source does have nickel in its discharge. Therefore staff determined that DSN 201-1 should be monitored for nickel. Once at least two years of data exist for the discharge, the need to monitor for nickel and monitoring frequency may be reexamined. Regulatory and BPJ limits were compared. Local instantaneous limits were found to be the most restrictive (see above table). The local instantaneous limit was used as the maximum daily limit.

Oil Petroleum, Total Recoverable

Fuel oil will be stored and used at the plant. As stated in its application, NTE predicts a total oil and grease concentration of less than 15 mg/l in its discharge. Based on this and data from other similar steam electric discharges, staff determined that DSN 201-1 should be monitored for total recoverable oil petroleum. Regulatory and BPJ limits were compared. Local instantaneous limits were found to be the most restrictive (see above table). The local instantaneous limit was used as the maximum daily limit.

pН

The pH limits are 6.0 S.U. (minimum) and 10.0 S.U. (maximum). These limits are considered to be protective of sanitary sewer systems, and are consistent with the Killingly POTW's local limits.

Phosphorus

NTE uses trisodium phosphate to help control the pH in the HRSG. NTE predicts the discharge will contain 4.5 mg/l of phosphorus. The Killingly POTW's permit contains seasonal phosphorus limits.

Therefore staff determined that DSN 201-1 should be monitored for phosphorus to establish its baseline concentration in the discharge.

Total suspended solids (TSS)

As stated in its application, NTE predicts that the TSS concentration in DSN 201-1 will be 13.9 mg/l. Staff determined the discharge should be monitored for TSS. Regulatory and BPJ limits were compared. Local instantaneous limits were found to be the most restrictive (see above table). The local instantaneous limit was used as the maximum daily limit.

Temperature

As stated in its application, NTE predicts the median temperature of DSN 201-1 will be less than 150 degrees F. The permit contains a limit for temperature of 150 degrees F for consistency with local limits.

Zinc

Like copper, zinc will be removed from incoming potable water by the facility's potable water treatment system. Therefore, zinc has the potential to be concentrated in the water treatment wastewater. As stated in its application, NTE predicts a zinc concentration of 0.0846 mg/l in its discharge. Based on this and data from other similar steam electric discharges, staff determined that DSN 201-1 should be monitored for zinc. Regulatory and BPJ limits were compared. Local instantaneous limits were found to be the most restrictive (see above table). The local instantaneous limit was used as the maximum daily limit.

Monitoring Frequency

In accordance with Section 22a-430-3 of the RCSA, the permit requires weekly monitoring for all parameters, except flow, pH and temperature. Flow, pH and temperature will be monitored continuously.

VII. PERMITS FOR OTHER DISCHARGES

The Department approved NTE's Stormwater and Dewatering Wastewaters from Construction Activities general permit registration on January 7, 2020.

NTE is also required to register under the Stormwater Associated with Industrial Activities general permit prior to starting operations.

Discharges of air conditioner and compressor condensate to the sanitary sewer system will be authorized by General Permit for Miscellaneous Discharges of Sewer Compatible (MISC) Wastewater.

VIII. COMMENTS RELATED TO THE PUBLIC NOTICE

Stephen Edwards was assigned this application on January 20, 2017.

The draft permit and its accompanying fact sheet were emailed to David Capacchione of the Town of Killingly Water Pollution Control Facility on July 16, 2019. The Town did not provide comments on the drafts.

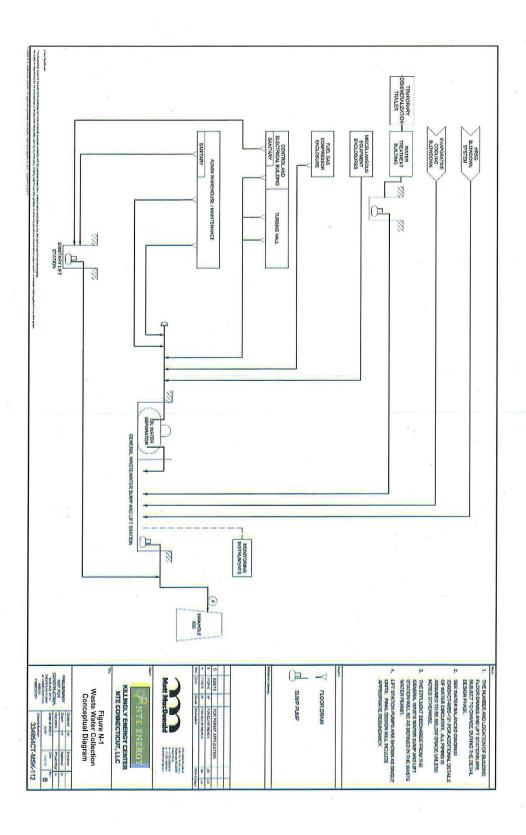
Notice of Tentative Decision was published in ____ on ____. The comment period ended on _____. The Department has received [no] [the following] written comments on the proposed action: Pick the one that applies.

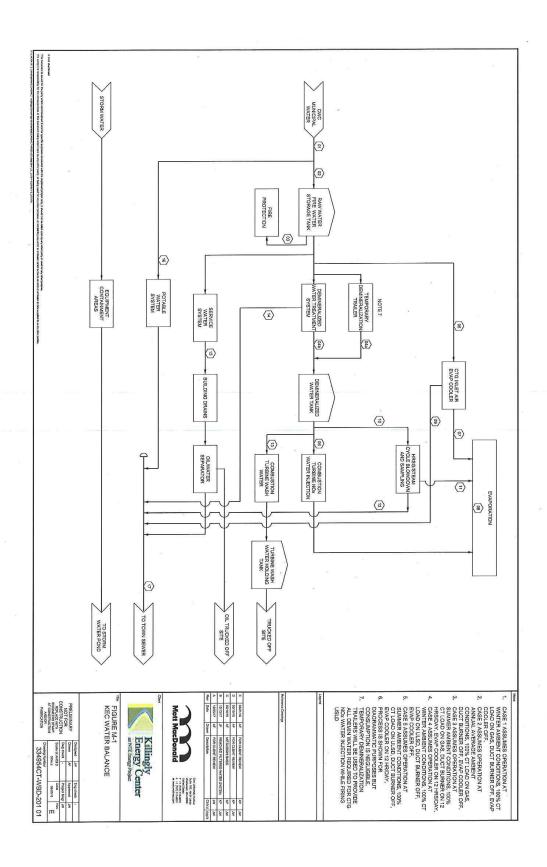
Comments If Any

The Bureau of Materials Management and Compliance Assurance staff has reviewed the written comments and does not feel that the tentative determination should be modified. Provide Reasons

The Bureau of Materials Management and Compliance Assurance staff has reviewed the written comments and recommends the following changes in the [tentative determination] [draft permit]. Pick the one that applies.







	SUMMARY FLOV	N TABLE (k	gpd)			
NODE #	DESCRIPTION	CASE1 ¹	CASE2 ²	CASE3 ³	CASE4 ⁴	CASE5 ⁵
1	Municipal Water Supply (Total)	41.7	40.0	70.0	327.6	345.4
2	Raw Water to Storage Tank	38.9	37.2	67.1	324.7	342.5
3	Fire Protection	Note 6				
4	Demineralized Water Treatment Product	29.2	27.8	34.7	260.7	257.8
5	CTG Water Injection	0.0	0.0	0.0	231.5	231.5
6	6 Make-up to CTG Inlet Air Coolers		0.0	21.4	0.0	21.4
7	7 CTG Inlet Air Cooler Evaporation		0.0	14.3	0.0	14.3
8	Total Evaporation	11.6	11.0	28.1	243.1	256.2
9	CTG Inlet Air Cooler Blowdown	0.0	0.0	7.1	0.0	7.3
10	Make-up to Steam Cycle	29.2	27.8	34.7	29.2	26.2
11	Steam Cycle Vent	11.6	11.0	13.8	11.6	10.4
12	Steam Cycle Blowdown	17.6	16.7	20.9	17.6	15.8
13	Combustion Turbine Wash Water	Note 6				
14	Demineralized Water Treatment Waste	6.8	6.5	8.1	61.2	60.5
15	Equipment Washdown	2.9	2.9	2.9	2.9	2.9
16	Potable Water Supply	2.9	2.9	2.9	2.9	2.9
17	Discharge to Town Sewer (Total)	30.2	29.0	41.9	84.5	89.3

lotes	
1.	CASE 1 ASSUMES OPERATION AT
	WINTER AMBIENT CONDITIONS, 100% CT
	LOAD ON GAS, DUCT BURNER OFF, EVAP
	COOLER OFF.
2.	CASE 2 ASSUMES OPERATION AT
	ANNUAL AVERAGE AMBIENT
	CONDITIONS, 100% CT LOAD ON GAS,
	DUCT BURNER OFF, EVAP COOLER OFF.
3	CASE 3 ASSUMES OPERATION AT
	SUMMER AMBIENT CONDITIONS, 100%
	CT LOAD ON GAS, DUCT BURNER ON 12
	HRS/DAY, EVAP COOLER ON 12 HRS/DAY.
4.	CASE 4 ASSUMES OPERATION AT
	CT THE THE PARTY OF THE PARTY O

4. CASE 4 ASSUMES OPERATION AT WINTER AMBIENT CONDITIONS, 100% CT LOAD ON ULSD, DUCT BURNER OFF, EVAP COOLER OFF.

5. CASE 5 ASSUMES OPERATION AT SUMMER AMBIENT CONDITIONS, 100% CT LOAD ON ULSD, DUCT BURNER OFF, EVAP COOLER ON 12 HRIDAY.

6. PROCESS IS SHOWN FOR DIAGRAMMATIC PURPOSES BUT CONSUMPTION IS NEGLIGIBLE.

8	08/15/16	AF	FOR CLIENT REVIEW	JW	311
A	08/15/16	AF	FOR CLIENT REVIEW	JW	311
Rey	Date	Drawn	Description	CHYKI	App'e



Figure M-2

KEC Water Balance (cont.)



Designed Drawn Dwg check Scale at ANSI D
SCALE 334954CT-WBD-101 02