



State of Vermont
Department of Environmental Conservation
Wastewater Management Division
103 South Main Street – The Sewing Bldg
Waterbury VT 05671-0405
www.anr.state.vt.us/dec/ww/wwmd.cfm

Agency of Natural Resources

Phone: 802-241-3822
Fax: 802-241-2596

January 19, 2011

Ms. Lynn Dewald
Mr. Jeff Hardy
Entergy Nuclear Vermont Yankee LLC
320 Governor Hunt Road
Vernon VT 05354

SUBJECT: FINAL Permit ID-9-0036
PIN: NS75-0006
Entergy Nuclear Vermont Yankee
Vernon, Vermont

Dear Ms. Dewald and Mr. Hardy:

Enclosed is your final Indirect Discharge Permit (ID-9-0036) that has been signed by the Director of the Wastewater Management Division for the Commissioner of the Department of Environmental Conservation.

We received no comments during the public comment period so the final permit is essentially the same as the draft which we sent to you for your review.

Please read the entire permit carefully and become familiar with all of its terms and conditions. Please feel free to call me at 802-241-3824 if you have any questions.

Enclosed please find a DEC Customer Survey Form. Please complete the form and send it to the Environmental Assistance Office at the address listed on the form. Thank you.

Sincerely,

John J. Akielaszek, Chief
Indirect Discharge Permit Section

Enclosures: Final ID-9-0036; DEC Customer Survey Form
cc w/permit:

Richard A. Masters, P.E., Normandeau Associates, Inc.
Daniel Wilcox, Regional Engineer
Permit File ID-9-0036



AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
103 SOUTH MAIN STREET
WATERBURY, VERMONT 05676

INDIRECT DISCHARGE PERMIT

File Code: LCT-9-0036

Permit No.: ID-9-0036
PIN : NS75-0006

SECTION A - "ADMINISTRATION"

In compliance with provisions of 10 V.S.A. §1263, and in accordance with the following conditions, the permittee:

Entergy Nuclear Vermont Yankee, LLC
320 Governor Hunt Road
Vernon, Vermont 05654

is authorized to indirectly discharge treated domestic sewage and other laboratory wastes defined herein from subsurface and mound disposal systems serving the Vermont Yankee Nuclear Power Plant to the ground water and indirectly into the Connecticut River in the Town of Vernon, Vermont. **This is a permit renewal.**

A1. Permit Summary:

| | |
|--------------------------|---|
| Expiration Date | September 30, 2015 |
| Type of Waste | Domestic Sewage/Laboratory Waste |
| Treatment System | Septic Tanks |
| Disposal System | Leachfields/Mounds |
| Town | Vernon |
| Drainage Basin | Lower Connecticut River |
| Receiving Stream | Connecticut River |
| Drainage Area | 6266 mi ² |
| Stream Flow: | |
| Low Median Monthly (LMM) | 1,971,129,600 gpd (est) |
| 7Q10 | 984,918,500 gpd (est) |
| Total Disposal Capacity | 14,347 gpd (normal operation) 30,904 gpd (during plant outages) |
| Dilution Ratio | |
| (stream flow : effluent) | 137,390: 1 at LMM (normal operation) 68,650: 1 at 7Q10 (normal operation) 63,782: 1 at LMM (during plant outages) 31,870: 1 at 7Q10 (during plant outages) |

A2. Compliance Schedule:

The following schedule summarizes the actions and requirements necessary for compliance with the conditions of this permit. The permittee shall complete the requirements in accordance with the dates indicated. See the designated section for specific details.

| <u>Condition # and Description</u> | <u>Schedule Date</u> |
|--|---|
| A3. Apply for renewal of Indirect Discharge Permit | By June 30, 2015 |
| D2. Have a Vermont Registered Professional engineer complete an inspection of all sewage collection, treatment and disposal systems. | Annually, in April or May, after snowpack on the leachfields has melted |
| D2. Submit Annual Inspection Report | Annually prior to July 1 st |
| Submit schedule for implementing engineer's recommendations | Annually by July 1 st |
| D3. Submit tabulation of ponding levels | As specified |
| D4. Notify Secretary of pumping of tanks | As Specified |
| E2(A) Collect and analyze effluent samples | As Specified |
| E2(C) Record water meter readings | As Specified |
| E3(A) Collect and analyze groundwater monitor samples | As Specified |
| E3(B) Measure and record the depths to groundwater in the monitor wells | As Specified |
| E4(A) Collect and analyze receiving stream samples | As Specified |
| E4(A) Collect and analyze receiving stream samples | As Specified |
| E2(A), E2(C), E3(A), E3(B), E4(A) Submit results of monitoring | By the 15th of the second month following the date of sampling |

A2. Compliance Schedule (continued):

| <u>Condition # and Description</u> | <u>Schedule Date</u> |
|--|----------------------|
| E5. Submit evaluation by a water quality specialist of all required effluent, ground, and surface water quality data and biological monitoring data. | June 30, 2015 |

A3. Expiration Date:

This permit, unless revoked or amended, shall be valid until September 30, 2015 despite any intervening change in Water Quality Standards or the classification of receiving waters. Renewal of this Indirect Discharge Permit will be subject to all rules applicable at the time of application for renewal, including biological standards to determine significant alteration of aquatic biota.

The permittee shall apply for an Indirect Discharge Permit renewal by June 30, 2015. For the purposes of Title 3, an application for renewal of this indirect discharge permit will be considered timely if a complete application is received by the expiration date.

A4. Effective Date:

This permit becomes effective on the date of signing.

A5. Revocation:

The Secretary may revoke this permit in accordance with 10 V.S.A. §1267.

A6. Transfer of Permit:

This permit is not transferable without prior written approval of the Secretary. The permittee shall notify the Secretary immediately, in writing, before any sale, lease or other transfer of ownership of the property from which the permitted discharge originates. The proposed transferee shall make application for a permit to be reissued in their name. Failure to apply shall be considered a violation of this permit. Responsibility for compliance with the conditions of this permit shall be the burden of the permittee until such time as transfer of the permit to the transferee is complete. All application and operating fees must be paid in full prior to transfer of this permit. This permit shall be transferred only upon showing by the permittee or proposed transferee of compliance with the following conditions:

A6. Transfer of Permit (continued):

- a. The transferee shall be a legal entity, financially and technically competent to operate, inspect, maintain and replace the system;
- b. The transferee shall demonstrate that they have the legal authority to raise revenues for the proper operation, inspection, and maintenance of the system; and
- c. The transferee shall provide a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee(s) to the Secretary.

A7. Minor Modifications of Permits:

The Secretary may modify this permit without requiring a permit application, a public notice, or a public hearing to correct typographical errors, or to increase the monitoring frequency in accordance with Condition E(8) of this permit.

A8. Indirect Discharge Rules:

This indirect discharge was reviewed and originally qualified for an Indirect Discharge Permit in accordance with Section 14-905 (f), In Situ, In-Ground Effluent Testing, of the Indirect Discharge Rules.

The New Warehouse sewage treatment and disposal system was approved under Water Supply and Wastewater Disposal Permit WW-2-0339. This indirect discharge permit incorporates by reference all of the terms and conditions of that permit with the exception of Condition #6 of WW-2-0339 which has been superseded by Condition D3 of this permit.

This indirect discharge was reviewed and qualified for an Indirect Discharge Permit in accordance with Section 14-603 (d) of the Indirect Discharge Rules for new indirect discharges of sewage. No increase in sewage volume is allowed without the written approval of the Secretary.

A9. Right of Agency To Inspect:

The permittee shall allow the Secretary or the Secretary's authorized representative upon the presentation of their credentials and at reasonable times:

- a. To enter upon permittee's premises in which any effluent source treatment or disposal system is located or in which any records are required to be kept under the conditions of the permit;

A9. Right of Agency To Inspect (continued):

- b. To have access to and copy any records required to be kept under conditions of this permit;
- c. To inspect any monitoring equipment or method required in this permit;
- d. To sample any discharge of waste, groundwater or surface water; and
- e. To inspect any collection, treatment, pollution management and disposal facilities required by this permit.

A10. Permit Availability:

A copy of this permit shall remain at the office of the permittee and, upon request, shall be made available for inspection by the Secretary.

A11. Minor Modifications To System:

Minor modifications of the engineering design which do not reduce the treatment effectiveness or increase the capacity of the system may be approved in writing by the Secretary without permit amendment.

Before making modifications to the treatment and/or disposal system the permittee shall submit plans to the Secretary for review and approval. These plans must be approved before any of the modifications or additions are made.

A12. Correction of Failed Systems:

The Secretary may, upon discretion, issue an Amendment to the Indirect Discharge Permit for the design and reconstruction of a failed wastewater disposal system where the replacement system design was not previously approved.

Before reconstruction of the failed system the permittee shall submit plans to the Secretary for review and approval. These plans must be approved before any reconstruction occurs. Due to the urgency of the need to correct failed disposal systems, the Secretary will process these Amendments as soon as possible.

A13. Operating Fees:

This indirect Discharge is subject to operating fees. The permittee shall submit the operating fees in accordance with procedures provided by the Secretary.

SECTION B "INDIRECT DISCHARGE"

B1. Location of Indirect Discharge:

The indirect discharge is located on the Connecticut River in the Town of Vernon in Windham County, Vermont with a drainage area of 6,266 square miles at the point of compliance. The indirect discharge can be located on the USGS Brattleboro Vermont 15' quadrangle map at Latitude N 42° 46' 54" and Longitude W 72° 30' 49".

B2. Nature of Indirect Discharge:

The discharge consists primarily of treated domestic sewage and may also include small volumes of laboratory waste, primarily pH buffer solutions, acetic acid (5% solution) and potassium iodide (0.3% solution).

The wastewater is discharged from subsurface and mound wastewater disposal systems with the following approved capacities:

| <u>Disposal System</u> | <u>Normal Operation Design Capacity (gpd)</u> | <u>"Plant Outage" Design Capacity (gpd)</u> |
|----------------------------|---|---|
| Main (North) System (1) | 4,950 | 14,900 |
| C.O.B. (South) System (2) | 4,607 | 9,214 |
| Plant Support Building | 2,160 | 2,160 |
| New Warehouse System (3) | 2,000 | 4,000 |
| Governor Hunt House System | 540 | 540 |
| Gatehouse #1 System | 90 | 90 |
| ===== | | |
| TOTALS | 14,347 | 30,904 |

(1) During plant outages, the Main (North) system may be loaded to a maximum of 14,900 gallons per day by loading both existing leachfields (combined 9,900 gpd) and the new 5,000 gpd leachfield. The outage lasts approximately one month and occurs every 18 months. During these outages the permittee adds temporary workers to perform maintenance on the plant.

(2) During plant outages, the COB (South) System may be loaded to a maximum of 9,214 gallons per day by loading both leachfields.

(3) During plant outages, the New Warehouse System may be loaded to a maximum of 4,000 gallons per day by loading both existing leachfields.

B2. Nature of Indirect Discharge (continued):

The low median monthly flow (LMMF) of the Connecticut River is approximately 1,971,129,600 gpd and the 7Q10 flow is approximately 984,918,500 gpd. During normal operation, the stream flow/effluent dilution ratio is 137,390:1 at LMMF and 68,650:1 at 7Q10. During plant outages the stream flow/effluent dilution ratio is 63,782:1 at LMMF and 31,870:1 at 7Q10.

SECTION C "SYSTEM CONSTRUCTION"

C1. Approved Plans - Existing Systems:

A listing of the approved plans for construction of the subsurface sewage disposal systems at Vermont Yankee whose discharges are authorized by this permit can be found in the fact sheet issued for this permit and dated December, 2010.

SECTION D "SYSTEM OPERATION"

D1. General Operating Requirements:

The sewage treatment and disposal system shall be operated at all times in a manner that will (1) not permit the discharge of sewage onto the surface of the ground; (2) not result in the surfacing of sewage; (3) not result in the direct discharge of sewage into the waters of the State; (4) not result in a violation of Water Quality Standards; and (5) not cause a significant alteration of the aquatic biota in the receiving waters.

The disposal fields for the Main, New Warehouse, Construction Office Building (South) and Plant Support Building sewage disposal systems shall be alternated on an annual basis. The effluent disposal rate to sewage disposal system shall not exceed the values listed in Condition B(2).

D2. Annual Inspection:

Annually during the month of April or May, after the snowpack on the leachfields has melted, the permittee shall engage a professional engineer registered in the State of Vermont to make a thorough inspection, evaluation, and report of the complete sewage collection, treatment and disposal system. The engineer's inspection shall include, but not be limited to the following:

D2. Annual Inspection (continued):

- a. verification of the use of alternate disposal fields (Main, New Warehouse Construction Office Building (South System) and Plant Support Building disposal systems);
- b. verification of the proper operation of the lift station pumps and alarms;
- c. inspecting the entire collection system, removing manhole covers to observe the condition of the sewers and manholes, and noting any signs of inflow or excess infiltration;
- d. evaluating the accumulation of solids and scum in the septic tanks and verifying the date of pumping of the tanks;
- e. checking the proper distribution of flow and the levelness of all distribution boxes in the disposal fields;
- f. checking the depth of ponding in observation wells for those fields in use during the inspection;
- g. checking the calibration of the effluent flow meter (if applicable); and
- h. noting any necessary repairs, or maintenance that needs to be performed.

Before July 1st each year the permittee shall have a professional engineer submit an annual report that includes the following items:

- a. a complete list of the items inspected and the results of the inspection;
- b. a discussion of the recommended repairs and maintenance required;
- c. the measured depth of sludge and scum in all septic tanks; and
- d. an evaluation of metered water use, depth of ponding and groundwater table levels in the vicinity of the disposal fields (if groundwater depth measurement is required).

Before July 1st each year the permittee shall notify the Secretary in writing stating how the engineer's recommendations are to be implemented and including a schedule for the required repairs and maintenance.

D3. Operation During Plant Outages:

The permittee shall verify that the Main (North) system pump station is properly alternating among all three fields during plant outages. At least every two weeks during outages, the permittee shall measure the depth of ponding in the observation wells in the Main (North) system. The permittee shall verify that the New Warehouse system pump station is properly alternating between both fields during plant outages. At least every two weeks during outages, the permittee shall measure the depth of ponding in the observation wells in the New Warehouse system. The permittee shall verify that the Construction Office Building (South System) pump station is properly alternating between both fields during plant outages. At least every two weeks during outages, the permittee shall measure the depth of ponding in the observation wells in the Construction Office Building (South System) mound leachfield. The permittee shall submit a tabulation of the recorded measurements at the end of each outage period, along with the required flow records.

D4. Septage Disposal:

During the system's annual inspection the depth of sludge and scum shall be measured in all septic tanks. The septic tanks shall be pumped if: 1) the sludge is closer than twelve (12) inches to the outlet baffle or; 2) the scum layer is closer than three (3) inches to the septic tank outlet baffle or; 3) if otherwise recommended by the inspecting engineer.

Sampling of the septic tank effluent for radioactivity in accordance with the procedures listed in the approved Quality Assurance/Quality Control Plan must be done each time pumping occurs, prior to pumping the tanks.

Before pumping the septage for land application, the permittee shall notify the Secretary in writing, of the name and address of the pumper and verify that the sludge has been tested for radioactivity and will be disposed of in accordance with the Solid Waste Management Facility Certification.

D5. System Operation and Maintenance:

The sewage collection, treatment, and disposal system shall be operated and maintained at all times in a manner satisfactory to the Secretary and in a manner that will not pose a risk to the public health and safety, or cause contamination of drinking water supplies, groundwater and/or surface water.

D6. Reporting of Failures:

The permittee shall immediately report any failure of the wastewater collection, treatment, or disposal system to the Secretary, first by telephone on the first working day within 24 hours of the failure and then in writing within 5 business days of the failure. The written notice shall include a discussion of the actions taken or to be taken to correct the failure.

Notification shall be to the Indirect Discharge Permit Section of the Department of Environmental Conservation at (802) 241-3822.

Reporting of instances when daily average flow exceeds design flow will be initiated only when:

- (a) a flow exceedence is associated with a physical or mechanical condition which compromises the performance of the sewage disposal system; or
- (b) a flow exceedence occurs for three or more consecutive days during an outage period; or
- (c) a flow exceedence occurs for two or more consecutive days during a non-outage operating period.

Any design flow exceedence shall be investigated to determine if it was associated with a problem in the system's performance.

D7. Discharge Restrictions:

The permittee shall not allow any person to discharge or cause to be discharged anything other than sanitary wastewater and the laboratory wastes authorized herein to this treatment and disposal facility.

SECTION E "MONITORING"**E1. Quality Assurance/Quality Control Plan:**

The laboratory identified in the Quality Assurance/Quality Control Plan shall demonstrate successful performance for U.S. EPA check samples for all parameters and shall analyze any check samples provided by the Secretary. Failure to obtain an acceptable result for either samples provided by the Secretary or EPA check samples may be a basis for requiring an alternate analytical laboratory.

E2. Effluent Monitoring:

A. Chemical

The effluent to the disposal fields for the Main, C.O.B., New Warehouse and Plant Support Building sewage disposal systems shall be sampled and analyzed as follows:

| Parameter | Measurement Units | Sample Type | Sample Frequency |
|---|-------------------|-------------|-------------------|
| Flow (1) | gpd | Daily Total | Continuous |
| Biochemical Oxygen Demand (5-day) | mg/L | Grab | April and October |
| Total Suspended Solids | mg/L | Grab | April and October |
| pH | S.U. | Grab | April and October |
| Total Kjeldahl Nitrogen | mg/L | Grab | April and October |
| Ammonia (as N) | mg/L | Grab | April and October |
| Nitrate/Nitrite Nitrogen (NO ₃ / NO ₂ as N) | mg/L | Grab | April and October |
| Total Phosphorus | mg/L | Grab | April and October |
| Total Dissolved Phosphorus | mg/L | Grab | April and October |
| Chloride (Cl-) | mg/L | Grab | April and October |

=====

(1) The permittee may record daily water use as an alternative to this monitoring requirement (See E(2)(B) below).

The results of the effluent analysis shall be submitted to the Secretary prior to the 15th day of the second month following the date of sampling.

B. Sewage Volume:

The permittee shall install sewage flow meters on the Main Sewage Disposal system, the C.O.B. sewage disposal system, New Warehouse sewage disposal system and Plant Support Building system in order to monitor the daily sewage flow to each of these disposal fields.

Alternatively, the permittee may record the daily water meter readings for all units connected to these sewage disposal systems, along with any bottled water utilized, to determine the total volume of water used each day. The volume of water used and individual meter readings shall be submitted to the Secretary by the 15th of the month following the recording period.

E3. Groundwater Monitoring:A. Chemical and Bacteriological Monitoring:

The groundwater in the monitoring wells upgradient and downgradient of the Main, Construction Office Building (South System), New Warehouse and Plant Support Building sewage disposal fields, both primary and alternate, as identified in the Quality Assurance/ Quality Control plan, shall be sampled and analyzed for the following parameters:

| Parameter | Measurement Units | Sample Type | Sample Frequency |
|--|----------------------|----------------|---------------------|
| Nitrate (as N) | mg/L | Grab | April and October |
| Total Dissolved Phosphorus (as P) | mg/L | Grab | April and October |
| Chloride (Cl-) | mg/L | Grab | April and October |
| pH | S.U. | Grab | April and October |
| <u>Escherichia coli</u> | colonies/100 ml | Grab | April and October |
| Depth to Groundwater (below ground surface) | inches | ---- | At time of sampling |
| ===== | | | |

Because of changing water table conditions, the samples from the groundwater monitors might not be collected on the same day or in the same week if water is not available. If a monitor has water at any time during the month then a sample is required to be collected and analyzed.

E3. Groundwater Monitoring:

A. Chemical and Bacteriological Monitoring: (continued)

For the purpose of this section, therefore, weekly groundwater measurements are required in April and October. Once a well is sampled, no further groundwater level measurements will be required for that well for that month.

The results of these analyses shall be submitted to the Secretary prior to the 15th day of the second month following the date of sampling.

B. Groundwater Levels:

The Quality Control/Quality Assurance plan includes the location of a minimum of six groundwater monitors installed around the Main, C.O.B. and New Warehouse disposal systems each, three groundwater monitors installed around the Plant Support Building disposal fields, two groundwater monitors located downgradient of the C.O.B. mound (Northwest) leachfield, and two groundwater monitors installed around the Governor Hunt and Gatehouse #1 disposal systems each, to monitor the level of the ground water table. Upon request by the Secretary, the depth to groundwater (below ground surface) shall be measured and recorded at a frequency determined by the Secretary above that required in E3(A) above. Any such request would be in the form of a letter to the permittee.

E4. Receiving Stream Monitoring:

Indirect Discharge Permits normally require regular chemical and biological monitoring of the receiving waters. Due to the extremely large stream flow to effluent flow ratio at low median monthly flow (approx. 63,782:1), and the size of the Connecticut River at the point of compliance, stream water quality monitoring is not required for this system. However, if the Secretary determines stream monitoring to be necessary, the permittee shall submit, upon written notice from the Secretary, sampling procedures for chemical and biological sampling of the receiving waters within 90 days of receiving such notice. The requirement for sampling and the frequency of such sampling will be upon written notice from the Secretary.

E5. Summary Water Quality Evaluation:

By June 30, 2015 the permittee shall have a qualified water quality specialist submit an evaluation to the Secretary of all past effluent and groundwater quality data and determine what, if any, short or long term impacts there have been on groundwater quality. The results of the septic tank effluent monitoring required under Condition D(4) shall also be reviewed and summarized as to groundwater impacts, if any. If chemical and biological monitoring of the receiving waters was conducted, the results of that monitoring shall also be evaluated.

E6. Sampling and Testing Procedures:

All wastewater, groundwater and surface water sampling, preservation, handling and test procedures used to comply with the monitoring requirements herein shall conform to procedures specified in the most current edition of Standard Methods for the Examination of Water and Wastewater APHA - AWWA - WPCF, and the Vermont Water Quality Standards unless written approval of an alternate method is received from the Agency.

E7. Miscellaneous:

If the permittee monitors any required parameter set forth in this permit for this treatment and disposal system more frequently than required by this permit, the results of such monitoring shall be included on the Discharge Monitoring Report Form.

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Secretary. Records shall include laboratory bench sheets showing exact location, time and composites of sample as well as analytical procedures used, interim results obtained and all calculations supporting the reported test results.

E8. Additional Monitoring:

The Secretary reserves the right to require additional monitoring of the system, in accordance with Condition A(7) of this permit, should operation of the system fail to meet the requirements of Conditions D(1) and D(5).

SECTION F - "COMPLIANCE REVIEW"

If the results of monitoring the effluent and groundwater (Section E) show there is a possibility that the aquatic permitting criteria of the Indirect Discharge Rules may be exceeded at the designated stream flow conditions, the Secretary may increase the frequency of, or change the location of monitoring of the ground and surface water. If continued monitoring and analysis indicates that a violation of the effluent disposal rate, or a violation of the Vermont Water Quality Standards, or a significant alteration of the aquatic biota has occurred, is occurring, or is likely to occur the Secretary may require the permittee to take appropriate corrective actions to eliminate or reduce the possibility of a violation.

The issuance of this Indirect Discharge Permit ID-9-0036, to Entergy Nuclear Vermont Yankee, LLC., by the Secretary relies upon the data, designs, judgement and other information supplied by the applicant, his consultants and other experts who have participated in the preparation of the application. The Secretary makes no assurance that the systems will meet the performance objectives of the applicant and no warranties or guarantees are given or implied.

SECTION G - "EFFECTIVE DATE"

This Indirect Discharge Permit, ID-9-0036, issued to Entergy Nuclear Vermont Yankee LLC., for the discharge of wastewater from the sewage treatment and disposal systems at the Entergy Nuclear Vermont Yankee LLC., facility in Vernon, Vermont is effective on this 19th day of January, 2011.

David K. Mears, Commissioner
Department of Environmental Conservation

By Christine Thompson
Christine Thompson, Director
Wastewater Management Division

