FACT SHEET

NPDES PERMIT MODIFICATION
PERMIT MODIFICATION PUBLIC NOTICED: FEBRUARY 2016

PERMITTEE	***ALLNEX USA INC.***
CO-LOCATED FACILITY	*EVONIK CYRO LLC*
NPDES PERMIT NO.	*CT0000086 (May 17, 2011 to May 16, 2016)*
APPLICATION NO.	*201508289*
DATE APPLICATION RECEIVED	*November 4, 2015*
FACILITY ID	*148-017*
LOCATION ADDRESS	*528 South Cherry Street* *Wallingford, Connecticut 06492*
MAILING ADDRESS	*P.O. Box 425* *Wallingford, Connecticut 06492*
FACILITY CONTACT	*Virginia Ryan, SHE Manager* *(203) 284-4212* *Virginia.Ryan@allnex.com*
DMR CONTACT	*Frank DiCristina, Site Manager* *(203) 284-4268* *Frank.DiCristina@allnex.com*
PERMIT TERM	*5 years*
PERMIT CATEGORY	*NPDES:* ☒ *Major* ☐ *Minor*
SIC CODE	*2821 (Plastic Materials, Synthetic Resins, and Nonvulcanizable Elastomers)*
APPLICABLE EFFLUENT GUIDELINE(S)	*40 CFR 414 (Organic Chemicals, Plastics, and Synthetic Fibers)*
PERMIT TYPE	*Modification*
OWNERSHIP	*Private*
RECEIVING WATER	*Quinnipiac River (DSN 001-1)* *Un-named tributary to the Quinnipiac River (DSN 002-1)*
WATER BODY SEGMENT ID	*CT5200-00_02 (Quinnipiac River)*
SURFACE WATER DISCHARGE LOCATIONS	*DSN 001-1: Latitude (41° 26' 03") Longitude (72° 50' 52")* *DSN 002-1: Latitude (41° 26' 04") Longitude (72° 50' 52")*
DEEP STAFF ENGINEER	*Christine Gleason (860/424-3278)* *christine.gleason@ct.gov*

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PERMIT FEES

Modification Processing Fee: *$940. Paid: October 28, 2015*
Annual Application Fee*: No change*

I. APPLICANT

Allnex USA Inc. ("Allnex", "Permittee", "Applicant"), formerly known as Cytec Industries Inc., is seeking a modification of its NPDES permit, CT0000086 (May 17, 2011 – May 16, 2016) for the discharge of treated wastewater into the Quinnipiac River via DSN 001-1. The permit is proposed to be modified to address a number of items, described in more detail below. On November 4, 2015, Allnex submitted an application (Application 201508289) for the proposed modification of its NPDES permit.

II. BACKGROUND

As it relates to this proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal of CT0000086.

III. PERMIT MODIFICATION(S)

CT0000086 was last modified on September 10, 2015.

IV. OTHER ISSUES RELATED TO THE APPLICATION

A. ENDANGERED SPECIES

B. COASTAL AREA/COASTAL BOUNDARY

C. AQUIFER PROTECTION AREAS

D. FEDERALLY-RECOGNIZED INDIAN LAND

As it relates to this proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal/modification of CT0000086.

V. RECEIVING WATER INFORMATION

As it relates to this proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal/modification of CT0000086.

VI. NATURE OF BUSINESS GENERATING THE DISCHARGE

As it relates to this proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal of CT0000086.

VII. FACILITY DESCRIPTION

As it related to this proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal of CT0000086, except for the following process changes related to the proposed new activities in Buildings 5 and 6:

The Permittee proposes to undertake the manufacture of several modified/new products at the facility. These products belong to the following product lines: Alkylated Acrylamide Resins, Acrylic-Modified Alkyd Resins, Modified Urea Resins, Methylated Resins, Alkyd Resins, and Formaldehyde-Free Resins. These products will be manufactured on existing equipment and will not reportedly result in an increase in the average monthly or maximum daily flows. No new wastestream types are proposed as part of the new process. A review of the chemicals used or generated in the process of manufacturing the new/modified products indicates that Tetrahydrofuran will be a by-product. Tetrahydrofuran will be included as a monitoring parameter in the permit.

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VIII. THE WASTEWATER TREATMENT SYSTEM

As it relates to this proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal of CT0000086.

IX. EFFLUENT QUALITY DATA

See Attachment 1 for Effluent Quality Data from June 2011 to present.

X. MONITORING/EFFLUENT VIOLATIONS

Based on a review of Allnex's DMRs from permit issuance to present, the following effluent violations were noted:

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
Feb 2012	001-1	Bis(2-ethylhexyl) phthalate	Average Monthly	2.2 µg/L 19 g/day	4 µg/L 22 µg/L
			Maximum Daily	4.4 µg/L 38 g/day	7 µg/L 7 µg/L 11 µg/L 47 g/day 75 g/day
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Other** ☒ **Unknown**					
The Permittee is undertaking sampling of certain wastewater streams that discharge into the WWTP in order to evaluate the source of Bis(2-ethylhexyl) phthalate.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
May 2012	001-1	Ammonia	Average Monthly	1.28 mg/L	2.48 mg/L
			Maximum Daily	5.32 mg/L	27.8 mg/L 14.8 mg/L
REASON: ☐ **Equipment Related** ☒ **Operator Error** ☐ **Other** ☐ **Unknown**					
The permit exceedance was related to NMA spill on May 18, 2012					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
August 2012	001-1	TSS	Maximum Daily	50 mg/L	74 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The exceedance was reportedly caused by flow fluctuations and low-flow conditions during shut-down/maintenance operations.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
August 2012	001-1	Aluminum	Average Monthly	0.071 mg/L	0.110 mg/L
			Maximum Daily	0.143 mg/L	0.200 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The permit exceedance was related to the use of aluminum-based salts for Phosphorus removal					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
Feb 2013	001-1	Bis(2-ethylhexyl) phthalate	Maximum Daily	4.4 µg/L 38 g/day	8.1 µg/L 43 g/day
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Other** ☒ **Unknown**					
The source of the exceedance is unknown. An investigation will be undertaken.					

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MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
March 2013	001-1	Bis(2-ethylhexyl) phthalate	Average Monthly	2.2 µg/L	2.5 µg/L
			Maximum Daily	4.4 µg/L 38 g/day	5.1 µg/L 6.8 µg/L 5.7 µg/L 38.6 g/day
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Other** ☒ **Unknown**					
The source of the exceedance is unknown. An investigation is continuing.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
April 2013	001-1	Ammonia	Maximum Instantaneous	7.99 µg/L	13.5 µg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The cause of the exceedance is unknown, but could be due to an imbalance in the nutrient/organic loading.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
November 2013	001-1	Ammonia	Average Monthly	1.28 mg/L	1.5 mg/L
			Maximum Daily	5.32 mg/L	7.5 mg/L 9.5 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The cause of the exceedance is due to a temporary imbalance of the nutrient added to the WWTP versus the amount of organic loading. In addition, the population of nitrifying bacteria didn't adequately consume the ammonia.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
April 2014	001-1	Ammonia	Maximum Daily	5.32 mg/L	7.1 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The cause of the exceedance was due to a nutrient imbalance that slowed the uptake of Ammonia in the Aeration Basin. Modified controls to better respond to elevated levels were implemented.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
April 2014	002-1	Aquatic Toxicity *Daphnia pulex*	Maximum Daily	≥90% survival	66% survival
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Other** ☒ **Unknown**					
The cause of the limit violation is unknown. An additional sample was collected prior to end of the month and that sample result was 100% survival.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
August 2014	001-1	Aluminum	Average Monthly	0.071 mg/L	0.113 mg/L
			Maximum Daily	0.143 mg/L	0.150 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The cause of the exceedance is due to use of the polyaluminum chloride-based salts to control Phosphorus. The use of the salts will be better managed going forward.					

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MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
September 2014	001-1	Aluminum	Average Monthly	0.071 mg/L	0.130 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The cause of the exceedance is due to use of the polyaluminum chloride-based salts to control Phosphorus. The use of the salts will be better managed going forward.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
October 2014	001-1	Aluminum	Average Monthly	0.071 mg/L	0.120 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The cause of the exceedance is due to use of the polyaluminum chloride-based salts to control Phosphorus. The use of the salts will be better managed going forward.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
November 2014	001-1	Aluminum	Average Monthly	0.071 mg/L	0.97 mg/L
			Maximum Daily	0.143 mg/L	0.6 mg/L 1.76 mg/L 0.54 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The cause of the exceedance is due to use of the polyaluminum chloride-based salts to control Phosphorus. The use of the salts will be better managed going forward.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
November 2014	001-1	TSS	Average Monthly	30 mg/L	34 mg/L
			Maximum Daily	50 mg/L 435 kg/day	70 mg/L 114 mg/L 518 kg/day
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The exceedance was caused by a number of different factors related to the biological operations of the WWTP.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
December 2014	001-1	Aluminum	Average Monthly	0.071 mg/L	0.19 mg/L
			Maximum Daily	0.143 mg/L	0.19 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
The cause of the exceedance is due to use of the polyaluminum chloride-based salts to control Phosphorus. The use of the salts will be better managed going forward.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
February 2015	001-1	Bis(2-ethylhexyl) phthalate	Maximum Daily	4.4 µg/L 38 g/day	10 µg/L 54 g/day
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Other** ☒ **Unknown**					
The Permittee is evaluating the sources of Bis(2-ethylhexyl) phthalate.					

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MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
June 2015	001-1	Acrylonitrile	Average Monthly	0.25 µg/L 2.2 g/day	7.8 µg/L 35.7 g/day
			Maximum Daily	0.36 µg/L 3.2 g/day	7.8 µg/L 35.7 g/day
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Other** ☒ **Unknown**					
A number of items were investigated relative to this exceedance (i.e., Cyro's operations, laboratory procedures, WWTS operations, etc.) but no cause was identified.					

MONTH/YEAR	DSN	PARAMETER VIOLATED	TYPE OF LIMIT	PERMITTED LIMIT	REPORTED VALUE
August 2015	001-1	Phosphorus	Average Monthly	1.0 mg/L	1.2 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Other** ☐ **Unknown**					
Both Formic Acid and Phosphoric Acid are used for neutralization. Internal procedures require the use of Formic Acid over Phosphoric Acid. During August 2015, the inventory of Formic Acid was depleted due to an unusual amount of vessel clean-ups and this resulted in the use of more Phosphoric Acid than normal.					

Based on a review of Allnex's DMRs from June 2011 to present, the following operational, monitoring, or reporting violations were identified:

- ***April 2012***: The Nitrate samples analyzed during the last two weeks in April for DSN 001-1 and DSN 001A were not useable due to an equipment error. This also effected reporting requirements for Total Nitrogen.

- ***May 2012***: One of the three weekly samples for BOD_5 for DSN 001A is missing due to a data loss during a computer upgrade.

- ***June 2012***: The Acetonitrile sample for DSN 001-I was held beyond the acceptable hold time.

- ***January 2013***: The Total Residual Chlorine tests conducted during the first week in January for DSN 001-1 were not valid due to a test equipment malfunction. Two sets of data were run on the second week.

XI. OUTSTANDING ENFORCEMENT (RELATED TO WASTEWATER DISCHARGES):

- NOV WR IN 15 003 was issued to the Permittee on March 30, 2015 for permit limitation violations from April 2014 to December 2014. The NOV was closed on June 25, 2015.
- Stipulation for Judgment (No HHD-CV-13-6039473-S) which addressed spills and effluent violations was entered on May 7, 2014.

XII. SPILL HISTORY

There have been a number spills/releases since permit issuance (May 2011), ranging from 5 gallons to 6,500 gallons. The Permittee continues to work on steps to reduce/eliminate the spills/releases.

XIII. EFFLUENT GUIDELINES

As it relates to this proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal of CT0000086.

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XIV. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

As it relates to this proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal of CT0000086, except for Subparagraph A:

CONVENTIONAL POLLUTANTS:

BOD_5 and TSS: Process wastewaters associated with the new products are subject to Subparts D/E of 40 CFR 414. However, no adjustment is necessary to either the BOD_5 and TSS limits in the existing permit since these limits were based on Secondary Treatment Guidelines.

TOXIC POLLUTANTS:

OCPSF Pollutants: Process wastewaters associated with the new products are subject to Subpart I of 40 CFR 414. The ratio of OCPSF Flow to Total Flow in the existing permit vs. the ratio of OCPSF Flow to Total Flow considering the new process would not require any modification to the technology-based OCPSF limits in the existing permit. In addition, none of the limits associated with the OCPSF pollutants that were based on water-quality need to be modified.

NON-CONVENTIONAL POLLUTANTS:

Tetrahydrofuran has been identified as a by-product associated with the new/modified products. This pollutant is now added as a monitoring parameter to DSN 001-1. Neither state nor federal numeric water quality criteria exist for Tetrahydrofuran; monitoring only conditions for Tetrahydrofuran are included in the permit.

FREQUENCY:

The proposed frequency for the new monitoring is Monthly.

XVIII. SPECIAL CONDITIONS/COMPLIANCE SCHEDULES

NPDES Permit CT0000086 contains several Special Conditions/Compliance Schedules. The Permittee has provided the Department with information relative to Special Conditions/Compliance Schedules and this has resulted in the need for certain modifications to the NPDES permit:

- Footnote 3 in Table A in the existing permit and Remark 4 of Table G in the existing permit include a requirement that the Permittee evaluate the lowest achievable ML, by test method, for a number of different parameters in the permit (i.e., those parameters with MLs identified as "TBD"). This evaluation has been performed and the following MLs and test methods are proposed:

DSN 001-1

POLLUTANT	TEST METHOD	METHOD APPROVED IN 40 CFR 136	PROPOSED ML FROM MDL STUDY RESULTS
Acetone	624	NO*	5 µg/L
Bisphenol A	ASTM 7065	YES	40 µg/L***
Chlorine, Total Residual	4500-Cl G	YES	11 µg/L
Cresol, m & p	625	NO**	10 µg/L
Ethanol	8015	NO*	1 mg/L
Isopropanol	8015	NO*	1 mg/L
Lead, Total	200.8	YES	0.1 µg/L
Methanol	8015	NO*	0.5 mg/L
Methyl ethyl ketone	624	NO	2 µg/L
Nonylphenol	ASTM 7065	YES	20 µg/L
Propylene glycol	1671M	NO	25 mg/L
Silver, Total	200.8	YES	0.2 µg/L
tert-Butyl alcohol	8015	NO*	1 mg/L

*Approved for Pharmaceutical only
** Approved for Centralized Waste Treatment only (p Cresol)
*** The results of the MDL study indicated that a matrix interference was present resulting in an increase in the method-specified MDL (of 0.3 µg/L). No information was provided regarding whether an alternative test method could be used.

DSN 002-1

POLLUTANT	TEST METHOD	METHOD APPROVED IN 40 CFR 136	PROPOSED ML FROM MDL STUDY RESULTS*
Chlorine, Total Residual	4500-Cl G	YES	11 µg/L
Lead, Total	200.8	YES	0.1 µg/L

*No MDL Study provided for TRC

The MLs noted above will replace the "TBD" in the permit.

- Section 10(A) of the existing permit requires the Permittee to combine sub-discharges DSN 001-G and DSN 001-H into one consolidated monitoring point, now known as DSN 001-I. This work was completed in 2011 and was subsequently approved. Section 10(A) of the permit can now be deleted.

- Section 10(B) of the existing permit requires the Permittee to submit a completed Attachment O for the consolidated monitoring point, DSN 001-I. The certified information provided on the Attachment O did not differ from the previously submitted information. No changes in the monitoring parameters for DSN 001-I are necessary. Section 10(B) of the permit can now be deleted.

- Section 10(C) of the existing permit requires the Permittee to provide a thorough and complete identification to the Commissioner of the name of each raw material that is expected to be used or present in each final product, intermediate, byproduct, chemical additive, or treatment substance. The Permittee provided two lists: one for Cytec and one for Cyro. The revised list for Cyro included "Acetonitrile", which was not on the prior lists provided. Acetonitrile is now incorporated as a monitoring parameter for DSN 001-1 and DSN 001-I. Section 10(C) of the permit can now be deleted.

- Section 10(F) of the existing permit requires that certain actions be performed relative to "Acrylamide" in the DSN 001-1 discharge. First, it requires that the Permittee develop human health based numeric ambient water quality criteria for Acrylamide, consistent with 40 CFR 122.44(d)(vi), so that effluent limitations can be developed by the Department. Second, it requires that the Permittee take steps, if necessary, in order to comply with the effluent limits developed from the criteria.

  EPA's *Technical Support Document for Water Quality-Based Toxics Control* ("TSD") identifies a process for developing human health criteria in the absence of state or federal criteria; these are referred to as Reference Ambient Concentrations ("RAC"). In July 2011, the Permittee (Cytec) submitted documentation to the Department proposing a numeric human health RAC for Acrylamide. However, the value that was proposed was developed using certain assumptions that the Department disagreed with. First, Cytec alleged that Acrylamide was not a carcinogen, despite the information in the Integrated Risk Information System ("IRIS"), 2010 to the contrary. However, Cytec also proposed an alternative RAC assuming that Acrylamide was a carcinogen. In that case, it proposed a value using assumptions that were not consistent with those used by Department in developing the most recent water quality criteria. The Department disapproved of the proposed values.

  In June 2015, Allnex, Department staff, as well as staff from the Department of Public Health, met to resolve the outstanding criteria and agreed on the following assumptions:

ACRYLAMIDE

$$RAC_{organisms} = RSD * \left[\frac{BW}{FI * BAF}\right]$$

Oral Slope Factor	=	0.51 /(mg/kg-day)	*IRIS, 2010*
Risk Exposure Level	=	0.000001	*Risk Exposure Level used by Connecticut for the last update to WQS*
Risk Specified Dose (RSD)	=	0.000002 mg/kg-day	*Risk Exposure Level ÷ Oral Slope Factor*
Body Weight (BW)	=	80 kg	*Value used by EPA for the 2015 update to Human Health criteria*
Fish Intake (FI)	=	0.0175 kg/day	*Value used by Connecticut for the last update to WQS*
Bioaccumulation Factor (BAF)	=	0.897 L/kg	*Arnot & Gobas, 2003 (upper trophic)*
RAC $_{organisms}$	=	**0.0100 mg/L**	
	=	**10.0 µg/L**	

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A reasonable potential analysis was conducted on the DSN 001-1 discharge as it relates to Acrylamide and it was determined that the discharge has the reasonable potential to cause an excursion of the RAC (i.e., the concentration of Acrylamide in the effluent is in excess of the RAC). [See Attachment 2].

Permit limits were developed consistent with the TSD using the RAC of 10.0 µg/L. This resulted in permit limits of: 10.0 µg/L (average monthly) and 20.1 µg/L (maximum daily). [See Attachment 2]. The Permittee cannot consistently comply with these permit limits until steps are taken to reduce the level of Acrylamide in its discharge. The Permittee estimates that it will take two years to implement these steps. Therefore, the final compliance schedule set forth in Section 10(F)(6) will be changed to March 1, 2018. Until the steps are implemented, the Permittee will be required to comply with interim limits based on performance. [See Attachment 3].

- Section 10(H) of the existing permit requires that the Permittee achieve compliance with the Phosphorus limits in the permit. The final ("Step 2") limit could not be met at permit issuance, so the Permittee was given an interim ("Step 1") limit. The Step 2 limit was developed from the watershed specific nutrient management strategy: http://www.ct.gov/deep/lib/deep/water/water_quality_standards/p/2011interimphosfactsheet.pdf and the Step 1 limit is a technology-based limit. Since permit issuance, the Permittee has undertaken steps in an effort to comply with the Step 2 limit. Specifically, it has obtained a consultant, evaluated alternatives to achieve compliance, and implemented a technology to achieve compliance (i.e., precipitation of the Phosphorus using an aluminum-based salt). However, the technology selected has failed to consistently produce effluent quality that meets the final permit limit. The Permittee indicates that it will need to further investigate other alternatives and implement another technology. Therefore the final compliance schedule set forth in Section 10(H)(3) will be changed to April 1, 2022. In addition, the Step 2 limits shall also be expressed as both concentration-based and mass-based, consistent with the WPCFs that have been assigned seasonal permit loads and performance levels through the interim phosphorus strategy. These limits have been determined as follows:

  Allnex has been assigned a performance level of 0.1 mg/L and a permit load of 1.49 lbs/day. Translating the performance level (i.e., the Long Term Average, "LTA") into average monthly limits and maximum daily limits by using the LTA multipliers in Table 5-2 in the TSD (assuming a 95th percentile probability for the average monthly limit and the 99th percentile probability for the maximum daily limit) results in the following limits:

  Average Monthly (@ n =12): 0.1 * 1.2 = 0.12 mg/L
  Maximum Daily: 0.1 * 3.11 = 0.31 mg/L

  In addition to the extension of the final compliance schedule, the Permittee also requests that the concentration-based limit be expressed as 2-month rolling average as this type of averaging is included in the NPDES permits for those WPCFs that are subject to the interim phosphorus strategy. The Step 1 limit is now expressed as 2-month rolling average.

- Section 10(I) of the existing permit requires that the Permittee relocate its outfall location for DSN 001-1 from the un-named tributary of the Quinnipiac River directly into the Quinnipiac River. Upon completion of the relocation project, the Permittee was required to conduct a dye dispersion study to confirm the extent of the mixing zone that corresponds to the dilution it had previously received for DSN 001-1, 3.8:1. The Permittee completed the piping relocation in fall 2014. The confirmatory dye study was completed on September 2, 2015. During the duration of the dye study, the average effluent flow from DSN 001-1 was approximately 1,240,000 (862 gpm) and the average Quinnipiac River flow was 52.8 cfs (23,710 gpm) as measured at USGS Gage 01196500. The results of the dye study indicate that a dilution factor of 3.8:1 is achieved within approximately 10 feet of the discharge point. Modeling was also conducted to project where the 3.8:1 dilution would be met under average and maximum permitted effluent conditions at a 7Q10 river flow. Results of this modeling indicate that at an average (2,298,333 gpd) effluent flow and a maximum (4,367,030 gpd) effluent flow and a river flow of 46 cfs (7Q10 flow @ USGS Gage + Wallingford POTW flow + Allnex flow), dilution of 3.8:1 is met within 70 feet of the discharge point; full mixing is achieved within 270 feet (at the average effluent flow) and 310 (at the maximum effluent flow). Allnex is located approximately 1,300 feet upstream of the nearest NPDES discharger, Nucor Steel.

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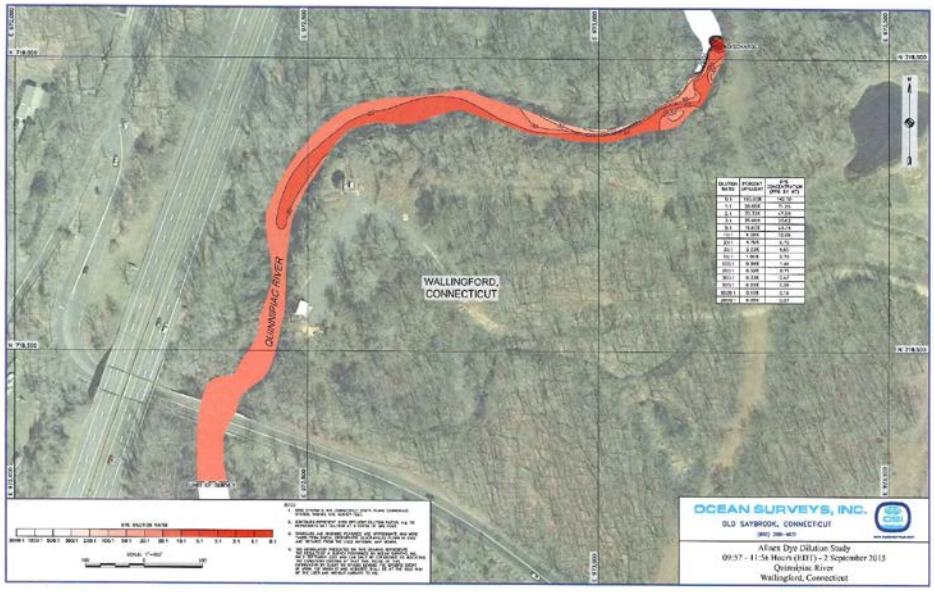

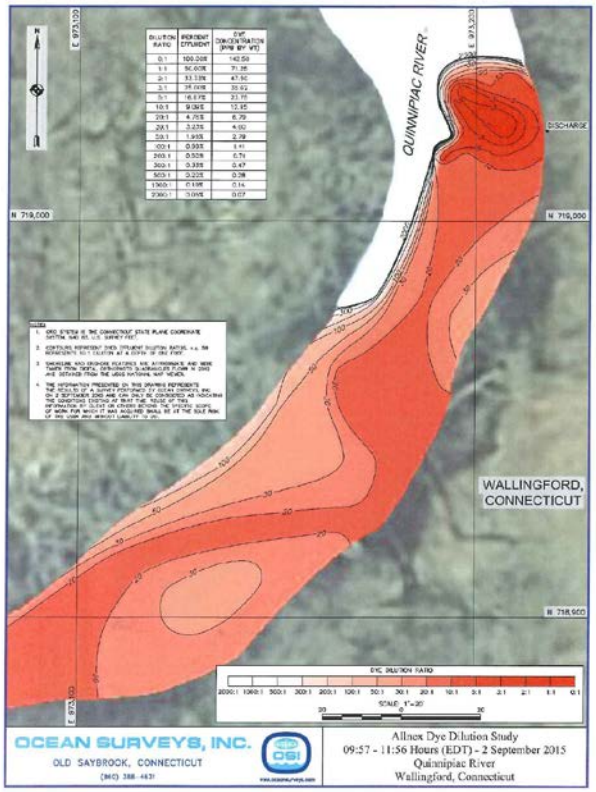

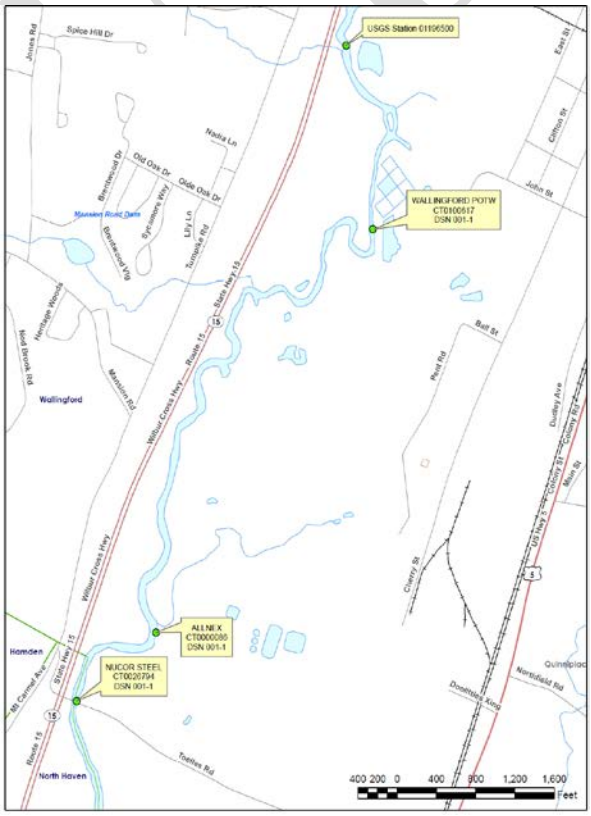

Gage	Period	Days in Record	Zero/Missing	7Q10
01196500 - QUINNIPIAC RIVER AT WALLINGFORD, CT	1931/01/01 - 2015/01/01	30,681	0/0	34.5

DFLOW 4.0

No changes are proposed to the permit based on the results of the dye study. The Permittee has completed all actions required by Section 10(I). Therefore, Section 10(I) is removed from the permit.

XIX. SUMMARY OF ALL CHANGES TO PERMIT

In addition to the changes to the permit necessary for the proposed new operation, other changes are proposed to address certain corrections/revisions. All of the proposed changes are as follows:

PERMIT PAGE NUMBER	CHANGE	REASON
3	NOAEL is removed from the Definitions; Definitions of "ND" and "NR" included in Tables A-G	Definition of NOAEL no longer necessary
4	New paragraph 3(C)	---
6-18	Table A: Identifies pollutants receiving dilution; NetDMR codes added, New Footnotes 5, 6 and 11; New Remark 2 added; Footnotes 4, 7 and 8 revised; existing Remark 5 removed	Miscellaneous formatting changes
6-18	Table A: Acute Toxicity species in Table A are corrected	RCSA 22a-430-3(j)(7)(A)(iii)(a) specifies the test species that must be used for freshwater acute toxicity testing
6-18	Table A: The sample type for: Butanol, Ethanol, Isobutanol, Isopropanol, Methanol, Tert-Butyl Alcohol is changed from Daily Composite to Grab Sample Average	Grab Sample Average is the appropriate sample type for the method used to analyze these pollutants
6-18	Table A: Mass-based limits are included for: Aluminum, Ammonia, Total Residual Chlorine, Formaldehyde, Isophorone, PCBs, and Silver	RCSA 22a-430-4(*l*)(4)(A)(xiv) requires limits to be expressed in mass
6-18	Table A: Acetonitrile is added as a monitoring parameter	Resolution of the Special Condition concerning the Raw Materials/ Intermediaries/By-Products List
6-18	Table A: Tetrahydrofuran is added as a monitoring parameter	Due to new/revised product manufacturing operation
6-18	Table A: Interim and Final Acrylamide limits are included in the permit. Footnote 9 is added.	Partial Resolution of the Compliance Schedule concerning Acrylamide
6-18	Table A: Footnote 10 is added.	Partial Resolution of the Compliance Schedule concerning Phosphorus
6-18	Table A: MLs included in Table A for those pollutants previously noted as "TBD". Footnote 4 revised	Resolution of MDL Study
19-20	Table B: The sample type for: Butanol, Ethanol, Isobutanol, and Methanol is changed from Daily Composite to Grab Sample Average	Grab Sample Average is the more appropriate sample type for the method used to analyze these pollutants
19-20	Table B: New Remark 1; Revised Remarks 2 & 3; NetDMR codes added	Miscellaneous format changes
21	Table C: New Remark 1; NetDMR codes added	Miscellaneous format changes
22	Table D: New Remark 1; NetDMR codes added	Miscellaneous format changes
23	Table E: New Remark 1; NetDMR codes added	Miscellaneous format changes
24-27	Table F: Acetonitrile added as a monitoring parameter	Resolution of the Special Condition concerning the Raw Materials/ Intermediaries/By-Products List
24-27	Table F: Added Remark 2; NetDMR codes added	Miscellaneous format changes
28-29	Table G: The endpoint for Aquatic Toxicity is changed from % Survival @ CTC of 100% to $LC_{50} \geq 100\%$	The recommended effluent toxicity test (per *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*) is a dilution series with an endpoint expressed as an LC_{50} or NOAEL
28-29	Table G: Mass-based limits are included for: Total Residual Chlorine and Zinc	RCSA 22a-430-4(*l*)(4)(A)(xiv) requires limits to be expressed in mass
28-29	Table G: MLs included in Table G for those pollutants previously noted as "TBD". Footnote 4 revised	Resolution of MDL Study
28-29	Table G: Added Remark 2; Revised Remark 3; NetDMR codes added	Miscellaneous format changes
30-31	Section 6: Changes to address revised format; Tetrahydrofuran added to 6(A)(2) list	Miscellaneous format changes
31-35	Section 7(A) and 7(B): Reformatted	Miscellaneous format changes
35-36	Section 8: Revised for NetDMR Reporting Requirements	New requirement to electronically report

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PERMIT PAGE NUMBER	CHANGE	REASON
37-41	Section 10: 10(A), 10(B) and 10(C) removed; 10(F) revised to reflect remaining provisions; 10(H) revised to reflect new compliance date; 10(I) removed.	Update status of Special Conditions/Compliance Schedules
43-44	Added Attachment A	---

XVI. ANTI-BACKSLIDING

As it relates to the proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal of CT0000086.

XVII. ANTIDEGRADATION

As it relates to the proposed permit modification, no changes are necessary to the Fact Sheet developed for the last renewal of CT0000086, except for the following:

The section of the Quinnipiac River that the Permittee discharges into, CT5200-00_02, is classified as a "B" water. This is a Tier 1 waterbody. The designated uses for this waterbody are: habitat for fish and other aquatic life and wildlife; recreation; navigation; and industrial and agricultural water supply. There are impaired designated uses associated with this segment for: 1) habitat for fish, other aquatic life, and wildlife due to unknown causes; and 2) recreation, due to *Escherichia coli*.

The Permittee is proposing to engage in the manufacture of modified/new products at the facility. However, these products are similar in nature to those already manufactured and will be produced on existing equipment. One new chemical, Tetrahydrofuran, will be generated during the manufacturing process. Based on the expected volume of the products manufactured and considering the treatment efficiency of the wastewater treatment system (80-99%) for organic compounds, it is expected that there will not be a discharge beyond permit conditions.

Therefore, it is expected that the proposed activity will not cause adverse effects to the existing uses or the water quality of the receiving stream. This evaluation is consistent with a Tier 1 review.

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