Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

NPDES PERMIT MODIFICATION

issued to

ReEnergy Sterling CT Limited Partnership
10 Exeter Drive
Sterling, CT 06377

Location Address:

10 Exeter Drive
Sterling, CT 06377

Permit ID: CT0026972

Receiving Stream: Moosup River

Stream Segment Number: CT3500-00_03

Permit Expires: January 17, 2017

SECTION 1: GENERAL PROVISIONS

(A) This permit modification is issued in accordance with section 22a-430 of Chapter 446k, Connecticut General Statutes ("CGS"), and Regulations of Connecticut State Agencies ("RCSA") adopted thereunder, as amended, and section 402(b) of the Clean Water Act, 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 an N.P.D.E.S. permit program.

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

Section 22a-430-3 General Conditions

(a) Definitions
(b) General
(c) Inspection and Entry
(d) Effect of a Permit
(e) Duty
(f) Proper Operation and Maintenance
(g) Sludge Disposal
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Section 22a-430-4 Procedures and Criteria

(a) Duty to Apply
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(d) Preliminary Review
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(p) Permit revocation, denial or modification
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(r) Secondary Treatment Requirements
(s) Treatment Requirements for Metals and Cyanide
(t) Discharges to POTWs - Prohibitions

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

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

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

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

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

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

SECTION 2: DEFINITIONS

(A) The definitions of the terms used in this permit shall be the same as the definitions contained in section 22a-423 of the CGS and section 22a-430-3(a) and 22a-430-6 of the RCSA, except for "No Observable Acute Effect Level (NOAEL)" which is redefined below.

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

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

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

"Critical Test Concentration (CTC)" means the specified effluent dilution at which the Permittee is to conduct a single-concentration Aquatic Toxicity test.

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

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

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

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

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

"mg/l" means milligrams per liter.

"NA" as a Monitoring Table abbreviation means “not applicable”.

"NR" as a Monitoring Table abbreviation means “not required”.

"No Observable Acute Effect Level (NOAEL)" means any concentration equal to or less than the critical test concentration in a single concentration (pass/fail) toxicity test conducted pursuant to section 22a-430-3(j)(7)(A)(i) RCSA demonstrating greater than 50% survival of test organisms in 100% (undiluted) effluent and 90% or greater survival of test organisms at the CTC

"Quarterly", in the context of a sampling frequency, means that a representative sample shall be collected during each of the following periods: January - March, inclusive; April – June, inclusive; July – September, inclusive, and; October – December, inclusive.

"Range During Month" ("RDM"), as a sample type, means the lowest and the highest values of all of the monitoring data for the reporting month.

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

"Semi-Annual" in the context of a sampling frequency, means that a representative sample shall be collected during each of the following periods: January – June, inclusive, and; July – December, inclusive. Semi-annual samples shall be taken at least thirty days apart.

"µg/l" means micrograms per liter.

SECTION 3: COMMISSIONER'S DECISION

(A) The Commissioner, has issued a final determination and found that modification of the existing system or installation of a new system would protect the waters of the state from pollution. The Commissioner’s decision is based on Application No. 201407571 for permit modification received on July 30, 2014 and the administrative record established in the processing of that application.

(B) (1) From the issuance of this permit modification through and including [LAST DAY OF MONTH, MONTH OF PERMIT REISSUANCE], the Commissioner hereby authorizes the Permittee to discharge in accordance with the terms and conditions of Permit No. CT00026972, issued by the Commissioner to the Permittee on [EXISTING ISSUANCE DATE], the previous application submitted by the Permittee on [PREVIOUS APPLICATION RECEIVED DATE], 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, Permit No. CT00026972, issued by the Commissioner to the Permittee on [PREVIOUS ISSUANCE DATE].

(2) From [FIRST DAY OF MONTH, MONTH FOLLOWING PERMIT REISSUANCE] 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 Permit No. CT00026972, issued by the Commissioner to the Permittee on [DATE OF PERMIT ISSUANCE], Application No. 201407571 received by the Department on July 30, 2014, 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, Permit No. CT00026972, issued by the Commissioner to the Permittee on [DATE OF PERMIT ISSUANCE].

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

SECTION 4: GENERAL EFFLUENT LIMITATIONS

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

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

(C) The temperature of any discharge shall not increase the temperature of the receiving stream above 85ºF, or, in any case, raise the normal temperature of the receiving stream more than 4ºF.

SECTION 5: SPECIFIC EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

(A) The discharge shall not exceed and shall otherwise conform to the specific terms and conditions listed below. The discharge is restricted by, and shall be monitored in accordance with, the tables below:

Table A									
Discharge Serial Number: 001-1						**Monitoring Location: 1**			
Wastewater Description: : Stormwater runoff from ReEnergy facility's impervious areas and infiltrating groundwater collected in a 2.2 million gallon retention basin									
Monitoring Location Description: In the Diversion Manhole									
Allocated Zone of Influence (ZOI) : 103,823 gph						**In-stream Waste Concentration (IWC 24 hours):** 5.68 %			
PARAMETER	**UNITS**	**FLOW/TIME BASED MONITORING**				**INSTANTANEOUS MONITORING**			**Minimum Level Test[4]**
		Average Monthly Limit	Maximum Daily Limit	Sample/ Reporting Frequency [2,3]	Sample Type or Measurement to be reported	Instantaneous limit or required range	Sample/ Reporting Frequency [2]	Sample Type or measurement to be reported	
NOAEL Static 48 Hr, Acute Daphnia pulex CTC 38% [5]	%	NA	≥90%	Quarterly	Composite	≥90%	NR	NA	
NOAEL Static 48 Hr, Acute Pimephales promelas CTC 38%[5]	%	NA	≥90%	Quarterly	Composite	≥90%	NR	NA	
LC50 Static 48 Hr Acute Daphnia pulex[5]	%	NA	≥100%	Quarterly	Composite	≥100%	NR	NA	
LC 50 Static 48 Hr, Pimephales promelas [5]	%	NA	≥100%	Quarterly	Composite	≥100%	NR	NA	
Aluminum, total (as Al)	mg/l	0.91	1.83	Monthly	Composite	1.83	NR	NA	*
Barium	mg/l	NA	NA	Semi-Annually	Composite	---	NR	NA	
Cadmium	mg/l	.002	.004	Monthly	Composite	0.004	NR	NA	*
Chlorine, Total Residual	mg/l	NA	NA	Quarterly	Grab Sample Average	---	NR	NA	*
Chromium-Total	mg/l	NA	NA	Quarterly	Composite	---	NR	NA	*
Copper, Total	mg/l	.050	0.093	Monthly	Composite	0.093	NR	NA	*
Duration of discharge (Day of Sample)	Hr	NA	-----	Monthly	Total (Hours)	NA	NR	NA	
Flow rate (Average Daily)[1]	Gpd	150,000	NA	Daily	Total Flow	NA	NR	NA	
Flow, instantaneous	Gpm	---	---	Monthly	Total Flow	NA	NR	NA	
Flow Total (Day of Sample)	Gpd	NA	250,000	Monthly	Total Flow	NA	NR	NA	
Flow, Maximum During 24 hr Period[1]	Gpd	NA	250,000	Daily	Total Flow	NA	NR	NA	
Iron, Total	mg/l	NA	NA	Quarterly	Composite	---	NR	NA	
Lead, Total	mg/l	NA	NA	Quarterly	Composite	---	NR	NA	*
Manganese, Total	mg/l	NA	NA	Quarterly	Composite	---	NR	NA	
Nickel, Total	mg/l	NA	NA	Quarterly	Composite	---	NR	NA	*
Nitrogen, Ammonia Total (as N)	mg/l	NA	NA	Quarterly	Composite	---	NR	NA	
Nitrogen, Nitrate Total (as N)	mg/l	NA	NA	Quarterly	Composite	---	NR	NA	
Oil and Grease, Total	mg/l	NA	NA	Monthly	Grab Sample Average	10.0	NR	NA	
Phosphorus, Total (as P)	mg/l	---	---	Quarterly	Composite	NA	NR	NA	
pH, Day of Sampling	S.U.	NA	NA	NR	NA	6.0 - 9.0	Monthly	RDS	
pH, Minimum	S.U.	NA	NA	NR	NA	6.0	Continuous	Continuous	
pH, Maximum	S.U.	NA	NA	NR	NA	9.0	Continuous	Continuous	
Total Suspended Solids	mg/l	---	100	Monthly	Composite	100	NR	NA	
Zinc, Total	mg/l	0.528	1.060	Monthly	Composite	1.060	NR	NA	*

Table A Footnotes:

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

[2] The first entry in this column is the 'Sample Frequency'. If this entry is not followed by a 'Reporting Frequency' 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] For each calendar month, the Permittee must submit DMR indicating "SAMPLING OPTIONAL" except for the months that sampling occurs, in which case the Permittee shall report the result of the wastewater analyses on the DMR.

[4] Minimum Level Test refers to revised Section 7(A)(3) of the existing permit.

[5] All analysis shall be on the same sample.

Table A Remarks:

a) The Permittee shall perform all Best Management Practices (BMPs) described in the Operation and Maintenance Plan.

b) A composite sample shall consist of three proportionally combined aliquot samples taken at the beginning, middle and end of a one-day discharge.

c) Please refer to Sections 6(A) and (B) of this modified permit.

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

(2) 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 personnel, the Permittee, or other parties.

SECTION 6: SPECIAL CONDITION

(A) The discharge shall not cause or result in erosion at the site, the drainage swale or the Moosup River.

(B) The Permittee shall maintain the retention basin level at or below a level of 508.5 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29). The Permittee shall immediately notify the Commissioner of any conditions that may occur to prevent the Permittee from maintaining the level of the water in the retention basin at or below 508.5 feet above NGVD 29.

(C) The Permittee is authorized to only discharge stormwater runoff from an inactive industrial site. The Permittee will be required to obtain a permit prior to restarting or initiating production activities to authorize the discharge of stormwater runoff from an active industrial site.

SECTION 7: SAMPLE COLLECTION, HANDLING AND ANALYTICAL TECHNIQUES

(A) Chemical Analysis

(1) Chemical analyses to determine compliance with effluent limits and conditions established in this permit shall be performed using the methods approved by the Environmental Protection Agency pursuant to 40 CFR 136 unless an alternative method has been approved in writing in accordance with 40 CFR 136.4 or as provided in section 22a-430-3(j)(7) of the RCSA. Chemicals which do not have methods of analysis defined in 40 CFR 136 shall be analyzed in accordance with methods specified in this permit.

(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.

(3) The Minimum Levels specified below represent the concentrations at which quantification must be achieved and verified during the chemical analyses for the parameters identified in Section 5 Table A. Analyses for these parameters must include check standards within ten percent of the specified Minimum Level or calibration points equal to or less than the specified Minimum Level.

Parameter	Minimum Level
Aluminum	10.0 µg/L
Cadmium	0.5 µg/L
Chlorine, total residual	20.0 µg/L
Chromium	5.0 µg/L
Copper	5.0 µg/L
Lead	5.0 µg/L
Nickel	5.0 µg/L
Zinc	10.0 µg/L

(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.

(5) Effluent analyses for which quantification was verified during the analysis at or below the minimum levels specified in this section and which indicate that a parameter was not detected shall be reported as "less than x"

where 'x' is the numerical value equivalent to the analytical method detection limit for that analysis.

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

(B) Acute Aquatic Toxicity Test

(1) Samples for monitoring of Aquatic Toxicity shall be collected and handled as prescribed in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA/821-R-02-012).

(a) Composite samples shall be chilled as they are collected. Grab samples shall be chilled immediately following collection. Samples shall be held at 4 degrees Centigrade until Aquatic Toxicity testing is initiated.

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

(c) Chemical analyses of the parameters identified in Section 5 Table A shall be conducted on an aliquot of the same sample tested for Aquatic Toxicity.

(i) At a minimum, pH, specific conductance, total alkalinity, total hardness, and total residual chlorine shall be measured in the effluent sample and, during Aquatic Toxicity tests, in the highest concentration of test solution and in the dilution (control) water at the beginning of the test and at test termination. If Total Residual Chlorine is not detected at test initiation, it does not need to be measured at test termination. Dissolved oxygen, pH, and temperature shall be measured in the control and all test concentrations at the beginning of the test, daily thereafter, and at test termination.

(d) Tests for Aquatic Toxicity shall be initiated within 24 hours of sample collection.

(2) Monitoring for Aquatic Toxicity to determine compliance with the permit limit on Aquatic Toxicity (invertebrate) above shall be conducted for 48-hours utilizing neonatal Daphnia pulex (less than 24-hours old)

(3) Monitoring for Aquatic Toxicity to determine compliance with the permit limit on Aquatic Toxicity (vertebrate) above shall be conducted for 48-hours utilizing larval Pimephales promelas (1-14 days old with no more than 24-hours range in age).

(4) Tests for Aquatic Toxicity shall be conducted as prescribed for static non-renewal acute tests in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA/821-R-02-012), except as specified below.

(a) For Aquatic Toxicity Limits and for monitoring only conditions, expressed as an NOAEL value, Pass/Fail (single-concentration) tests shall be conducted at a specified Critical Test Concentration (CTC) equal to the Aquatic Toxicity Limit, or 100% in the case of monitoring only conditions, as prescribed in section 22a-430-3(j)(7)(A)(I) of the Regulations of Connecticut State Agencies, except that five replicates of undiluted effluent and five replicates of effluent diluted to the CTC shall be included.

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

(c) Copper nitrate shall be used as the reference toxicant in tests with freshwater organisms.

(d) Synthetic freshwater prepared with deionized water adjusted to a hardness of 50 mg/L (plus or minus 5 mg/L) as CaCO3 shall be used as dilution water in tests with freshwater organisms.

(5) Compliance with limits on Aquatic Toxicity shall be determined as follows:

(a) For limits expressed as an NOAEL value, compliance shall be demonstrated when the results of a valid pass/fail 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.

SECTION 8: REPORTING REQUIREMENTS

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

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

(B) Complete and accurate aquatic toxicity test data, including percent survival of test organisms in each replicate test chamber, 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 if compliance with a limit on Aquatic Toxicity is based on toxicity limits based on actual flows described in Section 7, shall be entered on the Aquatic Toxicity Monitoring Report form (ATMR) and sent to the Bureau of Water Protection and Land Reuse at the following address. The ATMR shall be received at this address by the last day of the month following the month in which samples are collected.

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

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

(D) NetDMR Reporting Requirements

(1) Prior to one-hundred and eighty (180) days after the issuance of this permit, the Permittee may either submit monitoring data and other reports to the Department in hard copy form or electronically using NetDMR, a web-based tool that allows Permittees to electronically submit discharge monitoring reports (DMRs) and other required reports through a secure internet connection. Unless otherwise approved in writing by the Commissioner, no later than one-hundred and eighty (180) days after the issuance of this permit the Permittee shall begin reporting electronically using NetDMR. Specific requirements regarding subscription to NetDMR and submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

(a) Submittal of *NetDMR Subscriber Agreement*

On or before fifteen (15) days after the issuance of this permit, the Permittee and/or the person authorized to sign the Permittee's discharge monitoring reports ("Signatory Authority") as described in RCSA Section 22a-430-3(b)(2) shall contact the Department at deep.netdmr@ct.gov and initiate the NetDMR subscription process for electronic submission of Discharge Monitoring Report (DMR) information. Information on

NetDMR is available on the Department's website at www.ct.gov/deep/netdmr. On or before ninety (90) days after issuance of this permit the Permittee shall submit a signed copy of the ***Connecticut DEEP NetDMR Subscriber Agreement*** to the Department.

(b) Submittal of Reports Using NetDMR

Unless otherwise approved by the Commissioner, on or before one-hundred and eighty (180) days after issuance of this permit, the Permittee and/or the Signatory Authority shall electronically submit DMRs and reports required under this permit to the Department using NetDMR in satisfaction of the DMR submission requirement in paragraph (A) of this Section of this permit.

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

(c) Submittal of NetDMR Opt-Out Requests

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

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

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

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

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

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

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

This permit modification revises and supersedes NPDES Permit No. CT0026972 issued on January 18, 2012.

This permit modification is hereby issued on

DRAFT
Robert J. Klee
Commissioner
Department of Energy and Environmental Protection

MS/OF

cc: Ed Finger, WPED- Enforcement

WASTEWATER DISCHARGE PERMIT: DATA TRACKING AND TECHNICAL FACT SHEET

Permittee: ReEnergy Sterling CT Limited Partnership

PERMIT, ADDRESS, AND FACILITY DATA

PERMIT #: CT0026972 *APPLICATION #s: 201407571*

Mailing Address:						*Location Address:*					
Street:	*10 Exeter Drive*					*Street:*	*10 Exeter Drive*				
City:	*Sterling*	*ST:*	*CT*	*Zip:*	*06377*	*City:*	*Sterling*	*ST:*	*CT*	*Zip:*	*06377*
Contact Name:	*Michael LaPorte*					*DMR Contact*	*Michael LaPorte*				
Phone No.:	*(860) 564-7000*					*Phone No.:*	*(860) 230-2034*				
Contact E-mail:	*mlaporte@reenergyholdings.com*					*DMR Contact E-mail:*	*mlaporte@reenergyholdings.com*				

PERMIT INFORMATION

DURATION *5 YEAR X* *10 YEAR* *30 YEAR*

TYPE *New* *Reissuance* *Modification X*

CATEGORIZATION *POINT (X)* *NON-POINT ( )* *GIS #* ———

NPDES (X) *PRETREAT ()* *GROUND WATER (UIC) ( )* *GROUND WATER (OTHER) ( )*

NPDES MAJOR (MA)
NPDES SIGNIFICANT MINOR or PRETREAT SIU (SI)
NPDES or PRETREATMENT MINOR (MI) X

PRETREAT SIGNIFICANT INDUS USER (SIU)
PRETREAT CATEGORICAL (CIU)

POLLUTION PREVENTION MANDATE *ENVIRONMENTAL EQUITY ISSUE*

SIC CODE: 4931 (Electric and other services combined)

COMPLIANCE ISSUES

COMPLIANCE SCHEDULE *YES* *NO X*

POLLUTION PREVENTION *TREATMENT REQUIREMENT* *WATER CONSERVATION*

WATER QUALITY REQUIREMENT *REMEDIATION* *OTHER*

IS THE PERMITTEE SUBJECT TO A PENDING ENFORCEMENT ACTION? NO YES X
On September 18, 2014, DEEP issued Consent Order CO WR IN 14001 to address the elevated levels of zinc in the facility's stormwater and ReEnergy's failure to properly operate and maintain stormwater storage and control system at the facility, including the retention basin between October 2011 and December 2011. The consent order is still open and a consent order modification is pending to update injunctive relief provisions.

OWNERSHIP CODE

Private X *Federal* *State* *Municipal (town only)* *Other public*

DEEP STAFF ENGINEER: *Oluwatoyin Fakilede*

PERMIT FEES

Discharge Code	*DSN Number*	*Annual Fee*
1080000	*001 -1*	*$ 2,912.50*

FOR NPDES DISCHARGES

Drainage basin Code: *3500* ***Water Quality Standard:*** *B*

NATURE OF BUSINESS GENERATING DISCHARGE

ReEnergy Sterling CT Limited Partnership was engaged in primarily providing electric services in combination with other services. ReEnergy was a waste to energy facility that used waste tires as a fuel source. The process generated high-pressure steam, which in turn was used to generate electrical power sold directly to the ISO New England Wholesale Market. The facility temporarily ceased energy generation activities in October 2013.

PROCESS AND TREATMENT DESCRIPTION (by DSN)

DSN 001-1: This discharge consists of stormwater runoff and incidental infiltrating groundwater collected in a 2.2 million gallon retention basin. The runoff area of 12.2 acres consists of 9.3 acres of impervious area and 2.9 acres of retention basin area and grass covered embankments. Catch basins on site will use cloth filters for solids removal prior to discharge to the retention basin. The stormwater will undergo equalization in the retention basin before it is pumped out and injected with chemicals (when necessary) for precipitation and flocculation. It will then undergo settling in an 110,000 gallon settling basin prior to filtration and final pH adjustment. The pretreated stormwater in the settling basin will be pumped and discharged into the bypass valve chamber that ties into a drainage swale, for gravity discharge to the Moosup River. Down gradient to Reenergy's facility, there is a groundwater seep that discharges into the same drainage swale. See General Comment section of this fact sheet for further explanation.

RESOURCES USED TO DRAFT PERMIT

__ *Federal Effluent Limitation Guideline*_____
name of category

__ *Performance Standards*

__ *Federal Development Document*
Name of category

__ *Treatability Manual*

X *Department File Information*

X *Connecticut Water Quality Standards*

X *Anti-degradation Policy*

__ *Coastal Management Consistency Review Form*

X *Other – Explain (See General Comments)*
[1]Ahearn, E.A., 2008, Flow Durations, Low-Flow Frequencies, and Monthly Median Flows for Selected Streams in Connecticut through 2005: U.S. Geological Survey Scientific Investigations Report 2007–5270, 33 p.
[2] United States Department of Agriculture, Natural Resources Conservation Service (2008), Soil Survey of the State of Connecticut.
[3]Carsel, R. F. and Parrish, R. S. (1988), "Developing Joint Probability Distributions of Soil Retention", Water Resources Research, 24 (5): 755-769.
[4] U.S. Geological Survey: Open-File Report 91-481 (1992), "The Stratigraphy and Hydraulic Properties of Tills in Southern New England", pp:36.

BASIS FOR LIMITATIONS, STANDARDS, OR CONDITIONS

X *Case by Case Determination and Best Professional Judgment*
DSN 001 -1: Aluminum (MIL), cadmium (MIL), copper (MIL), Oil and grease, Total (MIL), pH (MIL), total suspended solids (MDL, MIL) and zinc (MIL)

X *In order to meet in-stream water quality (See General Comments)*
Aluminum (AML, MDL), aquatic toxicity (MIL), cadmium (AML, MDL), copper (AML, MDL) and zinc (AML, MDL)

AML:- Average Monthly Limit MDL:- Maximum Daily Limit MIL:- Maximum Instantaneous Limit

GENERAL COMMENTS

In July 2010, ReEnergy completed an expansion of its existing retention basin to retain the runoff that is generated on-site from a 100-year storm. ReEnergy reused the collected stormwater as makeup water for its cooling tower and scrubber. The retention basin system was designed to only discharge if a storm event generates more runoff than a 100 year, 24-hour storm or when the basin is full from previous storm(s). (The discharge would be stormwater bypassing the retention basin, after exhausting the basin's capacity. Water would not be discharged from the basin itself.) Since operations have ceased, ReEnergy no longer uses the stormwater as makeup water. Therefore, in order for the retention basin to maintain a capability of capturing a 100-year, 24-hour storm event, stormwater from the retention basin needs to be discharged routinely. ReEnergy had discharged the stormwater from the retention basin to the sanitary sewer after pretreatment under a Temporary Authorization TA0000174; ReEnergy is currently authorized to discharge the pretreated stormwater to the sanitary sewer under a Miscellaneous General Permit (MGP) No.CTMIU0103. On July 30, 2014, ReEnergy submitted Application No. 2014007571 for permit modification to allow stormwater discharge from its retention basin into the Moosup River following treatment. The MGP will be revoked after this permit modification is issued in accordance with Section 22a-430-3(b)(6)(E) of the Regulations of Connecticut State Agencies (RCSA).

The need for inclusion of water quality based discharge limitations was evaluated consistent with Connecticut Water Quality Standards and criteria, pursuant to 40 CFR 122.44(d). Each parameter was evaluated for consistency with the available aquatic life criteria (acute and chronic) considering the zone of influence allocated to the facility where appropriate. The statistical procedures outlined in the EPA Technical Support Document for Water Quality based Toxics Control (EPA/505/2 90 001) were employed to calculate the need for such limits. Comparison of monitoring data and its inherent variability with the calculated water quality based limits indicates a statistical probability of exceeding such limits. Therefore, water quality based limits were included in the permit for aluminum, cadmium, copper and zinc (the water quality based limits calculation is attached to this fact sheet and labeled Attachment 1).

The existing permit only allows a discharge if a storm event generated more runoff than a 100 year, 24-hour storm. Therefore, the toxicity limits were based on acute in-stream waste concentration (IWC). In this permit modification, the discharge will be more frequent. Therefore, the toxicity limits are based on chronic IWC. As a result of the new IWC, whole effluent toxicity limits were changed from LC50 > 50% to LC50 > 100% and NOAEL > 90% at CTC 38%.

Maximum instantaneous limits for oil and grease, pH and total suspended solids are consistent with the limits in the existing permit. Based on best professional judgment, a maximum daily limit of two-thirds the maximum instantaneous limit was included for total suspended solids, consistent with section 22a-430-4(s)(2) of the RCSA.

This permit modification does not include a monitoring requirement for total residual chlorine. Total residual chlorine is not considered a pollutant of concern for this discharge because chlorine is not used on site.

OTHER COMMENTS

With the exceptions of oil and grease and pH, the sample types for DSN 001-1 were changed from grab to daily composite for better representation of the effluent, over the period of the discharge. As a result, average monthly and maximum daily limits were included. The maximum instantaneous limits for copper and zinc are higher than the limits in the existing permit. Though these limits are higher, they do not contravene the anti-backsliding rule in accordance with Section 22a-430-4(l)(4)(A)(xxiii) of the Regulations of Connecticut State Agencies and Section 402(o)(2) of the Clean Water Act. This is

because the circumstances on which the existing permit was based have changed. The existing permit had an average flow of 475,000 gallons discharge within a 24 hour period. This modification has an average flow of 150,000 gallons discharge within the same period.

It is ReEnergy's desire to revoke its individual permit if/when it is established that a permit is no longer necessary. In order to do this, ReEnergy must consistently comply with the modified permit's terms and conditions, which would show that the effect of ReEnergy's past industrial activities on stormwater runoff had reduced to meet water quality standards. The monitoring frequencies for aluminum, cadmium, copper and zinc were increased from quarterly to monthly, in order to gather enough data to make a determination about a future permit revocation.

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

The receiving stream, Mossup River, was assessed in accordance with Section 305(b) of the Federal Clean Water Act. It is listed as being fully supporting of aquatic life but impaired for recreation. The impairment is as a result of E.coli. The receiving stream has not been designated as high quality water. This permit modification is for an increased discharge, therefore, a 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 Standard, Sec.22a-426-8(a)(1). All narrative and numeric water quality standards, criteria and associated policies contained in the Connecticut Water Quality Standards are the basis for the evaluation considering the discharge or activity both independently and in the context of other discharges and activities in the affected water body and considering any impairment listed pursuant to Section 303d for the Federal Clean Water Act or any TMDL established for the water body. The Department has determined that the discharge or activity is consistent with the maintenance, restoration, and protection of existing and designated uses assigned to the receiving water body by considering all relevant available data.

Section 6(A) has a special condition that requires the Permittee to perform all Best Management Practices (BMPs) described in the Operation and Maintenance Plan.

As previously stated, this permit modification allows more frequent discharge. Therefore, a special condition that "The Permittee shall undertake all reasonable measures to properly maintain the storm drainage system at the site to minimize erosion and sedimentation in the drainage swale and the Moosup River" was included in Section 6(B) of modified Permit No.CT0026972. Section 6(C) has a third special condition stating that "Except during and immediately following storm events, the Permittee shall maintain the retention basin level at or below a level of 508.5 feet above the National Geodetic Vertical Datum of 1929 (the operational level). During and immediately following storm events, the Permittee shall pump out accumulated stormwater that is above the operational level, while maintaining compliance with the terms and conditions of this permit modification. The Permittee shall immediately notify the Commissioner of any conditions that may occur to prevent the Permittee from returning the level of the water in the retention basin to the operational level." This is to ensure that the retention basin maintains a capability of capturing a 100-year, 24-hour storm event.

Finally, Section 6(D) of modified Permit No.CT0026972 includes a special condition which states that "The Permittee is authorized to discharge incidental groundwater and stormwater runoff from an inactive industrial site. The Permittee will be required to obtain a permit prior to restarting or initiating production activities to authorize the discharge from an active industrial site." This was included because all evaluation made during this permit modification processing was of discharges from ReEnergy site at its present state of production inactivity. A discharge from an active site could have a different discharge frequency, quality and quantity.

Zinc concentrations in groundwater in the south-central and south-western portions of ReEnergy site exceed applicable groundwater criteria under the Connecticut Remediation Standard Regulations (RSRs). This is currently being investigated and addressed under the Property Transfer Program administered by the Remediation Division of the Department. ReEnergy has represented that some measures have been taken to prevent this groundwater infiltration into the collection system by lining some of the pipes to the collection system down gradient to the zinc plume location.

Wastewater Treatment System Installation

Approval of plans and specifications for the proposed wastewater treatment system was issued on July 15, 2015, prior to the Commissioner making a Final Determination authorizing staff to do so. Staff inspected the wastewater treatment system on November 10, 2015 to verify that it was installed in accordance with the approved plans and specifications. On November 20, 2015, the Permittee submitted an updated operation and maintenance plan and "as built drawings" of the treatment system. Following the Commissioner's Final Determination memo, another approval letter was issued superseding the July 15th approval letter.

SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC NOTICE PERIOD AND THE DEPARTMENT'S RESPONSES

The tentative decision for this permit modification was published in the Norwich Bulletin on July 27, 2015. On August 26, 2015, the Department received written comments on the proposed action, via electronic mail from Diane Wagner, Executive Assistant, ReEnergy Holdings LLC on behalf of James B. White, the Chief Operating Officer, Energy Division of ReEnergy Holdings.

The Water Permitting and Enforcement Division staff has reviewed the written comments and does not feel that the tentative decision should be modified. (Comments by James White are summarized below in bold italics followed by the Department's response). However, staff does recommend changes to the draft permit and fact sheet to clarify the wastewater description and acknowledge the existence of a groundwater plume on-site. The proposed edits are provided later in this memo.

1) ***The aluminum, cadmium, copper and zinc average monthly limits were not calculated following the EPA Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) using n=1 and the corresponding multipliers because the proposed monitoring frequencies are monthly. We request that the limits be recalculated using n=1 to correlate to the monthly sampling frequency in the permit, which results in average monthly limits of 1.25 mg/l for aluminum, 0.003 mg/l for cadmium, 0.068 mg/l for copper and 0.726 mg/l for zinc.***

   *The Department followed the protocol specified in the EPA Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001). Specifically, section 5.5.3 of the document states in bold type that "**…** in situations where monitoring frequency is once per month or less, a higher value for n must be assumed for average monthly limit derivation purposes **…**, the statistical procedure should be employed using an assumed number of samples of at least four for the average monthly limit derivation." Therefore, the use of n = 4 is consistent with the above referenced document. The Department does not propose a change in its calculation.*

2) ***ReEnergy is of the opinion that based on the actual site specific soils and hydrogeological data from the site, CTDEEP analysis of groundwater zone of influence contribution is excessively conservative and greatly overestimates the potential impact of the groundwater discharge. ReEnergy's assessment is based on the following:***

   a) ***"While the groundwater elevations, saturated thicknesses and cross-sectional flow areas of the plume were taken directly from the December 18, 2014 ARCADIS memorandum, as stated in that memorandum these data are from spring high water table conditions and are not representative of the low water table conditions that would be present at time of the 7Q10 flows in the Moosup River. In these types of hydrogeological settings, water table elevations would be expected to drop at least several feet and result in significantly lower flow estimates. A low water table groundwater monitoring event is scheduled for later this year that will provide more appropriate data."***

   The groundwater seep referenced in the Department's Zone of Influence (ZOI) calculations is located down gradient of ReEnergy's site, after the swale goes under Industrial Park Road twice. Please see attached photos on page 8 of 19 of this fact. The ground water seep is labeled "Trib Entering Stormwater Detention Pond; Zn-Total = 490 µg/l". The information provided by Arcadis is from ReEnergy's site. The Department used the information Arcadis provided in a submittal dated December 18, 2014, as well as other reference materials for hydraulic conductivity, to estimate the flow of the ground water seep. It is unlikely that the site-specific ground water conditions at ReEnergy solely dictate the flow of the down gradient ground water seep. Such an assumption would likely underestimate the seep's flow.

While one may expect the ground water seep to have lower flow during dry/ 7Q10 conditions, DEEP's actual observations of the seep while conducting sampling during wet weather conditions in April 2014 and dry weather conditions in August 2014 noted that the flow was about the same. Rainfall data shows that the most recent rain event occurred five days prior to the August site visit and was less than one quarter of an inch. Hence, the observed flow could not have been as a result of a rain event. Based on the observed consistency in flow and the relative down gradient distance from ReEnergy's site, the Department believes that its flow estimation is acceptable.

b) Use of the 490 µg/l concentration from the "groundwater seep" is also an unrealistic high zinc concentration given the groundwater concentrations and the two separate flow regimes. We believe a flow weighted average concentration of the northern flow regime (approximately 30% of flow) and southern flow regimes (approximately 70%) would be far more appropriate. Using concentrations in the December 18, 2014 memorandum of 8 µg/l for the northern and 280 µg/l for the southern that were based on the latest available data from 2012 – 2014 , a flow weighted concentration of 200 µg/l results. It should also be noted that this concentration is likely conservative based on the latest groundwater samples collected in April 2015, which indicate that the zinc concentrations appear to be attenuating, especially along the "edges" of the plume, with the cessation of site operations and remedial measures implemented by ReEnergy.

i) While corresponding April 2015 southern flow regime data are not available from wells MW-117 and MW-118 (the 2 off-site boundary wells destroyed by the off-site property owner), the zinc concentrations in the plume core wells immediately up gradient decreased from 1.71 mg/L (in May 2012) to 0.992 mg/L in well MW-119, and from 10.1 mg/L (in May 2012) to 0.774 mg/L in well MW-120. Based on these data, attenuation at the southern flow regime boundary is expected.

ii) The northern flow regime "average zinc concentration across the discharge area" of 0.008 mg/L was used in the December 18, 2014 memorandum. The April 2015 value is 0.007 mg/L.

490 µg/l is the analytical result of an actual sample collected in April during the Department's site visit. Sampling protocol and the chain of custody procedure were followed. The Department believes that this data is accurate and that its surface water samples of the actual seep as it flows into the drainage swale that discharges into the Moosup River, is more relevant than ReEnergy's upgradient ground water monitoring data.

c) Based on site-specific data, the K value used for the hydraulic conductivity is also overly conservative as noted below:

i) From CTDEEP: "The hydraulic conductivities of these soil types range from 4.0 µm/sec to 141 µm/sec (USDA-NRCS). Carsel and Parrish (1988) have the hydraulic conductivity of sandy loam as 12.3 µm/sec. The Department will assume a hydraulic conductivity of 12.3 µm/sec, because fine sandy loam seems to be the prevalent soil type. 12.3 µm/sec falls within the hydraulic conductivity range stated in the Soil Survey of the State of Connecticut."

ii) CTDEEP used Soil Survey of the State of Connecticut mapping information to conclude that sandy loam type soils are present. Soil survey information only addresses the upper 5 feet of soils, which are not representative of the saturated soil and water bearing materials on-site based on actual site specific boring information. Soil boring logs and previous investigation reports (i.e., the draft Phase II/III report prepared by Anchor) indicate that groundwater depth are typically 10 to 20 feet below grade and that glacial till is the predominant soil type at the site. The Surficial Materials Map of Connecticut also indicates till throughout the site and immediately surrounding area, with a strip of sand and gravel along the river at the bottom of the hill.

iii) We used an average K value of 1x10-4 cm/sec (for both flow regimes) based on the range of actual K values (roughly 1x10-3 to 1x10-6 cm/sec) from nearby sites with similar geology (USGW Open File Report 91-481: "The Stratigraphy and Hydraulic Properties of Tills in Southern New England").

iv) DEEP used a K value of 12.3 µm/sec, which equates to 1.23x10-3 cm/sec, and which is about an order of magnitude higher than the K value we used. As discussed, we believe our value is still conservative but more representative of the actual site geology.

In respect to the hydraulic conductivity value used in the zone of influence calculation, several studies show higher or similar hydraulic conductivity for the soil types at ReEnergy's site and environs. Based on ReEnergy's referenced publication, "The Stratigraphy and Hydraulic Properties of Tills in Southern New England", sites at Plainfield, Sterling and Voluntown have hydraulic conductivities that range from .09 µm/sec to 28 µm/sec, specifically the hydraulic conductivity of a site in Sterling was stated as 9.4 µm/sec at a depth range of 14.4 m – 17.4 m. In addition, an application addendum submitted by Arcadis on June 2, 2015 states that the hydraulic conductivity at the site is 1.44 in/hr = 10.16 µm/sec, which is comparable to the 12.3 µm/sec used in DEEP's calculation.

Using a flow weighted zinc concentration of 200 µg/l, the ARCADIS estimated total groundwater flow (99 cubic feet/day = 29.6 gph) and the CTDEEP methodology for calculating the ZOI, the ZOI associated with the groundwater is estimated to be approximately 166 gph. This estimate is still conservative but much more representative of actual site conditions and those conditions expected at the time of 7Q10 flows in the Moosup River. ReEnergy concluded that ReEnergy's allocated ZOI and Instream Waste Concentration (IWC) of 103,823 gph and 5.68%, should have been 109,431 gph and 5.4% respectively,

Based on the reasons stated in the Department's response to items 2(a) – 2(c), the Department considers the ZOI allocated to the groundwater seep as conservative and reasonable, but not excessively conservative. The Department does not propose a change in its ZOI calculation.

Changes listed below were made to the public noticed draft permit and fact sheet by Department staff for clarification purpose:

1) *The groundwater in the wastewater description in Table A that formerly read "Stormwater runoff from ReEnergy facility's impervious areas and infiltrating groundwater collected in a 2.2 million gallon retention basin", now reads "Stormwater runoff from ReEnergy facility's impervious areas and incidental infiltrating groundwater collected in a 2.2 million gallon retention basin".*

2) *Section 6(D) was changed from "The Permittee is authorized to discharge groundwater and **…**" to "The Permittee is authorized to discharge incidental groundwater and **…**".*

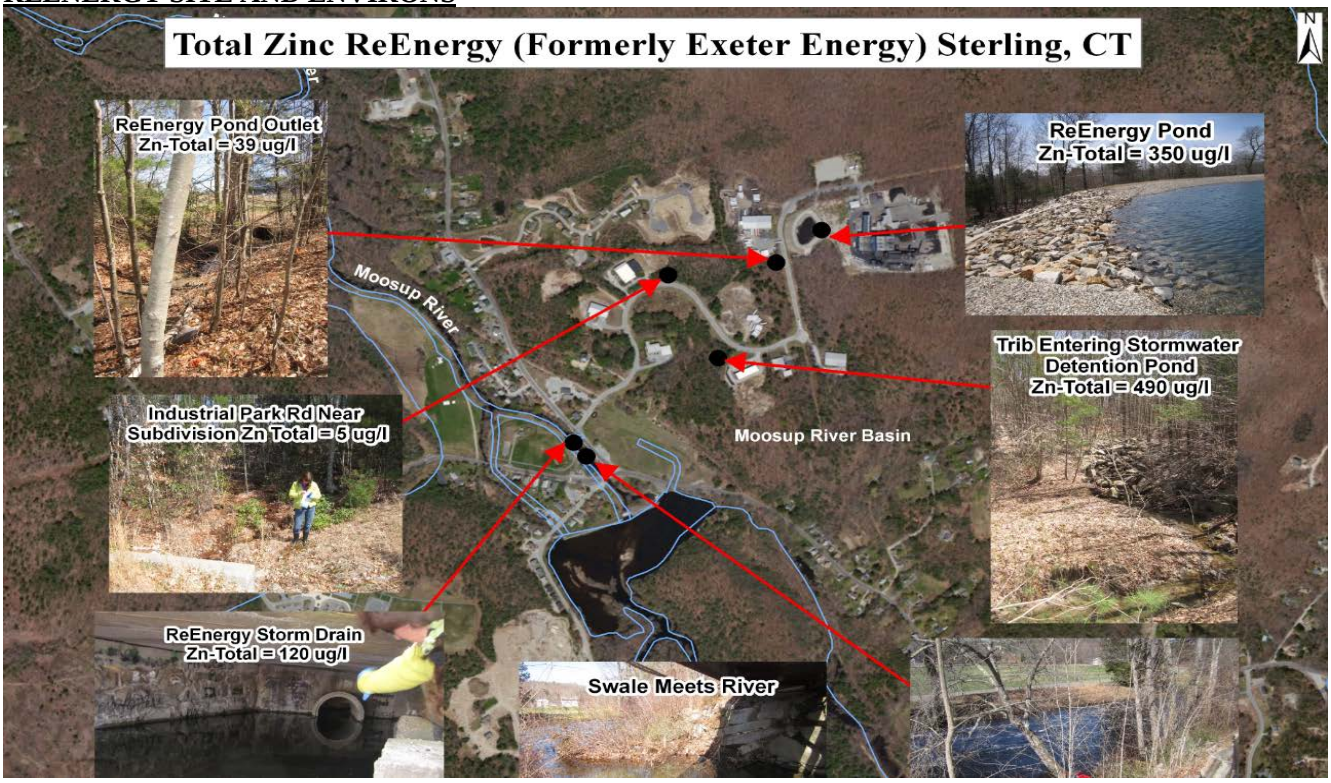
3) *Process and Treatment Description in the fact sheet was changed to reflect "incidental groundwater" instead of "groundwater".*

4) *Under the "Process and Treatment Description" in the fact sheet, chemical injection process was clarified by adding "when necessary", and the pretreated stormwater in the settling basin will be pumped and discharged to the bypass valve chamber, rather than a stormdrain.*

5) *A new sentence in parenthesis was added under the "General Comments" section of the fact sheet that reads "(The discharge would be stormwater bypassing the retention basin, after exhausting the basin's capacity. Water would not be discharged from the basin itself.)".*

6) *Two new paragraphs were added to the fact sheet. The first paragraph was to explain the groundwater situation on site and how it is being addressed and the second paragraph was about the approval of wastewater treatment system. Please refer to the last two paragraphs under "Other Comments" section of the fact sheet.*

REENERGY SITE AND ENVIRONS



"TRIB ENTERING STORMWATER DETENTION POND ZN- TOTAL = 490 µg/l"

The table below shows the retention basin water elevations and corresponding storage volumes. ReEnergy shall adhere to this table for any future calculations of the retention basin's stormwater storage capability.

EXETER ENERGY
DETENTION BASIN STAGE-STORAGE VOLUMES
AUGUST 2010

Basin Water Elevation (ft)	Storage Volume (cf)	Storage Volume (gal)	Storage Volume (ac-ft)
506.25	0	0	0
506.50	2,408	18,009	0.1
507.00	7,223	54,028	0.2
507.50	19,314	144,465	0.4
508.00	31,404	234,902	0.7
508.50	45,514	340,445	1.0
509.00	59,624	445,988	1.4
509.50	74,991	560,933	1.7
510.00	90,358	675,878	2.1
510.50	106,984	800,240	2.5
511.00	123,610	924,603	2.8
511.50	141,506	1,058,461	3.2
512.00	159,401	1,192,319	3.7
512.50	178,610	1,335,999	4.1
513.00	197,818	1,479,679	4.5
513.50	218,406	1,633,677	5.0
514.00	238,994	1,787,675	5.5
514.50	261,057	1,952,703	6.0
515.00	283,119	2,117,730	6.5
515.10	287,826	2,152,940	6.6
515.50	306,655	2,293,779	7.0
516.00	330,191	2,469,829	7.6
516.85	369,879	2,766,695	8.5

ATTACHMENT 1: WATER QUALITY BASED LIMITS CALCULATION

7Q10 OF THE RECEIVING STREAM

$7Q10\ of\ Moosup\ River\ at\ Plainfield = 7.96\ ft^3/s\ with\ drainage\ area\ of\ 83.6\ mi^2\ (Ahearn, 2008^1)$

$Drainage\ area\ of\ the\ receiving\ stream = 42.8\ mi^2\ (USGS\ Connecticut\ Streamstats)$

$$Receiving\ stream\ 7Q10 = 7Q10\ of\ Moosup\ River\ at\ Plainfield\ X\ \frac{Drainage\ area\ of\ Moosup\ River\ at\ Sterling}{Drainage\ area\ of\ Moosup\ River\ at\ Plainfield}$$

$$7Q10 = ZOI = 7.96\ X\ \frac{42.8}{83.6} = 4.07\ \text{cfs} = 4.07\ X\ 646272 = 2{,}630{,}327\ gpd = 109{,}597\ gph$$

There is a groundwater seep that discharges to a drainage swale down gradient from ReEnergy's facility. ReEnergy's discharge will comingle with the groundwater seep prior to discharge to the Moosup River. The seep was observed and sampled in April and August 2014 when groundwater flow was expected to be high and low respectively. Analytical results of the samples collected in April and August showed zinc concentration levels of 300 µg/l and 490 µg/l respectively. The zinc concentration level in the groundwater seep is higher than state's surface water criteria. Therefore, the zone of influence (ZOI) of ReEnergy's permitted discharge was adjusted as described below in view of the elevated zinc levels in the groundwater seep.

In a submittal sent via email on December 18, 2014 by ReEnergy's consultant, Arcadis, the hydraulic gradient and cross − sectional flow area of the zinc plume at the southern regime of ReEnergy's site were determined to be 0.05 and 2,030 ft^2 respectively. The hydraulic gradient and cross − sectional flow area of the zinc plume at the northern regime of ReEnergy's site were determined to be 0.06 and 4,100 ft^2 respectively.
Based on the type of soil at ReEnergy site and surrounding areas upto the Moosup River, the soil's hydraulic conductivity was estimated to be 12.3 µm/sec. (see Appendix A).

Using Darcy's law, the groundwater flux is calculated as follows:

$Q = KiA$ *where* $K =$ *hydraulic conductivity,* $i =$ *hydraulic gradient and* $A =$ *cross − sectional area.*

$$Q_{southern\ regime} = 12.3\ \frac{\mu m}{sec}\ X\ .05\ X\ 2{,}030\ ft^2 = .004\ \frac{ft^3}{sec}\ (1\ \mu m = 3.28084\ X\ 10^{-6}\ ft)$$

$$Q_{northern\ regime} = 12.3\ \frac{\mu m}{sec}\ X\ .06\ X\ 4{,}100\ ft^2 = .010\ \frac{ft^3}{sec}$$

It is assumed that the flows in the northern and southern regimes are in parallel. Therefore, the groundwater flux Q will be an addition of the fluxes in both regimes. (Note: the actual flux may be less than the calculation below because the total flow from the northern and southern regimes may not necessarily discharge into the Moosup River. However, DEEP staff used the worst case scenario.)

$$Q_e = Q_{southern\ regime} + Q_{northern\ regime} = .004 + .010 = .014\ \frac{ft^3}{sec}$$

$$.014\ \frac{ft^3}{sec} = 377\ gph\ (1\ cfs = 26929.87\ gph)$$

Assuming an average daily limit of 490 µg/l for the groundwater seep, based on analytical data of the groundwater samples collected on two occassions, the ZOI of the groundwater can be back − calculated.

$$AML = LTA\ X\ 95th\ percentile\ multiplier$$

$$LTA = \frac{AML}{95th\ percentile\ multiplier} = \frac{0.49}{1.55} = 0.316$$

$$WLA = \frac{LTA}{99th\ percentile\ multiplier} = \frac{0.316}{0.321} = 0.984$$

$$WLA = 0.984 = \frac{(QC)_d - (QC)_u}{Q_e} = \frac{.065(ZOI + 377) - .005(ZOI)}{377}$$

where $(QC)_d$ *are downstream data,* $(QC)_u$ *are upstream data,* Q_e *is the discharge flow and* $Q_d = Q_u + Q_e$

ZOI for groundwater seep = 5,774.38 gph ≈ 5,774 *gph*

ZOI for ReEnergy discharge = 109,597 – 5,774 = 103,823 gph

The Permit average flow limit = 150,000 gpd
According to the Permittee, the discharge duration will be 24 hours, therefore flow per hour will be 6,250 gph.

$$DF = \frac{AML + ZOI}{AML}$$

$$DF = \frac{6250+103{,}823}{6250} = 17.61$$

$$IWC = \frac{1}{DF}\ X\ 100\% = 5.68\%$$

The maximum daily limit for toxicity is based on the concentration that will prevent toxicity within the receiving stream as specified in section 22a-430-3(j)(7)(B)(i) of the RCSA.
Chronic toxicity occurs at LC50 X 0.05 and/or NOAEL X 0.15
I.e. toxicity test LC50/0.05 = non-chronically toxic effluent % at ZOI border or
I.e. toxicity test NOAEL/0.15 = non-chronically toxic effluent % at ZOI border

Chronic toxicity limit: LC50 = IWC X 20 and/or NOAEL = IWC X 20/3
For an IWC of 5.68%, chronic toxicity limit = 5.68% X 20 which is higher than 100%.
I.e. chronic toxicity limit = 5.68 X 20/3 = 37.8 % ≈ 38%.

Therefore, the proposed aquatic toxicity limits in this permit modification are:
LC50 $\geq$ 100% and NOAEL > 90% with a CTC of 38%.

[1]Ahearn, E.A., 2008, Flow Durations, Low-Flow Frequencies, and Monthly Median Flows for Selected Streams in Connecticut through 2005: U.S. Geological Survey Scientific Investigations Report 2007–5270, 33 p.

Prior to the Temporary Authorization issued on 1/10/2014, ReEnergy did not treat its stormwater runoff. Therefore, only the data after February 2014 were used for this evaluation because the data before the implementation of the new treatment system is not representative of the data going forward.

TABLE A: DMR analytical data from February 2014 – July 2014							
	Aluminum (µg/l)	*Cadmium (µg/l)*	*Copper (µg/l)*	*Iron (µg/l)*	*Lead (µg/l)*	*Manganese (µg/l)*	*Zinc (µg/l)*
2/13/2014	*620*	*2.0*	*2.9*	*57*	*2.0*	*160*	*160*
2/14/2014	*530*	*2.0*	*33*	*440*	*2.0*	*100*	*130*
2/19/2014	---	---	---	---	---	---	*130*
2/20/2014	*480*	*2.0*	*45*	*440*	*2.0*	*120*	*78*
2/24/2014	---	---	---	---	---	---	*320*
2/25/2014	---	---	---	---	---	---	*360*
2/26/2014	---	---	---	---	---	---	*340*
2/27/2014	*760*	*2.0*	*35*	*530*	*2.0*	*120*	*330*
2/28/2014	---	---	---	---	---	---	*260*
3/3/2014	---	---	---	---	---	---	*190*
3/4/2014	*550*	*2.0*	*41*	*470*	*2.0*	*96*	*200*
3/5/2014	---	---	---	---	---	---	*160*
3/6/2014	---	---	---	---	---	---	*170*
3/7/2014	---	---	---	---	---	---	*140*
3/8/2014	---	---	---	---	---	---	*150*
3/10/2014	---	---	---	---	---	---	*98*
3/11/2014	*380*	*2.0*	*57*	*470*	*2.0*	*3400*	*95*
3/11/2014	---	---	---	---	---	---	*110*
3/12/2014	---	---	---	---	---	---	*66*
3/13/2014	---	---	---	---	---	---	*63*
3/14/2014	---	---	---	---	---	---	*75*
3/17/2014	---	---	---	---	---	---	*77*
3/18/2014	---	---	*43*	*510*	*2.0*	---	*72*
3/18/2014	---	---	---	---	---	---	*57*
3/19/2014	---	---	---	---	---	---	*76*
3/20/2014	---	---	---	---	---	---	*47*
3/21/2014	---	---	---	---	---	---	*82*
3/24/2014	---	---	---	---	---	---	*10*
3/25/2014	*35*	*2.0*	*60*	*550*	*2.0*	*110*	*60*
3/25/2014	---	---	---	---	---	---	*68*
3/26/2014	---	---	---	---	---	---	*42*
3/27/2014	---	---	---	---	---	---	*60*
3/28/2014	---	---	---	---	---	---	*62*
3/31/2014	---	---	---	---	---	---	*420*
4/1/2014	*500*	*2.0*	*54*	*660*	*2.0*	*130*	*370*
4/2/2014	---	---	---	---	---	---	*360*
4/3/2014	---	---	---	---	---	---	*390*
4/4/2014	---	---	---	---	---	---	*380*
4/5/2014	---	---	---	---	---	---	*400*
4/6/2014	---	---	---	---	---	---	*360*
4/7/2014	---	---	---	---	---	---	*400*
4/8/2014	*440*	*2.0*	*23*	*320*	*2.0*	*120*	*390*
4/9/2014	---	---	---	---	---	---	*350*
4/10/2014	---	---	---	---	---	---	*350*
4/11/2014	---	---	---	---	---	---	*280*
4/12/2014	---	---	---	---	---	---	*320*
4/13/2014	---	---	---	---	---	---	*370*
4/14/2014	---	---	---	---	---	---	*370*
4/15/2014	*320*	*2.0*	*77*	*560*	*4.4*	*180*	*320*
4/16/2014	---	---	---	---	---	---	*350*
4/17/2014	---	---	---	---	---	---	*460*
4/18/2014	---	---	---	---	---	---	*330*
4/19/2014	---	---	---	---	---	---	*340*
4/20/2014	---	---	---	---	---	---	*370*
4/21/2014	---	---	---	---	---	---	*280*
4/22/2014	*380*	*2.0*	*28*	*280*	*2.0*	*180*	*290*
4/23/2014	---	---	---	---	---	---	*390*
4/24/2014	---	---	---	---	---	---	*210*
4/25/2014	---	---	---	---	---	---	*190*
4/26/2014	---	---	---	---	---	---	*240*
4/27/2014	---	---	---	---	---	---	*210*
4/28/2014	---		---	---	---	---	*160*

4/29/2014	*300*	*2.0*	*69*	*69*	*2.0*	*190*	*200*
4/30/2014	*---*	*---*	*---*	*---*	*---*	*---*	*170*
5/1/2013	*---*	*---*	*---*	*---*	*---*	*---*	*170*
5/2/2014	*---*	*---*	*---*	*---*	*---*	*---*	*280*
5/3/2014	*---*	*---*	*---*	*---*	*---*	*---*	*320*
5/14/2014	*---*	*---*	*---*	*---*	*---*	*---*	*280*
5/15/2014	*280*	*---*	*38*	*540*	*6.6*	*210*	*240*
5/16/2014	*---*	*---*	*---*	*---*	*---*	*---*	*310*
5/17/2014	*---*	*---*	*---*	*---*	*---*	*---*	*260*
5/20/2014	*---*	*---*	*---*	*---*	*---*	*---*	*240*
5/21/2014	*---*	*---*	*---*	*---*	*---*	*---*	*230*
5/22/2014	*490*	*---*	*46*	*590*	*2.0*	*210*	*280*
5/23/2014	*---*	*---*	*---*	*---*	*---*	*---*	*200*
5/27/2014	*---*	*---*	*---*	*---*	*---*	*---*	*160*
5/28/2014	*---*	*---*	*---*	*---*	*---*	*---*	*160*
5/29/2014	*740*	*---*	*18*	*440*	*2.0*	*250*	*200*
7/8/2014	*1400*	*2.0*	*8.8*	*420*	*2.0*	*3900*	*960*
$Cv = \frac{sd}{mean}$	*0.58 ≈ 0.60*	*Use 0.6*	*0.51 ≈ 0.50*	*0.38 ≈ 0.40*	*0.52 ≈ 0.50*	*2.02 ≈ 2.0*	*0.61 ≈ 0.60*

TABLE B: AVERAGE OF THE UPSTREAM MOOSUP RIVER CONCENTRATION DATA BASED ON DATA COLLECTED ON APRIL 17, 2014 AND AUGUST 27, 2014 (µg/l)

	4/17/2014	*8/27/2014*	*Average*
Aluminum	*---*	*25*	*25*
Cadmium	*0.5*	*0.5*	*0.5*
Copper	*1.5*	*1.5*	*1.5*
Iron	*240*	*500*	*370*
Lead	*0.5*	*0.5*	*0.5*
Manganese	*20*	*20*	*20*
Zinc	*5*	*5*	*5*

TABLE C: CONNECTICUT WATER QUALITY CRITERIA (CLASS B FRESHWATER)

	Aquatic Life (Acute (µg/l))	*Aquatic Life (Chronic (µg/l))*	*Human Health (µg/l)*
Aluminum	*750*	*87*	*---*
Cadmium	*1.0*	*0.125*	*10,769*
Copper	*14.3*	*4.8*	*---*
Iron	*---*	*1000**	*---*
Lead	*30*	*1.2*	*15*
Manganese	*---*	*---*	*100*,[1]*
Zinc	*65*	*65*	*26,000*

** EPA National Recommended Water Quality Criteria*
[1] Only applicable to marine waters

TABLE D: REASONABLE POTENTIAL EVALUATION

(This analysis basically compares the projected maximum concentration in the effluent with the applicable water quality standard. When the projected maximum concentration is lower than the waste load allocation, this indicates that there is no potential for the discharge to exceed the water quality criteria. When the projected maximum concentration is higher than the waste load allocation, this indicates that there is potential for the discharge to exceed the water quality criteria and therefore limits are needed in the permit.)

$WLA = Waste\ load\ allocation,\ (QC)_d = Downstream\ data,\ (QC)_u = Upstream\ data\ and\ \ Q_e = \ the\ discharge\ flow$
$(refer\ to\ the\ ZOI\ calculation\ above\ for\ \ the\ downstream\ and\ effluent\ flow\ data)$

	$Maximum\ projected\ concentration\ in\ effluent = Maximum\ measured\ concentration\ in\ effluent\ X\ multiplier\ in\ Table\ 3-1\ below$	$= \frac{WLA_{acute}}{(QC)_d - (QC)_u / Q_e}$	$= \frac{WLA_{chronic}}{(QC)_d - (QC)_u / Q_e}$	$** \frac{WLA_{health}}{(QC)_d - (QC)_u / Q_e}$	$Is\ there\ reasonable\ potential\ to\ exceed\ WQC?$
Aluminum	1400 X 2.5 = 3500.0	12,793.47	1,116.92	---	*Yes*
* *Cadmium*	2 X 2.7 = 5.4	9.31	2.20	368,534.75	*Yes*
Copper	77 X 2.1 = 161.7	226.93	59.62	---	*Yes*
Iron	660 X 1.9 = 1254.0	---	13,126.53	---	*No*
Lead	6.6 X 2.1 = 13.86	520.04	12.83	496.74	*No*
Manganese	3900 X 8.2 = 31980	---	---	---	*NA*
Zinc	960 X 2.3 = 2208	1061.70	1061.70	889,641.24	*Yes*

$(QC)_d\ are\ downstream\ data, (QC)_u are\ upstream\ data, Q_e is\ the\ discharge\ flow\ and\ Q_d = Q_u + Q_e$
$* The\ upstream\ concentration\ of\ cadmium\ was\ assumed\ to\ be\ zero\ for\ the\ WLA_{chronic}\ calculation$
$** Harmonic\ mean\ flow\ of\ 2\ X\ ZOI\ was\ assumed\ for\ the\ WLA_{health}\ calculation$

TABLE E: PERMIT LIMITS CALCULATION

$LTA = Long\ term\ average,\ \ AML = Average\ monthly\ limit\ and\ MDL\ = Maximum\ daily\ limit$

	$LTA_{acute} = WLA_{acute}\ X\ 99th\ percentile\ multiplier\ in\ the\ attached\ Table\ 5-1\ (\mu g/l)$	$LTA_{chronic} = WLA_{chronic}\ X\ 99th\ percentile\ multiplier\ in\ the\ attached\ Table\ 5-1\ (\mu g/l)$	$Governing\ LTA$	$AML = LTA\ X\ 95th\ percentile\ multiplier\ in\ the\ attached\ Table\ 5-2\ (\mu g/l)$	$MDL = LTA\ X\ 99th\ percentile\ multiplier\ in\ the\ attached\ Table\ 5-2\ (\mu g/l)$
Aluminum	12793.47 X 0.321 = 4106.70	1116.92 X 0.527 = 588.62	588.62	588.62 X 1.55 = 912.36	588.62 X 3.11 = 1830.61
Cadmium	9.31 X 0.321 = 2.99	2.2 X 0.527 = 1.16	1.16	1.16 X 1.55 = 1.80	1.16 X 3.11 = 3.61
Copper	226.93 X 0.373 = 84.64	59.62 X 0.581= 34.64	34.64	34.64 X 1.45 = 50.23	34.64 X 2.68 = 92.84
Zinc	1061.70 X 0.321 = 340.81	1061.70 X 0.527 = 559.52	340.81	340.81 X 1.55 = 528.26	340.81 X 3.11 = 1059.92

Table 3-1. Reasonable Potential Multiplying Factors: 99% Confidence Level and 99% Probability Basis

Number of	Coefficient of Variation																			
Samples	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
1	1.6	2.5	3.9	6.0	9.0	13.2	18.9	26.5	36.2	48.3	63.3	81.4	102.8	128.0	157.1	190.3	227.8	269.9	316.7	368.3
2	1.4	2.0	2.9	4.0	5.5	7.4	9.8	12.7	16.1	20.2	24.9	30.3	36.3	43.0	50.4	58.4	67.2	76.6	86.7	97.5
3	1.4	1.9	2.5	3.3	4.4	5.6	7.2	8.9	11.0	13.4	16.0	19.0	22.2	25.7	29.4	33.5	37.7	42.3	47.0	52.0
4	1.3	1.7	2.3	2.9	3.8	4.7	5.9	7.2	8.7	10.3	12.2	14.2	16.3	18.6	21.0	23.6	26.3	29.1	32.1	35.1
5	1.3	1.7	2.1	2.7	3.4	4.2	5.1	6.2	7.3	8.6	10.0	11.5	13.1	14.8	16.6	18.4	20.4	22.4	24.5	26.6
6	1.3	1.6	2.0	2.5	3.1	3.8	4.6	5.5	6.4	7.5	8.6	9.8	11.1	12.4	13.8	15.3	16.8	18.3	19.9	21.5
7	1.3	1.6	2.0	2.4	2.9	3.6	4.2	5.0	5.8	6.7	7.7	8.7	9.7	10.8	12.0	13.1	14.4	15.6	16.9	18.2
8	1.2	1.5	1.9	2.3	2.8	3.3	3.9	4.6	5.3	6.1	6.9	7.8	8.7	9.6	10.6	11.6	12.6	13.6	14.7	15.8
9	1.2	1.5	1.8	2.2	2.7	3.2	3.7	4.3	5.0	5.7	6.4	7.1	7.9	8.7	9.6	10.4	11.3	12.2	13.1	14.0
10	1.2	1.5	1.8	2.2	2.6	3.0	3.5	4.1	4.7	5.3	5.9	6.6	7.3	8.0	8.8	9.5	10.3	11.0	11.8	12.6
11	1.2	1.5	1.8	2.1	2.5	2.9	3.4	3.9	4.4	5.0	5.6	6.2	6.8	7.4	8.1	8.8	9.4	10.1	10.8	11.5
12	1.2	1.4	1.7	2.0	2.4	2.8	3.2	3.7	4.2	4.7	5.2	5.8	6.4	7.0	7.5	8.1	8.8	9.4	10.0	10.6
13	1.2	1.4	1.7	2.0	2.3	2.7	3.1	3.6	4.0	4.5	5.0	5.5	6.0	6.5	7.1	7.6	8.2	8.7	9.3	9.9
14	1.2	1.4	1.7	2.0	2.3	2.6	3.0	3.4	3.9	4.3	4.8	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2
15	1.2	1.4	1.6	1.9	2.2	2.6	2.9	3.3	3.7	4.1	4.6	5.0	5.4	5.9	6.4	6.8	7.3	7.7	8.2	8.7
16	1.2	1.4	1.6	1.9	2.2	2.5	2.9	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.1	6.5	6.9	7.3	7.8	8.2
17	1.2	1.4	1.6	1.9	2.1	2.5	2.8	3.1	3.5	3.8	4.2	4.6	5.0	5.4	5.8	6.2	6.6	7.0	7.4	7.8
18	1.2	1.4	1.6	1.8	2.1	2.4	2.7	3.0	3.4	3.7	4.1	4.4	4.8	5.2	5.6	5.9	6.3	6.7	7.0	7.4
19	1.2	1.4	1.6	1.8	2.1	2.4	2.7	3.0	3.3	3.6	4.0	4.3	4.6	5.0	5.3	5.7	6.0	6.4	6.7	7.1
20	1.2	1.3	1.6	1.8	2.0	2.3	2.6	2.9	3.2	3.5	3.8	4.2	4.5	4.8	5.2	5.5	5.8	6.1	6.5	6.8

Table 5-1. Back Calculations of Long-Term Average

CV	WLA Multipliers $e^{[0.5\,\sigma^2 - z\,\sigma]}$	
	95th Percentile	99th Percentile
0.1	0.853	0.797
0.2	0.736	0.643
0.3	0.644	0.527
0.4	0.571	0.440
0.5	0.514	0.373
0.6	0.468	0.321
0.7	0.432	0.281
0.8	0.403	0.249
0.9	0.379	0.224
1.0	0.360	0.204
1.1	0.344	0.187
1.2	0.330	0.174
1.3	0.319	0.162
1.4	0.310	0.153
1.5	0.302	0.144
1.6	0.296	0.137
1.7	0.290	0.131
1.8	0.285	0.126
1.9	0.281	0.121
2.0	0.277	0.117

Acute

$$LTA_{a,c} = WLA_{a,c} \cdot e^{[0.5\,\sigma^2 - z\,\sigma]}$$

where $\sigma^2 = ln\,[CV^2 + 1]$,
z = 1.645 for 95th percentile occurrence probability, and
z = 2.326 for 99th percentile occurrence probability

Chronic
(4-day average)

$$LTA_c = WLA_c \cdot e^{[0.5\,\sigma_4^2 - z\,\sigma_4]}$$

where $\sigma_4^2 = ln\,[CV^2/4 + 1]$,
z = 1.645 for 95th percentile occurrence probability, and
z = 2.326 for 99th percentile occurrence probability

CV	WLA Multipliers $e^{[0.5\,\sigma_4^2 - z\,\sigma_4]}$	
	95th Percentile	99th Percentile
0.1	0.922	0.891
0.2	0.853	0.797
0.3	0.791	0.715
0.4	0.736	0.643
0.5	0.687	0.581
0.6	0.644	0.527
0.7	0.606	0.481
0.8	0.571	0.440
0.9	0.541	0.404
1.0	0.514	0.373
1.1	0.490	0.345
1.2	0.468	0.321
1.3	0.449	0.300
1.4	0.432	0.281
1.5	0.417	0.264
1.6	0.403	0.249
1.7	0.390	0.236
1.8	0.379	0.224
1.9	0.369	0.214
2.0	0.360	0.204

Table 5-2. Calculation of Permit Limits

CV	LTA multipliers $e^{[z\,\sigma - 0.5\,\sigma^2]}$	
	95th Percentile	99th Percentile
0.1	1.17	1.28
0.2	1.36	1.55
0.3	1.55	1.90
0.4	1.75	2.27
0.5	1.95	2.68
0.6	2.13	3.11
0.7	2.31	3.56
0.8	2.48	4.01
0.9	2.64	4.46
1.0	2.78	4.90
1.1	2.91	5.34
1.2	3.03	5.76
1.3	3.13	6.17
1.4	3.23	6.56
1.5	3.31	6.93
1.6	3.38	7.29
1.7	3.45	7.63
1.8	3.51	7.95
1.9	3.56	8.26
2.0	3.60	8.55

Maximum Daily Limit

$$MDL = LTA \cdot e^{[z\,\sigma - 0.5\,\sigma^2]}$$

where $\sigma^2 = ln\,[CV^2 + 1]$,
z = 1.645 for 95th percentile occurrence probability, and
z = 2.326 for 99th percentile occurrence probability

Average Monthly Limit

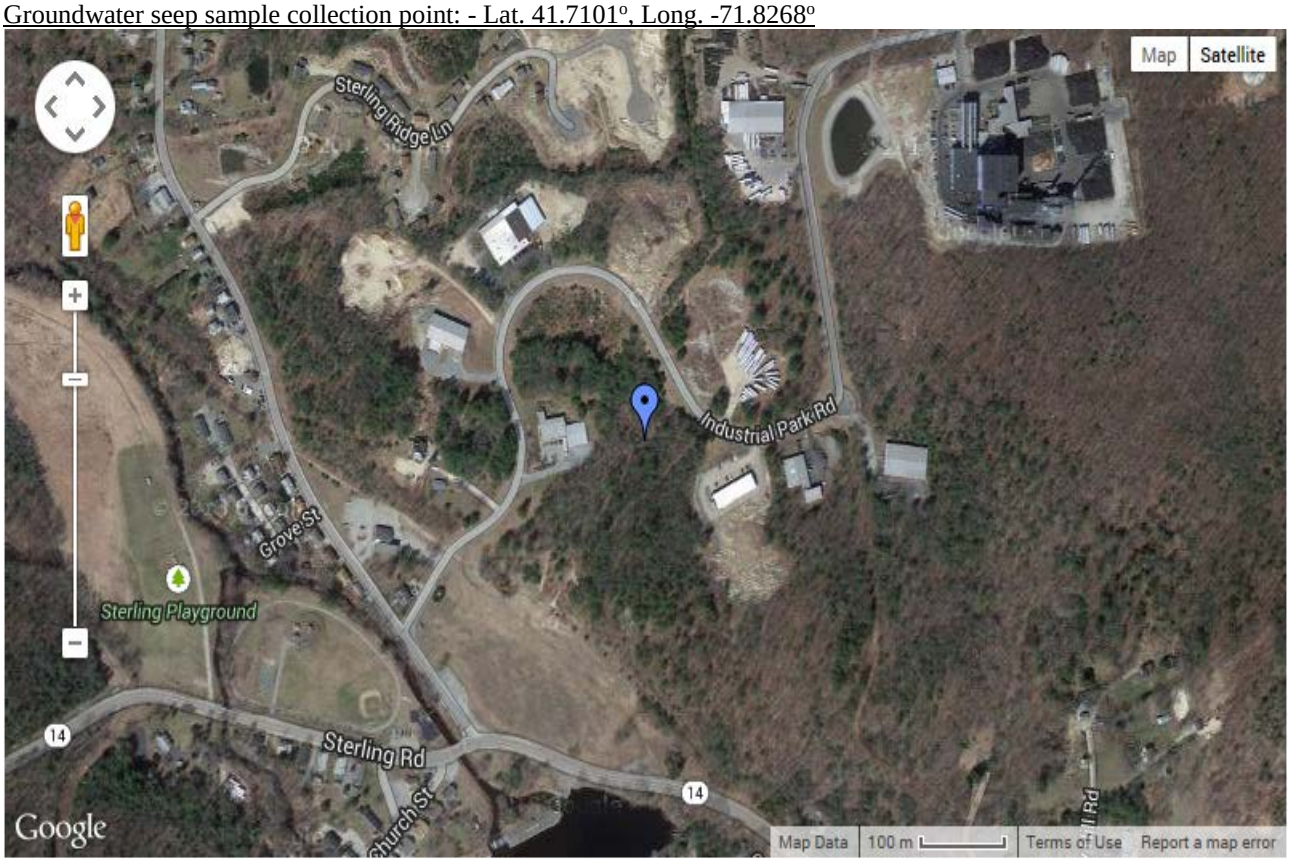
$$AML = LTA \cdot e^{[z\,\sigma_n - 0.5\,\sigma_n^2]}$$

where $\sigma_n^2 = ln\,[CV^2/n + 1]$,
z = 1.645 for 95th percentile,
z = 2.326 for 99th percentile, and
n = number of samples/month

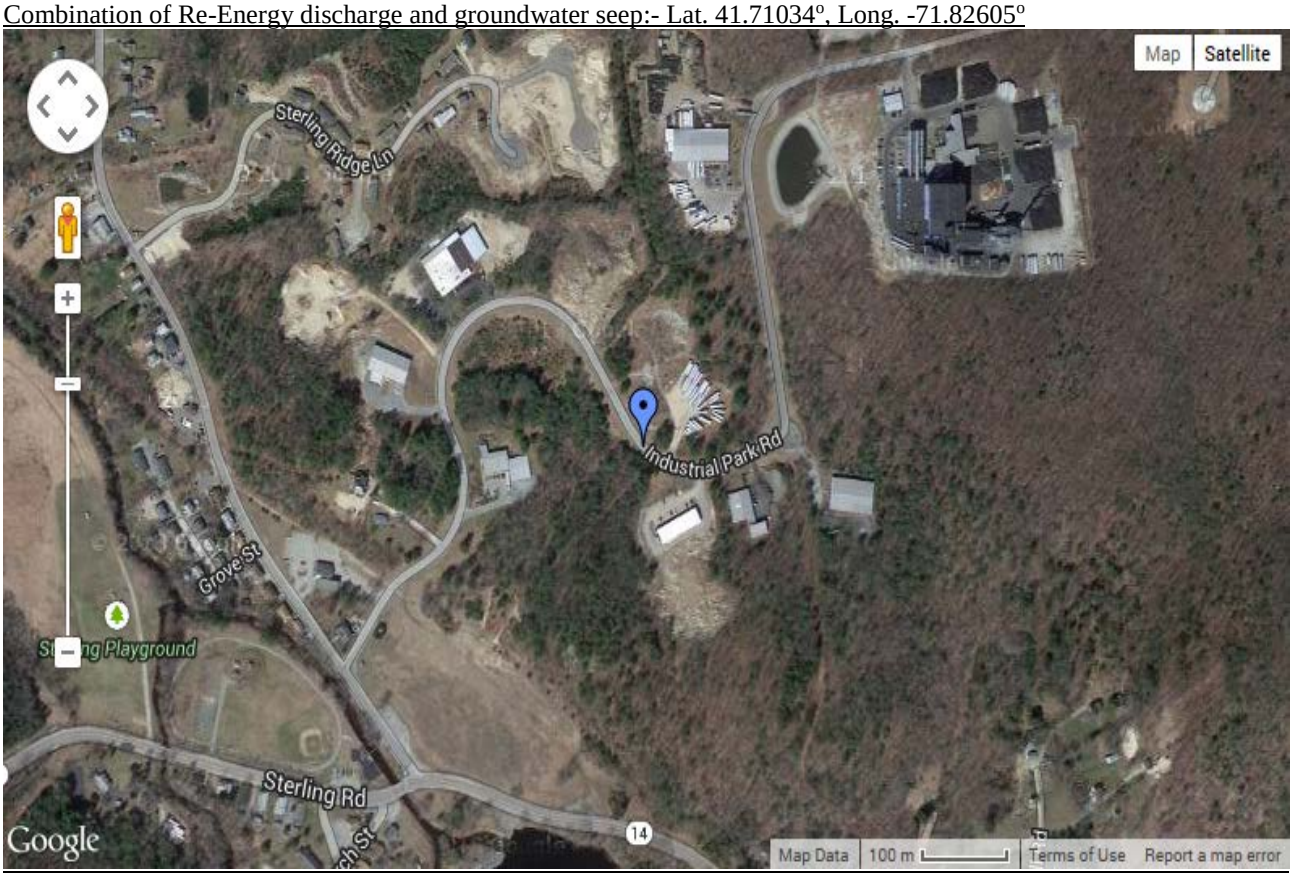
CV	LTA Multipliers $e^{[z\,\sigma_n - 0.5\,\sigma_n^2]}$									
	95th Percentile					99th Percentile				
	n=1	n=2	n=4	n=10	n=30	n=1	n=2	n=4	n=10	n=30
0.1	1.17	1.12	1.08	1.06	1.03	1.25	1.18	1.12	1.08	1.04
0.2	1.36	1.25	1.17	1.12	1.06	1.55	1.37	1.25	1.16	1.09
0.3	1.55	1.38	1.26	1.18	1.09	1.90	1.59	1.40	1.24	1.13
0.4	1.75	1.52	1.36	1.25	1.12	2.27	1.83	1.55	1.33	1.18
0.5	1.95	1.66	1.45	1.31	1.16	2.68	2.09	1.72	1.42	1.23
0.6	2.13	1.80	1.55	1.38	1.19	3.11	2.37	1.90	1.52	1.28
0.7	2.31	1.94	1.65	1.45	1.22	3.56	2.66	2.08	1.62	1.33
0.8	2.48	2.07	1.75	1.52	1.26	4.01	2.96	2.27	1.73	1.39
0.9	2.64	2.20	1.85	1.59	1.29	4.46	3.28	2.48	1.84	1.44
1.0	2.78	2.33	1.95	1.66	1.33	4.90	3.59	2.68	1.96	1.50
1.1	2.91	2.45	2.04	1.73	1.36	5.34	3.91	2.90	2.07	1.56
1.2	3.03	2.56	2.13	1.80	1.39	5.76	4.23	3.11	2.19	1.62
1.3	3.13	2.67	2.23	1.87	1.43	6.17	4.55	3.34	2.32	1.68
1.4	3.23	2.77	2.31	1.94	1.47	6.56	4.86	3.56	2.45	1.74
1.5	3.31	2.86	2.40	2.00	1.50	6.93	5.17	3.78	2.58	1.80
1.6	3.38	2.95	2.48	2.07	1.54	7.29	5.47	4.01	2.71	1.87
1.7	3.45	3.03	2.56	2.14	1.57	7.63	5.77	4.23	2.84	1.93
1.8	3.51	3.10	2.64	2.20	1.61	7.95	6.06	4.46	2.96	2.00
1.9	3.56	3.17	2.71	2.27	1.64	8.26	6.34	4.68	3.12	2.07
2.0	3.60	3.23	2.78	2.33	1.68	8.55	6.61	4.90	3.26	2.14

Onsite retention basin: - Lat. 41.71829º, Long. -71.82999º

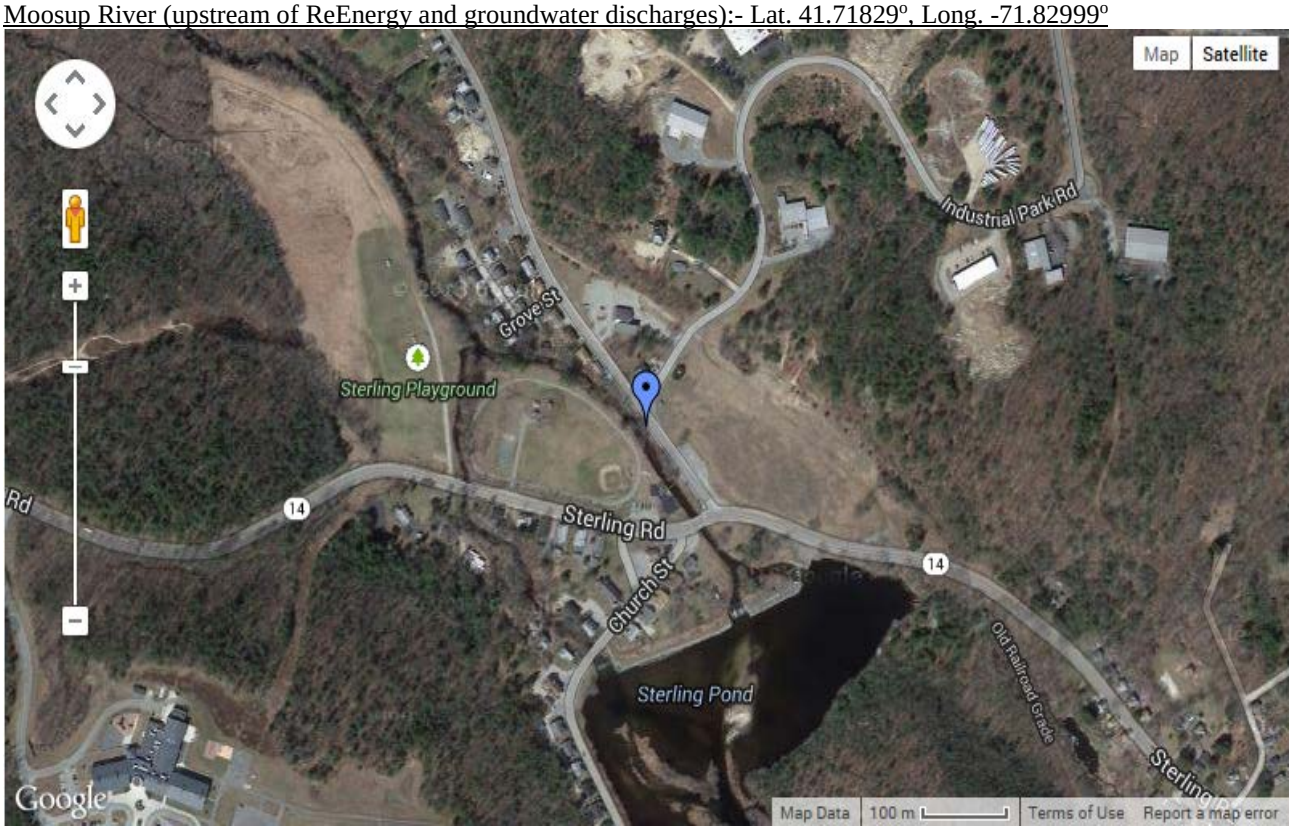
Groundwater seep sample collection point: - Lat. 41.7101º, Long. -71.8268º



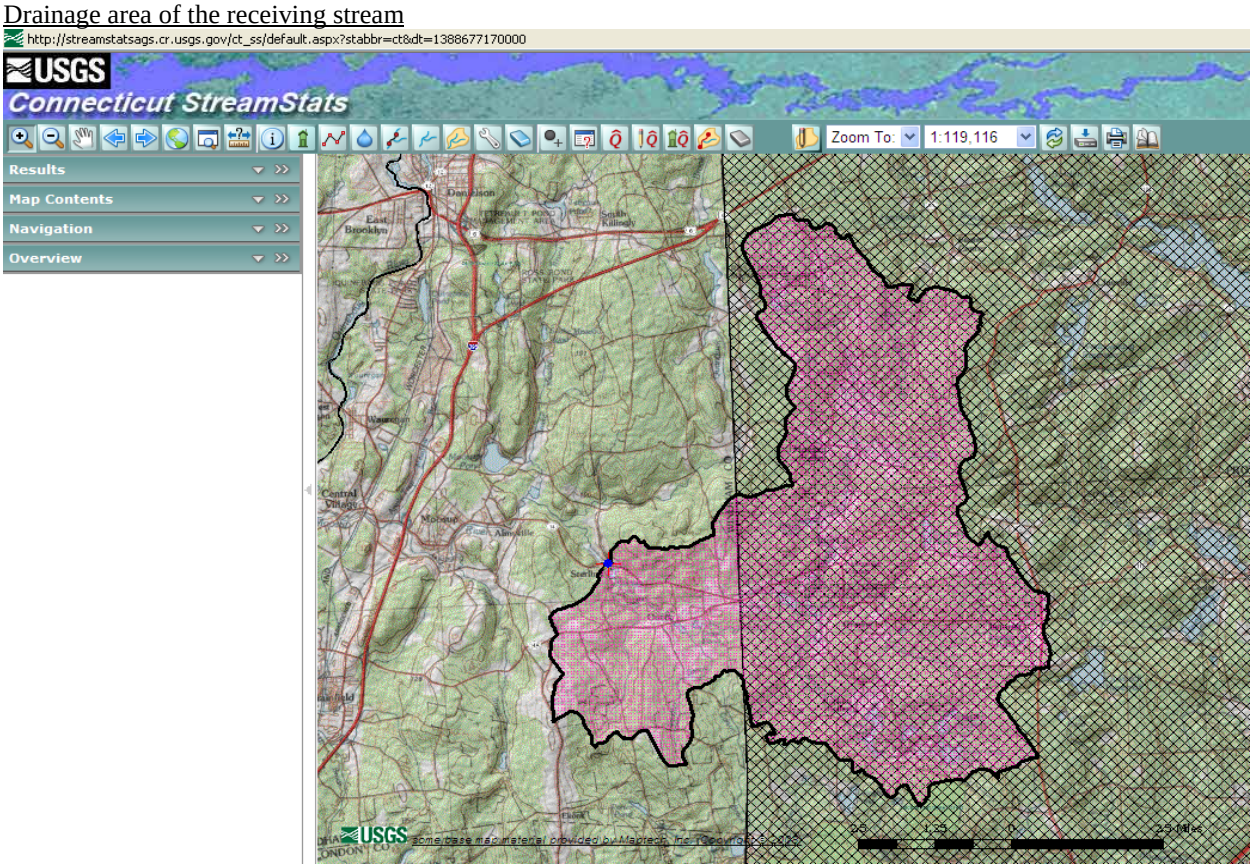
Combination of Re-Energy discharge and groundwater seep:- Lat. 41.71034º, Long. -71.82605º

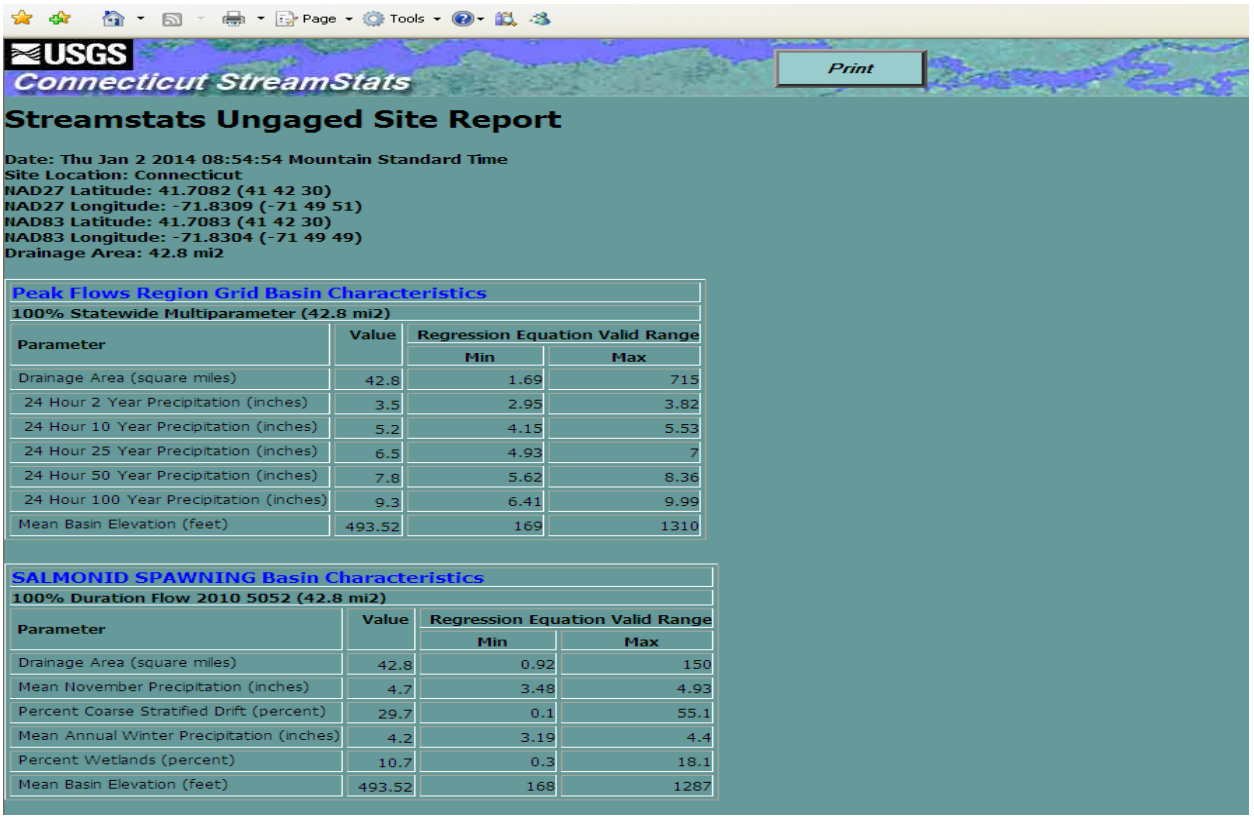


Moosup River (upstream of ReEnergy and groundwater discharges):- Lat. 41.71829º, Long. -71.82999º



Drainage area of the receiving stream





Streamstats Ungaged Site Report

Date: Thu Jan 2 2014 08:54:54 Mountain Standard Time
Site Location: Connecticut
NAD27 Latitude: 41.7082 (41 42 30)
NAD27 Longitude: -71.8309 (-71 49 51)
NAD83 Latitude: 41.7083 (41 42 30)
NAD83 Longitude: -71.8304 (-71 49 49)
Drainage Area: 42.8 mi2

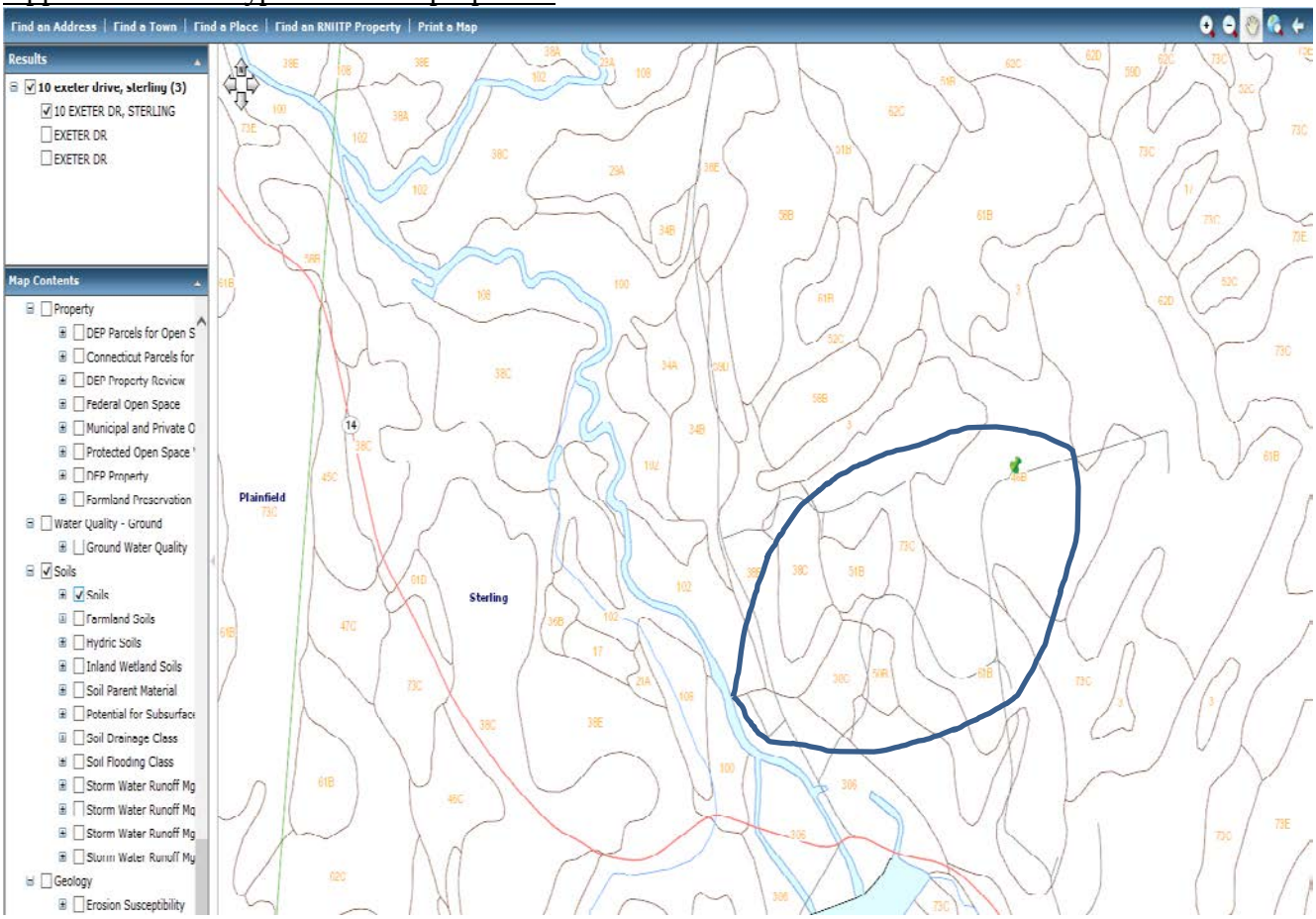
Peak Flows Region Grid Basin Characteristics
100% Statewide Multiparameter (42.8 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	42.8	1.69	715
24 Hour 2 Year Precipitation (inches)	3.5	2.95	3.82
24 Hour 10 Year Precipitation (inches)	5.2	4.15	5.53
24 Hour 25 Year Precipitation (inches)	6.5	4.93	7
24 Hour 50 Year Precipitation (inches)	7.8	5.62	8.36
24 Hour 100 Year Precipitation (inches)	9.3	6.41	9.99
Mean Basin Elevation (feet)	493.52	169	1310

SALMONID SPAWNING Basin Characteristics
100% Duration Flow 2010 5052 (42.8 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	42.8	0.92	150
Mean November Precipitation (inches)	4.7	3.48	4.93
Percent Coarse Stratified Drift (percent)	29.7	0.1	55.1
Mean Annual Winter Precipitation (inches)	4.2	3.19	4.4
Percent Wetlands (percent)	10.7	0.3	18.1
Mean Basin Elevation (feet)	493.52	168	1287

Appendix A: Soil types and their properties



Description of soil types at ReEnergy site and the surrounding areas up to the receiving stream[2]

46B:- Woodbridge fine sandy loam, 2% - 8% slopes, very stony
73C:- Charlton-Chatfield complex, 3% - 15% slopes, very rocky
61B:- Canton and Charlton soils, 3% - 8% slopes, very stony
50B:- Sutton fine sandy loam, 3% - 8% slopes
51B:- Sutton fine sandy loam, 2% - 8% slopes, very stony
38C:- Hinckley gravelly sandy loam, 3% - 15% slopes
38E:- Hinckley gravelly sandy loam, 15% - 45% slopes
102:- Pootatuck fine sandy loam
306:- Urdorthents-Urban land complex

The hydraulic conductivities of these soil types range from 4.0 µm/sec to 141 µm/sec (USDA-NRCS)[2]. Carsel and Parrish (1988) [3] have the hydraulic conductivity of sandy loam as 12.3 µm/sec. The Department will assume a hydraulic conductivity of 12.3 µm/sec, because fine sandy loam seems to be the prevalent soil type. 12.3 µm/sec falls within the hydraulic conductivity range stated in the Soil Survey of the State of Connecticut[2]. ReEnergy claims that the predominant soil type throughout ReEnergy site is glacial till. A review of five hydraulic conductivity data of till from sites at Plainfield, Sterling and Voluntown showed a range of 0.09 µm/sec to 28 µm/sec; a median of 9.4 µm/sec and an average of 11.9 µm/sec[4]. The average of the data set is comparable to the assumed 12.3 µm/sec used by the Department.

[2] United States Department of Agriculture, Natural Resources Conservation Service (2008), Soil Survey of the State of Connecticut.
[3]Carsel, R. F. and Parrish, R. S. (1988), "Developing Joint Probability Distributions of Soil Retention", Water Resources Research, 24 (5): 755-769.
[4] U.S. Geological Survey: Open-File Report 91-481 (1992), "The Stratigraphy and Hydraulic Properties of Tills in Southern New England", pp:36.

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

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

TENTATIVE DECISION

The Commissioner of Energy and Environmental Protection ("the Commissioner") hereby gives notice of a tentative decision to modify a permit based on an application submitted by **ReEnergy Sterling CT Limited Partnership** ("the applicant") under section 22a-430 of the Connecticut General Statutes ("C.G.S.") for a permit to discharge into the waters of the state.

In accordance with applicable federal and state law, the Commissioner has made a tentative decision that modification of the existing system or installation of a new system would protect the waters of the state from pollution and the Commissioner proposes to modify a permit for the discharge to the Moosup River.

The proposed permit modification, if issued by the Commissioner, will require that all stormwater and groundwater be treated to meet the applicable effluent limitations and periodic monitoring to demonstrate that the discharge will not cause pollution.

APPLICANT'S PROPOSAL

ReEnergy Sterling CT Limited Partnership proposes to discharge a maximum of 250,000 gallons per day of pretreated stormwater and groundwater runoff to the Moosup River from its facility.

The name and mailing address of the permit applicant are: ReEnergy Sterling CT Limited Partnership, 10 Exeter Drive, Sterling, CT 06377.

The proposed activity will take place at: 10 Exeter Drive, Sterling, CT 06377.

REGULATORY CONDITIONS

Type of Treatment

DSN 001-1: Treatment consists of cloth filtration prior entering into catch basins, then equalization in the retention basin, precipitation, flocculation, settling, final pH adjustment and final filtration.

Effluent Limitations

This permit contains effluent limitations consistent with Best Available Technology (BAT) based on a Case by Case Determination using the criteria of Best Professional Judgment 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.

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 C.G.S. section 22a-430 and the Water Discharge Permit Regulations (section 22a-430-3 and 4 of the Regulations of Connecticut State Agencies).

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. 201407571 PERMIT ID NO. CT0026972

Interested persons may obtain copies of the application from Michael LaPorte, ReEnergy Sterling CT Limited Partnership, 10 Exeter Drive, Sterling, CT 06377, (860) 230-2034.

The application is available for inspection by contacting Oluwatoyin Fakilede, (860) 424-3025, 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.

PUBLIC COMMENT

Prior to making a final determination 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, Bureau of Materials Management and Compliance Assurance, Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106-5127. 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 30 days prior to the hearing.

Petitions for a hearing 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. Original petitions must be *mailed or delivered* to: DEEP Office of Adjudications, 79 Elm Street, 3rd floor, Hartford, CT 06106-5127. Petitions cannot be sent by fax or email. Additional information can be found at www.ct.gov/deep/adjudications.

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action and Equal Opportunity Employer that is committed to complying with the Americans with Disabilities Act. To request an accommodation contact us at (860) 418-5910 or deep.accommodations@ct.gov.

Oswald Inglese, Jr.
Director
Water Permitting and Enforcement Division
Bureau of Materials Management and Compliance Assurance

Dated: JUL 23 2015