AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
ONE NATIONAL LIFE DRIVE, MAIN BUILDING, 2nd FLOOR
MONTPELIER, VT 05620-3522

Permit No.: 3-1211
PIN: NS95-0163
NPDES No.: VT0100277

Name of Applicant: Town of Putney
PO Box 233
Putney, VT 05346

Expiration Date: September 30, 2021

DRAFT
DISCHARGE PERMIT

In compliance with the provisions of the Vermont Water Pollution Control Act as amended (10 V.S.A. chapter 47), the Vermont Water Pollution Control Permit Regulations as amended, and the federal Clean Water Act as amended (33 U.S.C. § 1251 *et seq.*), the Town of Putney, Vermont (hereinafter referred to as the "Permittee") is authorized by the Secretary of Natural Resources (Secretary) to discharge from the Putney Wastewater Treatment Facility to Sackett's Brook in accordance with the following conditions.

This permit shall become effective on October 1, 2016.

Alyssa B. Schuren, Commissioner
Department of Environmental Conservation

By: _____ Date: _____
Mary L. Borg, Deputy Director
Watershed Management Division

I. SPECIAL CONDITIONS

A. EFFLUENT LIMITS

1. Until September 30, 2021, the Permittee is authorized to discharge from outfall serial number S/N 001 of the Putney Wastewater Treatment Facility to Sackett's Brook, an effluent for which the characteristics shall not exceed the values listed below:

EFFLUENT CHARACTERISTICS	**DISCHARGE LIMITATIONS**							
	Annual Average	Monthly Average	Weekly Average	Maximum Day	Monthly Average	Weekly Average	Maximum Day	Instantaneous Maximum
		Mass (**lbs/day**)			Concentration (**mg/L**)			
Flow	0.100 MGD							
Biochemical Oxygen Demand (5-day, 20° C) (BOD_5) [1]		20	30		30	45	50	
Total Suspended Solids (TSS) [1]		20	30		30	45	50	
Total Phosphorus (TP)		4.17						
Total Nitrogen (TN)[2,3]	See Special Condition I.B.						Monitor only	
Total Kjeldahl Nitrogen (TKN)							Monitor only	
Nitrate/Nitrite Nitrogen (NO_x)							Monitor only	
Settleable Solids								1.0 mL/L
Escherichia coli								77/100 mL
Total Residual Chlorine								0.1 mg/L
pH					Between 6.5-8.5 Standard Units			

[1] The Permittee shall comply with the more restrictive of the mass and concentration limitations.
[2] TN = TKN + NO_x
[3] See Total Nitrogen Form WR-43-TN

2. The effluent shall not have concentrations or combinations of contaminants including oil, grease, scum, foam, or floating solids which would cause a violation of the Vermont Water Quality Standards.

3. The effluent shall not cause visible discoloration of the receiving waters.

4. The monthly average concentrations of Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS) in the effluent shall not exceed 15 percent of the monthly average concentrations of BOD_5 and TSS in the influent into the Permittee's wastewater treatment facility. For the purposes of determining whether the Permittee is in compliance with this condition, samples from the effluent and the influent shall be taken with appropriate allowance for detention times.

5. If the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the permitted flow limitation, the Permittee shall submit to the Agency projected loadings and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans.

6. Any action on the part of the Agency in reviewing, commenting upon or approving plans and specifications for the construction of wastewater treatment facilities shall not relieve the Permittee from the responsibility to achieve effluent limitations set forth in this permit and shall not constitute a waiver of, or act of estoppel against any remedy available to the Agency, the State of Vermont or the federal government for failure to meet any requirement set forth in this permit or imposed by state or federal law.

B. TOTAL NITROGEN

1. Optimization Plan

By **December 31, 2016** the Permittee shall develop and submit to the Agency of Natural Resources (Agency) for review and approval a Nitrogen Removal Optimization Evaluation Plan for the evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen. The methods to be evaluated include: operational, process, equipment changes designed to enhance nitrification and denitrification (seasonal and year-round); incorporation of anoxic zones; septage receiving policies and procedures; and side stream management. The Permittee shall implement these recommended operational changes to maintain a mass discharge of total nitrogen (TN) lower than the existing mass loading of TN. The baseline annual average daily TN load discharge from this facility is estimated to be **approximately 16 lbs/day**.

This plan shall be developed by a qualified professional with experience in the operation and/or design of municipal wastewater treatment facilities in conjunction with the Chief Operator of the facility.

This plan shall be provided to the Agency for review and approval prior to implementation and shall be revised by the Permittee upon the Agency's request to address equipment or operational changes.

Implementation of the plan shall commence within 30 days of its approval by the Agency.

2. Plan Evaluation

After implementing the plan for one year, the Permittee shall evaluate the effectiveness of the plan. The evaluation shall be conducted by a qualified professional with experience in the operation and/or design of municipal wastewater treatment facilities in conjunction with the Chief Operator of the facility. The results of the evaluation shall be submitted to the Agency for review and approval within one year and six months following the implementation of the plan and shall be revised at the Agency's request. Actions to implement the approved nitrogen removal optimization practices, if any, shall be initiated within 90 days of the Agency's approval.

3. Reporting

Annually, the Permittee shall submit a report to the Agency as an attachment to the **December** Discharge Monitoring Report (DMR) form WR-43 that documents the annual average TN discharged (in pounds per day) from the facility, summarizes nitrogen removal optimization and efficiencies, and tracks trends relative to the previous year. The first annual report shall include data collected during 2017, and shall be attached to the December 2017 DMR form WR-43.

TN = Total Kjeldahl Nitrogen (TKN) + Nitrite/Nitrate (NO_x).

TN pounds per day, annual average, shall be calculated as follows:

1. Calculate the pounds of TN discharged on each sample date:

TN (lbs/day) = TN (mg/L) × volume discharged (million gallons) on day of sample × 8.34

2. Calculate the TN, pounds per day, annual average:

TN (lbs/day, annual average = (Sum of all TN [lbs/day])/(count of TN samples)

4. Wasteload Allocation

This permit does not establish a formal Wasteload Allocation for the facility nor does it convey any right to ownership of the facility's estimated baseline annual average TN load.

The Agency reserves the right to reopen and amend this permit, pursuant to Section II.B.4 of this permit, to include an alternate TN limitation and/or additional monitoring requirements based on the monitoring data, the results of nitrogen optimization activities, or a formal Wasteload Allocation promulgated under Vermont's Wasteload Allocation

Rule for Total Nitrogen in the Connecticut River Watershed based on the Long Island Sound Total Nitrogen Total Maximum Daily Load.

C. WASTE MANAGEMENT ZONE

In accordance with 10 V.S.A. § 1252, this permit hereby establishes a waste management zone that extends from the outfall of the Putney Wastewater Treatment Facility in Sackett's Brook and the Connecticut River, within the Vermont border, downstream one mile.

D. REAPPLICATION

If the Permittee desires to continue to discharge after the expiration of this permit, the Permittee shall reapply on the application forms then in use at least 180 days before this permit expires.

Reapply for a Discharge Permit by: March 31, 2021

E. OPERATING FEES

This discharge is subject to operating fees as required by 3 V.S.A. § 2822.

F. INSTREAM MONITORING

The Permittee shall perform instream water quality monitoring in Sackett's Brook above and below the Putney Wastewater Treatment Facility outfall S/N 001. The Permittee shall submit a study plan, outlining the locations of the collection, sampling methodology, and analysis of the data, to the Agency's Monitoring, Assessment and Planning Program for approval before sampling begins.

1. Instream water quality samples shall be collected for TP, TN, pH, and turbidity once per month, **during the months of June through October of 2017, 2018, and 2019**. Samples shall be collected upstream and downstream of outfall S/N 001 at river mile 0.7 and river mile 0.5 respectively. Streamflow characteristics shall be documented for each sample collection. The results of the sampling shall be submitted as an attachment to the **appropriate DMR form WR-43**.

The Agency reserves the right to reopen and amend this permit to include additional monitoring or effluent limitations

G. TOXICITY TESTING

1. The Permittee shall complete the following Whole Effluent Toxicity (WET) testing:

a. During **August or September 2020**, the Permittee shall conduct a two-species (*Pimephales promelas* and *Ceriodaphnia dubia*) acute WET test on a composite effluent sample collected from S/N 001. The results shall be submitted to the Agency by **December 31, 2020**.

b. The WET tests shall be conducted according to the procedures and guidelines specified in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (October 2002 or, if a newer edition is available, the most recent edition) U.S. EPA document.

Based upon the results of these tests or any other toxicity tests conducted, the Agency reserves the right to reopen and amend this permit, pursuant to Section II.B.4 of this permit, to require additional WET testing or a Toxicity Reduction Evaluation be conducted.

H. MONITORING AND REPORTING

1. Sampling and Analysis

The sampling, preservation, handling, and analytical methods used shall conform to the test procedures published in 40 C.F.R. Part 136.

The permittee shall use sufficiently sensitive test procedures (i.e., methods) approved under 40 C.F.R. Part 136 for the analysis of the pollutants or pollutant parameters specified in Condition I.A. above.

Samples shall be representative of the volume and quality of effluent discharged over the sampling and reporting period. All samples are to be taken during normal operating hours. The Permittee shall identify the effluent sampling location used for each discharge.

2. Effluent Monitoring

The Permittee shall monitor and record the quality and quantity of discharge(s) at outfall serial number S/N 001 of the Putney Wastewater Treatment Facility, according to the following schedule and other provisions: until September 30, 2021

PARAMETER	MINIMUM FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow	Continuous	Daily Total, Max., Min.
Biochemical Oxygen Demand (BOD_5)	1 × month	composite[1]
Total Suspended Solids (TSS)	1 × month	composite[1]
Total Phosphorus (TP)	1 × month	composite[1]
Total Nitrogen (TN)	1 × month	[calculated[2,3]]
Total Kjeldahl Nitrogen (TKN)	1 × month	composite[1,3]
Nitrate/Nitrite Nitrogen (NO_x)	1 × month	composite[1,3]
Settleable Solids	1 × day	grab[4]

Escherichia coli	1 × month	grab[5]
Total Residual Chlorine	1 × day	grab[5,6]
pH	1 × day	grab

Samples collected in compliance with the monitoring requirements specified above shall be collected at the final effluent stand pipe V notch.

[1] Composite samples for BOD_5, TSS, TP, TKN and NO_x shall, at a minimum, be taken during the hours 6:00 AM to 6:00 PM, unless otherwise specified. Eight hours is the minimum period for the composite, 24 hours is the maximum for the composite.
[2] TN = TKN + NO_x
[3] Submit results each month on Total Nitrogen Monitoring Report Form WR-43-TN.
[4] Settleable Solids samples shall be collected between 10:00 AM and 2:00 PM or during the period of peak flow.
[5] The monthly *E. coli* sample shall be collected at the same time and location as a daily Total Residual Chlorine sample. Samples shall be collected between the hours of 6:00 AM and 6:00 PM.
[6] Total Residual Chlorine shall be monitored and recorded both prior to and following dechlorination.

3. Annually, by December 31, the Permittee shall monitor S/N 001 and submit the results, including units of measurement, as an attachment to the DMR form WR-43 for the month in which the samples were taken for the following parameters:

Temperature
Ammonia (as N)
Dissolved Oxygen
Oil & Grease
Total Dissolved Solids

Grab samples shall be used for Temperature, Ammonia, Dissolved Oxygen, and Oil & Grease; a composite sample shall be used for Total Dissolved Solids. Samples shall be representative of the seasonal variation in the discharge.

4. Influent Monitoring

The Permittee shall monitor the quality of the influent according to the following schedule and provisions.

PARAMETER	MINIMUM FREQUENCY OF ANALYSIS	SAMPLE TYPE
Biochemical Oxygen Demand (BOD_5)	1 × month	composite[1]
Total Suspended Solids (TSS)	1 × month	composite[1]
Total Nitrogen (TN)	1 × quarter	[calculated[2,3]]
Total Kjeldahl Nitrogen (TKN)	1 × quarter	composite[1,3,4]
Nitrate/Nitrite Nitrogen (NO_x)	1 × quarter	composite[1,3,4]

[1] Composite samples for BOD_5, TSS, TKN and NO_x shall, at a minimum, be taken during the hours 6:00 AM to 6:00 PM, unless otherwise specified. Eight hours is the minimum period for the composite, 24 hours is the maximum for a composite.
[2] $TN = TKN + NO_x$
[3] Submit results each month on Total Nitrogen Monitoring Report Form WR-43-TN.
[4] The influent TKN and NO_x sample shall be collected on the same day as an effluent TKN and NO_x sample.

5. Reporting

The Permittee is required to submit monthly reports of monitoring results on DMR form WR-43. Reports are due on the 15th day of each month, beginning with the month following the effective date of this permit. When the Permittee submits DMRs using an electronic system designated by the Agency, it is not required to submit hard copies of DMRs.

If, in any reporting period, there has been no discharge, the Permittee must submit that information by the report due date.

Signed copies of these, and all other reports required herein, shall be submitted to the Secretary at the following address:

Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division
One National Life Drive, Main Building, 2nd Floor
Montpelier, VT 05620-3522

All reports shall be signed:

a. In the case of corporations, by a principal executive officer of at least the level of vice president, or his/her duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the permit form originates and the authorization is made in writing and submitted to the Agency;

b. In the case of a partnership, by a general partner;

c. In the case of a sole proprietorship, by the proprietor; or

d. In the case of a municipal, State, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

In addition to the monitoring and reporting requirements given above, daily monitoring of certain parameters for operational control shall be submitted to the Agency on the DMR form WR-43. Operations reports shall be submitted monthly.

6. Recording of Results

The Permittee shall maintain records of all information resulting from any monitoring activities required, including:

a. The exact place, date, and time of sampling or measurement;

b. The individual(s) who performed the sampling or measurements;

c. The dates and times the analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques and methods used including sample collection handling and preservation techniques;

f. The results of such analyses;

g. The records of monitoring activities and results, including all instrumentation and calibration and maintenance records; and

h. The original calculation and data bench sheets of the operator who performed analysis of the influent or effluent pursuant to requirements of Section I.A of this permit.

The results of monitoring requirements shall be reported (in the units specified) on the DMR form WR-43 or other forms approved by the Agency.

7. Additional Monitoring

If the Permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form WR-43. Such increased frequency shall also be indicated.

I. DRY WEATHER FLOWS

Dry weather flows of untreated municipal wastewater from any sanitary or combined sewers are not authorized by this permit and are specifically prohibited by state and federal laws and regulations. If for any reason there is a discharge to waters of the State of dry weather flows of untreated municipal wastewater from any sanitary or combined sewer, the operator of the facility or the operator's delegate shall comply with the notice requirements outline in Section II.A.2 of this permit.

J. OPERATION, MANAGEMENT, AND EMERGENCY RESPONSE PLANS

1. The Permittee shall implement the Operation, Management, and Emergency Response Plan for the treatment facility, sewage pumping stations, and sewer line stream crossings as approved by the Agency on January 13, 2009.

2. The Permittee shall implement the Operation, Management, and Emergency Response Plan for the sewage collection system as approved by the Agency on September 21, 2010

The Permittee shall revise these plans upon the Agency's request or on its own motion to reflect equipment or operational changes.

K. EMERGENCY ACTION - ELECTRIC POWER FAILURE

The Permittee shall indicate in writing to the Agency **within 30 days after the effective date of this permit** that the discharge shall be handled in such a manner that, in the event the primary source of electric power to the wastewater treatment facility (including pump stations) fails, any discharge into the receiving waters will attempt to comply with the conditions of this permit, but in no case shall the wastes receive less than primary treatment (or in the case of ultraviolet light disinfection systems, not less than secondary treatment) plus disinfection and dechlorination.

The Permittee shall either provide an alternative source of power for the operation of its wastewater treatment facility, or demonstrate that the treatment facility has the capacity to store the wastewater volume that would be generated over the duration of the longest power failure that would have affected the facility in the last five years, excluding catastrophic events.

The alternative power supply, whether from a generating unit located at the wastewater treatment facility or purchased from an independent source of electricity, must be separate from the existing power source used to operate the wastewater treatment facility. If a separate unit located at the wastewater treatment facility is to be used, the Permittee shall certify in writing to the Agency when the unit is completed and prepared to generate power.

The determination of treatment system storage capacity shall be submitted to the Agency upon completion.

L. SEWER ORDINANCE

The Permittee shall have in effect a sewer use ordinance acceptable to the Agency which, at a minimum, shall

1. Prohibit the introduction by any person into the Permittee's sewerage system or wastewater treatment facility of any pollutant which:

a. Is a toxic pollutant in toxic amounts as defined in standards issued from time to time under Section 307(a) of the Clean Water Act;

b. Creates a fire or explosion hazard in the Permittee's treatment works;

c. Causes corrosive structural damage to the Permittee's treatment works, including all wastes with a pH lower than 5.0;

d. Contains solid or viscous substances in amounts which would cause obstruction to the flow in sewers or other interference with proper operation of the Permittee's treatment works; or

e. In the case of a major contributing industry, as defined in this permit, contains an incompatible pollutant, as defined in this permit, in an amount or concentration in excess of that allowed under standards or guidelines issued from time to time pursuant to Sections 304, 306, and/or 307 of the Clean Water Act.

2. Require 45 days prior notification to the Permittee by any person or persons of a:

a. Proposed substantial change in volume or character of pollutants over that being discharged into the Permittee's treatment works at the time of issuance of this permit;

b. Proposed new discharge into the Permittee's treatment works of pollutants from any source which would be a new source as defined in Section 306 of the Clean Water Act if such source were discharging pollutants; or

c. Proposed new discharge into the Permittee's treatment works of pollutants from any source which would be subject to Section 301 of the Clean Water Act if it were discharging such pollutants.

3. Require any industry discharging into the Permittee's treatment works to perform such monitoring of its discharge as the Permittee may reasonably require, including the installation, use, and maintenance of monitoring equipment and monitoring methods, keeping records of the results of such monitoring, and reporting the results of such monitoring to the Permittee. Such records shall be made available by the Permittee to the Agency upon request.

4. Authorize the Permittee's authorized representatives to enter into, upon, or through the premises of any industry discharging into the Permittee's treatment works to have access to and copy any records, to inspect any monitoring equipment or method required under subsection 3 above, and to sample any discharge into the Permittee's treatment works.

The Permittee shall notify the Agency of any discharge specified in subsection 2 above within 30 days of the date on which the Permittee is notified of such discharge. This permit may be modified accordingly.

II. GENERAL CONDITIONS

A. MANAGEMENT REQUIREMENTS

1. Facility Modification / Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than, or at a level in excess of, that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit. Such a violation may result in the imposition of civil and/or

criminal penalties pursuant to 10 V.S.A. chapters 47, 201, and/or 211. Any anticipated facility alterations or expansions or process modifications which will result in new, different, or increased discharges of any pollutants must be reported by submission of a new permit application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Agency of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

In addition, the Permittee shall provide notice to the Agency of the following:

a. Any new introduction of pollutants into the treatment works from a source which would be a new source as defined in Section 306 of the Clean Water Act if such source were discharging pollutants;

b. Except for such categories and classes of point sources or discharges specified by the Agency, any new introduction of pollutants into the treatment works from a source which would be subject to Section 301 of the Clean Water Act if such source were discharging pollutants; and

c. Any substantial change in volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into such works at the time of issuance of the permit.

The notice shall include:

i. The quality and quantity of the discharge to be introduced into the system, and

ii. The anticipated impact of such change in the quality or quantity of the effluent to be discharged from the wastewater treatment facility.

2. Noncompliance Notification

a. The Permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

b. In the event the Permittee is unable to comply with any of the conditions of this permit due, among other reasons, to:

i. Breakdown or maintenance of waste treatment equipment (biological and physical-chemical systems including all pipes, transfer pumps, compressors, collection ponds or tanks for the segregation of treated or untreated wastes, ion exchange columns, or carbon absorption units);

ii. Accidents caused by human error or negligence;

iii. Any unanticipated bypass or upset which exceeds any effluent limitation in the permit;

iv. Violation of a maximum day discharge limitation for any of the pollutants listed by the Agency in this permit; or

v. Other causes such as acts of nature,

the Permittee shall provide notice as specified in subdivisions (c) and (d) of this subsection.

c. Pursuant to 10 V.S.A. §1295, notice for "untreated discharges," as defined.

i. Public notice. For "untreated discharges" an operator of a wastewater treatment facility or the operator's delegate shall as soon as possible, but no longer than one hour from discovery of an untreated discharge from the wastewater treatment facility, post on a publicly accessible electronic network, mobile application, or other electronic media designated by the Secretary an alert informing the public of the untreated discharge and its location, except that if the operator or his or her delegate does not have telephone or Internet service at the location where he or she is working to control or stop the untreated discharge, the operator or his or her delegate may delay posting the alert until the time that the untreated discharge is controlled or stopped, provided that the alert shall be posted no later than four hours from discovery of the untreated discharge.

ii. Agency notification. For "untreated discharges" an operator of a wastewater treatment facility shall within 12 hours from discovery of an untreated discharge from the wastewater treatment facility notify the Secretary and the local health officer of the municipality where the facility is located of the untreated discharge. The operator shall notify the Secretary through use of the Department of Environmental Conservation's online event reporting system. If, for any reason, the online event reporting system is not operable, the operator shall notify the Secretary via telephone or e-mail. The notification shall include:

A. The specific location of each untreated discharge, including the body of water affected. For combined sewer overflows, the specific location of each untreated discharge means each outfall that has discharges during the wet weather storm event.

B. Except for discharges from a wastewater treatment facility to a separate storm sewer system, the date and approximate time the untreated discharge began.

C. The date and approximate time the untreated discharge ended. If the untreated discharge is still ongoing at the time of reporting, the entity reporting the untreated discharge shall amend the report with the date and approximate time the untreated discharge ended within three business days of the untreated discharge ending.

D. Except for discharges from a wastewater treatment facility to a separate storm sewer system, the approximate total volume of sewage and, if applicable, stormwater that was released. If the approximate total volume is unknown at the time of reporting, the entity reporting the untreated discharge shall amend the report with the approximate total volume within three business days.

E. The cause of the untreated discharge and a brief description of the noncompliance, including the type of event and the type of sewer structure involved.

F. The person reporting the untreated discharge.

d. For any non-compliance not covered under Section II.A.2.b. of this permit, an operator of a wastewater treatment facility or the operator's delegate shall notify the Agency within 24 hours of becoming aware of such condition and shall provide the Agency with the following information, in writing, within five days:

i. Cause of non-compliance;

ii. A description of the non-complying discharge including its impact upon the receiving water;

iii. Anticipated time the condition of non-compliance is expected to continue or, if such condition has been corrected, the duration of the period of non-compliance;

iv. Steps taken by the Permittee to reduce and eliminate the non-complying discharge; and

v. Steps to be taken by the Permittee to prevent recurrence of the condition of non-compliance.

3. Operation and Maintenance

All waste collection, control, treatment, and disposal facilities shall be operated in a manner consistent with the following:

a. The Permittee shall, at all times, maintain in good working order and operate as efficiently as possible all treatment and control facilities and systems (and related appurtenances) installed or used by the Permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

b. The Permittee shall provide an adequate operating staff which is duly qualified to carry out the operation, maintenance, and testing functions required to ensure compliance with the conditions of this permit; and

c. The operation and maintenance of this facility shall be performed only by qualified personnel. The personnel shall be certified as required under the Vermont Wastewater Treatment Facility Operator Certification Rule.

4. Quality Control

The Permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at regular intervals to ensure accuracy of measurements, or shall ensure that both activities will be conducted.

The Permittee shall keep records of these activities and shall provide such records upon request of the Agency.

The Permittee shall demonstrate the accuracy of the effluent flow measurement device weekly and report the results on the monthly report forms. The acceptable limit of error is ± 10%.

The Permittee shall analyze any additional samples as may be required by the Agency to ensure analytical quality control.

5. Bypass

The bypass of facilities (including pump stations) is prohibited, except where authorized under the terms and conditions of an Emergency Pollution Permit issued pursuant to 10 V.S.A. § 1268. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the activity in order to maintain compliance with the conditions of this permit.

6. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any adverse impact to waters of the State, the environment, or human health resulting from non-compliance with any condition specified in this permit, including accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed, all calibration and maintenance of instrumentation records and all original chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit shall be retained for a minimum of three years, and shall be submitted to the Agency upon request. This period shall be extended during the

course of unresolved litigation regarding the discharge of pollutants or when requested by the Agency.

8. Solids Management

Collected screenings, sludges, and other solids removed in the course of treatment and control of wastewaters shall be stored, treated, and disposed of in accordance with 10 V.S.A. chapter 159 and with the terms and conditions of any certification, interim or final, transitional operation authorization, or order issued pursuant to 10 V.S.A. chapter 159 that is in effect on the effective date of this permit or is issued during the term of this permit.

9. Emergency Pollution Permits

Maintenance activities, or emergencies resulting from equipment failure or malfunction, including power outages, which result in an effluent which exceeds the effluent limitations specified herein, shall be considered a violation of the conditions of this permit, unless the Permittee immediately applies for, and obtains, an emergency pollution permit under the provisions of 10 V.S.A. § 1268. The Permittee shall notify the Agency of the emergency situation by the next working day.

10 V.S.A. § Section 1268 reads as follows:

> When a discharge permit holder finds that pollution abatement facilities require repairs, replacement or other corrective action in order for them to continue to meet standards specified in the permit, he may apply in the manner specified by the secretary for an emergency pollution permit for a term sufficient to effect repairs, replacements or other corrective action. The permit may be issued without prior public notice if the nature of the emergency will not provide sufficient time to give notice; provided that the secretary shall give public notice as soon as possible but in any event no later than five days after the effective date of the emergency pollution permit. No emergency pollution permit shall be issued unless the applicant certifies and the secretary finds that:
>
> (1) there is no present, reasonable alternative means of disposing of the waste other than by discharging it into the waters of the state during the limited period of time of the emergency;
>
> (2) the denial of an emergency pollution permit would work an extreme hardship upon the applicant;
>
> (3) the granting of an emergency pollution permit will result in some public benefit;
>
> (4) the discharge will not be unreasonably harmful to the quality of the receiving waters;
>
> (5) the cause or reason for the emergency is not due to willful or intended acts or omissions of the applicant.

Application shall be made to the Secretary at the following address: Agency of Natural Resources, Department of Environmental Conservation, One National Life Drive, Main Building, 2nd Floor, Montpelier VT 05620-3522.

B. RESPONSIBILITIES

1. Right of Entry

The Permittee shall allow the Secretary or authorized representative, upon the presentation of proper credentials:

a. To enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. To have access to and copy, at reasonable times, any records required to be kept under the terms and conditions of this permit;

c. To inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. To sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

2. Transfer of Ownership or Control

This permit is not transferable without prior written approval of the Agency. All application and operating fees must be paid in full prior to transfer of this permit. In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the Permittee shall provide a copy of this permit to the succeeding owner or controller and shall send written notification of the change in ownership or control to the Agency **at least 30 days in advance of the proposed transfer date**. The notice to the Agency shall include a written agreement between the existing and new Permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them. The Permittee shall also inform the prospective owner or operator of their responsibility to make an application for transfer of this permit.

This request for transfer application must include as a minimum:

a. A properly completed application form provided by the Agency and the applicable processing fee.

b. A written statement from the prospective owner or operator certifying:

i. The conditions of the operation that contribute to, or affect, the discharge will not be materially different under the new ownership;

ii. The prospective owner or operator has read and is familiar with the terms of the permit and agrees to comply with all terms and conditions of the permit; and

iii. The prospective owner or operator has adequate funding to operate and maintain the treatment system and remain in compliance with the terms and conditions of the permit.

c. The date of the sale or transfer.

The Agency may require additional information dependent upon the current status of the facility operation, maintenance, and permit compliance.

3. Confidentiality

Pursuant to 10 V.S.A. § 1259(b):

> Any records, reports or information obtained under this permit program shall be available to the public for inspection and copying. However, upon a showing satisfactory to the secretary that any records, reports or information or part thereof, other than effluent data, would, if made public, divulge methods or processes entitled to protection as trade secrets, the Secretary shall treat and protect those records, reports or information as confidential. Any records, reports or information accorded confidential treatment will be disclosed to authorized representatives of the State and the United States when relevant to any proceedings under this chapter.

Claims for confidentiality for the following information will be denied:

a. The name and address of any permit applicant or Permittee.

b. Permit applications, permits, and effluent data.

c. Information required by application forms, including information submitted on the forms themselves and any attachments used to supply information required by the forms.

4. Permit Modification, Suspension, and Revocation

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance shall not stay any permit condition.

The Permittee shall provide to the Agency, within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee shall also furnish to the Agency upon request, copies of records required to be kept by this permit.

5. Toxic Effluent Standards

If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under section 307(a) of the Clean Water Act for a toxic pollutant which is present in the Permittee's discharge and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, then this permit shall be modified or revoked and reissued in accordance with the toxic effluent standard or prohibition and the Permittee so notified.

6. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject under 10 V.S.A. § 1281.

7. Other Materials

Other materials ordinarily produced or used in the operation of this facility, which have been specifically identified in the application, may be discharged at the maximum frequency and maximum level identified in the application, provided:

a. They are not:

i. Designated as toxic or hazardous under provisions of Sections 307 and 311, respectively, of the Clean Water Act, or

ii. Known to be hazardous or toxic by the Permittee, except that such materials indicated in (a) and (b) above may be discharged in certain limited amounts with the written approval of, and under special conditions established by, the Secretary or his/her designated representative, if the substances will not pose any imminent hazard to the public health or safety;

b. The discharge of such materials will not violate the Vermont Water Quality Standards; and

c. The Permittee is not notified by the Agency to eliminate or reduce the quantity of such materials entering the watercourse.

8. Navigable Waters

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

9. Civil and Criminal Liability

The Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Except as provided in "Emergency Action – Electric Power Failure" (Section I.K), "Bypass" (Section II.A.5), and "Emergency Pollution Permits" (Section II.A.9), nothing in this permit shall be construed to relieve the Permittee from civil or criminal penalties for noncompliance. Civil and criminal penalties for non-compliance are provided for in 10 V.S.A. Chapters 47, 201, and 211.

10. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Clean Water Act.

11. Property Rights

Issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

12. Other Information

If the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Agency, it shall promptly submit such facts or information.

13. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

14. Authority

This permit is issued under authority of 10 V.S.A. §§1258 and 1259 of the Vermont Water Pollution Control Act, the Vermont Water Pollution Control Permit Regulation, and Section 402 of the Clean Water Act, as amended.

15. Definitions

For purposes of this permit, the following definitions shall apply.

Agency – The Vermont Agency of Natural Resources

Annual Average - The highest allowable average of daily discharges calculated as the sum of all daily discharges (mg/L, lbs or gallons) measured during a calendar year divided by the number of daily discharges measured during that year.

Average - The arithmetic means of values taken at the frequency required for each parameter over the specified period.

Bypass – The intentional diversion of waste streams from any portion of the treatment facility.

The Clean Water Act - The federal Clean Water Act, as amended (33 U.S.C. § 1251, *et seq*.).

Composite Sample - A sample consisting of a minimum of one grab sample per hour collected during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportionally to flow over that same time period.

Daily Discharge - The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling.

For pollutants with limitations expressed in pounds the daily discharge is calculated as the total pounds of pollutants discharged over the day.

For pollutants with limitations expressed in mg/L the daily discharge is calculated as the average measurement of the pollutant over the day.

Discharge – Any wastes, directly or indirectly, that are placed, deposited or emitted into waters of the state.

Grab Sample - An individual sample collected in a period of less than 15 minutes.

Incompatible Substance – Any waste being discharged into the treatment works which interferes with, passes through without treatment, or is otherwise incompatible with said works or would have a substantial adverse effect on the works or on water quality. This includes all pollutants required to be regulated under the Clean Water Act.

Instantaneous Maximum - A value not to be exceeded in any grab sample.

Major Contributing Industry - One that: (1) has a flow of 50,000 gallons or more per average work day; (2) has a flow greater than five percent of the flow carried by the

municipal system receiving the waste; (3) has in its wastes a toxic pollutant in toxic amounts as defined in standards issued under Section 307(a) of the Clean Water Act; or (4) has a significant impact, either singly or in combination with other contributing industries, on a publicly owned treatment works or on the quality of effluent from that treatment works.

Maximum Day (maximum daily discharge limitation) - The highest allowable "daily discharge" (mg/L, lbs or gallons).

Mean - The mean value is the arithmetic mean.

Monthly Average (Average monthly discharge limitation) - The highest allowable average of daily discharges (mg/L, lbs or gallons) over a calendar month, calculated as the sum of all daily discharges (mg/L, lbs or gallons) measured during a calendar month divided by the number of daily discharges measured during that month.

NPDES - The National Pollutant Discharge Elimination System.

Secretary - The Secretary of the Agency of Natural Resources

State Certifying Agency Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division
One National Life Drive, Main Building, 2nd Floor
Montpelier, VT 05620-3522

Untreated Discharge – means (1) combined sewer overflows from a wastewater treatment facility; (2) overflows from sanitary sewers and combined sewer systems that are part of a wastewater treatment facility during dry weather flows, which result in a discharge to waters of the State; (3) upsets or bypasses around or within a wastewater treatment facility during dry or wet weather conditions that are due to factors unrelated to a wet weather storm event and that result in a discharge of sewage that has not been fully treated to waters of the State; and (4) discharges from a wastewater treatment facility to separate storm sewer systems.

Waste – Effluent, sewage or any substance or material, liquid, gaseous, solid or radioactive, including heated liquids, whether or not harmful or deleterious to waters.

Waste Management Zone – A specific reach of Class B waters designated by a permit to accept the discharge of properly treated wastes that prior to treatment contained organisms pathogenic to human beings. Throughout the receiving waters, water quality criteria must be achieved but increased health risks exist due to the authorized discharge.

Weekly Average - (Average weekly discharge limitation) - The highest allowable average of daily discharges (mg/L, lbs or gallons) over a calendar week, calculated as the sum of all daily discharges (mg/L, lbs or gallons) measured during a calendar week divided by the number of daily discharges measured during that week.

AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
ONE NATIONAL LIFE DRIVE, MAIN BUILDING, 2ND FLOOR
MONTPELIER, VT 05620-3522

FACT SHEET
(AUGUST 2016)

***DRAFT* NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES**

PERMIT NO: 3-1211
PIN: NS95-0163
NPDES NO: VT0100277

NAME AND ADDRESS OF APPLICANT:

Town of Putney
PO Box 233
Putney, VT 05346

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Putney Wastewater Treatment Facility
21 Treatment Plant Road
Putney, Vermont

RECEIVING WATER: Sackett's Brook

CLASSIFICATION: Class B with a waste management zone. Class B waters are suitable for swimming and other forms of water-based recreation, and irrigation of crops and other agricultural uses without treatment; good aesthetic value; aquatic biota and wildlife sustained by high quality aquatic habitat; suitable for boating, fishing, and other recreational uses; acceptable for public water supply with filtration and disinfection. A waste management zone is a specific reach of Class B waters designated by a permit to accept the discharge of properly treated wastes that prior to treatment contained organisms pathogenic to human beings.

I. Proposed Action, Type of Facility, and Discharge Location

The Vermont Agency of Natural Resources (Agency) received a renewal application for the permit to discharge into the designated receiving water from the above-named applicant on July 6, 2011. At this time the Agency has made a tentative decision to reissue the discharge permit. The facility is engaged in the treatment of municipal wastewater. The discharge is from the outfall of the Putney Wastewater Treatment Facility to Sackett's Brook.

Agency of Natural Resources
Department of Environmental Conservation

Watershed Management Division
1 National Life Drive 2 Main
802-828-1535

MEMORANDUM

To: Mary Borg, Deputy Director (WSWD)

From: Neil Kamman, Manager, Monitoring, Assessment and Planning Program (MAPP)

Cc: Pete LaFlamme, Director, Watershed Management Division (WSMD)
Rick Levey, MAPP
Nick Giannetti, WWM

Date: August 8, 2016

Subject: MAPP Reasonable Potential Determination for the Putney Wastewater Treatment Facility (WWTF).

MAPP has evaluated the draft permit limits for the Putney WWTF in Putney, Vermont pursuant to the 2012 procedure outlining WWM-WSMD roles and responsibilities. This memo provides MAPP's concurrence with the permit limits set forth by the draft permit for Putney WWTF prepared by the WWM. MAPP notes in the draft Permit an increase in flows relative to the prior authorization, resulting in an increase is flow from 0.8 to 0.10 MGD. As such, MAPP has also reviewed the Antidegradation Analysis referenced by the draft Permit Fact Sheet. We note that the increased discharge authorizes an increase of 0.02MGD in volume, but the permit does not authorize an increase in weekly or monthly load limits for BOD and TSS. As such, while effluent volume is authorized to increase in this discharge relative to the prior permit, the concentration of these wastewater pollutants in the effluent, which is what impacts instream designated uses, will remain at their maximum at prior permitted levels. The net effect is a reduced overall concentration of wastewater pollutants in receiving waters.

Facility:
Putney Wastewater Treatment Facility
Permit No. 3-1211
NPDES No. VT0100277

Hydrology for Putney WWTF used in this evaluation:
Design Flow: 0.10 MGD = 0.155 CFS
7Q10 = 1.21 CFS, LMM = 3.65 CFS
IWC-7Q10 =0.113 (>10%)
IWC-LMM= 0.041 (>1%)

Receiving Water:
Sacketts Brook, Putney, VT
Facility Location: Lat. 42.97081 Long. 72.51952 (NAD 83)

Sacketts Brook downstream of the Putney WWTF is classified as Class B and is designated Cold Water Fish Habitat. At the point of discharge, the river has a contributing drainage area of 13.5 square miles. The proposed permit retains the existing waste management zone (WMZ) that extends downstream from the outfall for approximately 1.0 mile from the facility outfall at river mile 0.6 in Sackett's Brook (Figure 1) before terminating in the Connecticut River. There are no permitted discharges upstream of this discharge.

General Assessment – VTDEC Assessment Database:
MAPP maintains the VTDEC assessment database, an EPA-required database which describes the conditions of Vermont's surface waters with respect to their attainment of VWQS. For Sackett's Brook the segment to which this facility discharges, the database indicates Sacketts Brook is altered from below Putney Paper withdrawal (River Mile 1.5) to the confluence with the Connecticut River. Impairment is to aquatic life/ habitat altered due to artificial and insufficient flow below Putney Paper water withdrawal.

Ambient Chemistry Data for Sackett's Brook above and below the Putney WWTF:
There is ambient chemistry data available from VTDEC sampling that occurred in July, August and September 2012, bracketing the facility outfall with sites at RM 0.7 and RM 0.5. Additionally, Southeastern Vermont Watershed Alliance's (SeVWA's) water quality program made possible by the VTDEC LaRosa Partnership Program provides water chemistry data (TP, TN, Turbidity) below the Putney WWTF at station 0.15 (above I91 bridge) in 2015.

The VTDEC water chemistry data provided sufficient data for evaluation and represented flow conditions suitable for evaluating water quality changes and nutrient impacts; as such the SeVWA's data which did not bracket the facility as well and represented variable flow conditions was not utilized in this review, with the exception of the E. coli discussion presented later in this document. Results of VTDEC water chemistry measures for the following parameters: total phosphorus (TP), total nitrogen (TN), nitrate + nitrite (NOX), ammonia (NH3), turbidity, pH and dissolved oxygen (DO) and percent saturation are summarized in Table 1. Data repesentiveness was assessed by evaluating the flow conditions at which samples were collected from field sheets and from the most proximally-located USGS gauge for which data were available, and in consideration of possible downstream sensitive reaches.

Table 1: Concentrations of surface-water chemistry above and below the Putney Wastewater Treatment Facility (River Mile 0.7 and RM 0.5 refer to stations above and below the outfall respectively).

Date	River Mile	TP µg/L	TN Mg/L	NOX mg/L	TNH3 mg-N/L	Turb (NTU)	pH	DO mg/L	% Saturation
7/23/2012	0.7	13.4	0.36	0.28	<0.05	1.77	-	-	-
7/23/2012	0.5	157	1.16	1.05	<0.05	2.29	-	-	-
8/22/2012	0.7	13.2	0.3	0.27	<0.05	1.12	-	-	-
8/22/2012	0.5	129	1.21	1.13	<0.05	1.02	-	-	-
9/25/2012	0.7	12.6	0.2			1.2	7.65	11.1	100
9/25/2012	0.5						7.94	10.27	94

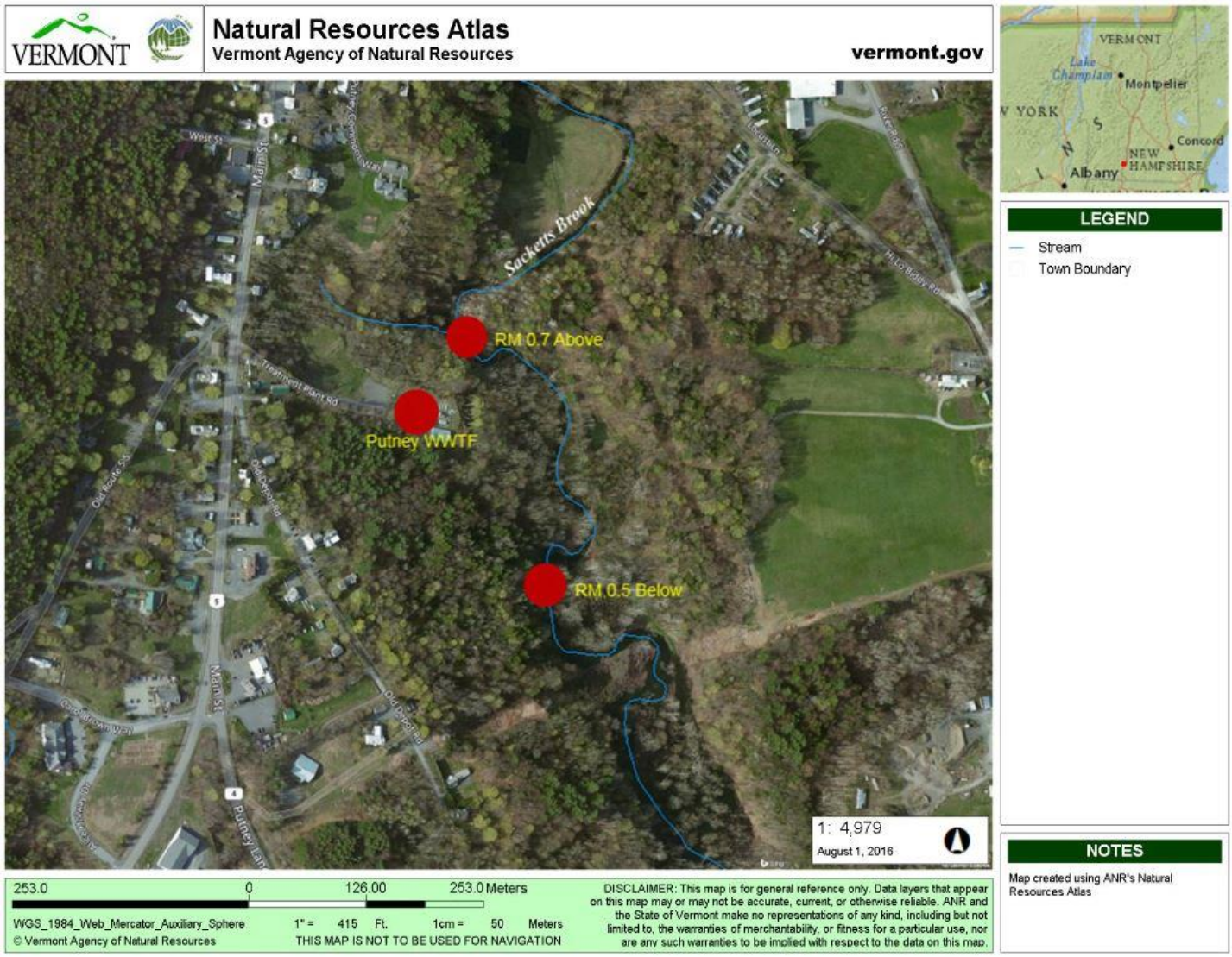

Figure 1. Sackett's Brook in the vicinity of the Putney WWTF, showing upstream and downstream sampling locations. Figure taken from the Vermont Integrated Watershed Assessment System on the VTANR Atlas (https://anrweb.vt.gov/DEC/IWIS/).

Total Phosphorus (TP) values above the outfall ranged from 12.6 µg/L to 13.4 µg/L. TP values below the outfall ranged from 129 µg/L to 157 µg/L illustrating an increase of over 100 µg/L-TP downstream of the facility.

Total Nitrogen (TN) values above the outfall ranged from 0.20 mg/L – 0.36 mg/L. TN values below the outfall ranged from 1.16 mg/L – 1.21 mg/L, indicating an increase of almost 1.0 mg/L-TN.

Turbidity, Dissolved Oxygen, pH:

Turbidity values above the outfall ranged from 1.12 – 1.77 Nephelometric Turbidity (NTU). Turbidity values below the outfall ranged from 1.02 – 2.29 NTU, well below the 10 NTU criteria. Dissolved oxygen and percent saturation were 11.1 mg/L and 100% respectively, above at RM 0.7 and 10.27 mg/L and 94% below at RM 0.5 on 9/25/2012. The pH above at RM 0.7 was 7.65, and 7.94 below on 9/25/2012.

Biological Assessments:
Biological assessments conducted above and below the outfall in 2012 (Table 2) scored "Very Good" and "Good" respectively. The biological condition has met or exceeded Class B standards for aquatic biota and aquatic habitat uses for the Medium High Gradient (MHG) stream type. The bioassessment below the outfall did have high density, moderately elevated BI value, as well as moderately low EPT; all of which indicate a moderate level of nutrient enrichment below the outfall.

Total Nitrogen:
MAPP notes that EPA, in a November 10, 2011 letter to the Agency indicated that Vermont must establish total nitrogen limitations in permits such that the total nitrogen load from all facilities in the Connecticut River watershed is consistent with the requirements of the Long Island Sound Total Maximum Daily Load (TMDL). Section I.B in this permit requires the Permittee have a qualified consultant develop and submit a Nitrogen Removal Optimization Plan by December 31, 2016. The plan shall be provided to the Agency before implementation. Additionally, an annual report will be due to the Agency documenting the pounds of TN discharged as well as removal optimization and efficiencies; the first annual report shall be submitted by January 15, 2018, as an attachment to the December 2017 DMR WR-43 report. Finally, this Condition contains as clause that allows the Agency to reopen the permit to include a wasteload allocation for this facility based on the LIS TMDL.

Optimization Plan:
By December 31, 2016 the Permittee shall develop and submit to the Agency of Natural Resources (Agency) for review and approval a Nitrogen Removal Optimization Evaluation Plan for the evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen. The methods to be evaluated include: operational, process, equipment changes designed to enhance nitrification and denitrification (seasonal and year-round); incorporation of anoxic zones; septage receiving policies and procedures; and side stream management. The Permittee shall implement these recommended operational changes to maintain a mass discharge of total nitrogen (TN) lower than the existing mass loading of TN, notwithstanding the increased discharge volume of 0.02MGD. The baseline annual average daily TN load discharge from this facility is estimated to be approximately 16 lbs./day. This plan shall be developed by a qualified professional with experience in the operation and/or design of municipal wastewater treatment facilities in conjunction with the Chief Operator of the facility.

Table 2. Results of biological monitoring for macroinvertebrates on Sacketts Brook, above and below the Putney WWTF discharge.

Macroinvertebrate Site Summary			
Location:	Sacketts Brook	**Location ID:**	501274
Town:	Putney	**Bio Site ID:**	040000000009/05
Description:	Sites RM 0.9 (above) and RM 0.5 Blw Putney WWTF	**WBID:**	VT13-12
Stream Type:	Medium High Gradient		

Date	Density	Richness	EPT Richness	PMA-O	B.I.	Oligo.	EPT/EPT + Chiro	PPCS-F	Community Assessment	Attainment Status
Above 9/25/2012	669	42.0	21.0	58.2	3.95	2.56	0.74	0.45	Vgood	Meets WQS
Below 9/25/2012	1131	46.0	18.0	65.0	4.31	1.82	0.72	0.5	Good	Meets WQS
Full Support	≥ 350	≥ 32	≥ 20	≥ 50	≤ 4.85	≤ 9.5	≥ 0.47	≥ 0.45		
Meets Threshold	≥ 300	≥ 30	≥ 18	≥ 45	≤ 5	≤ 12	≥ 0.45	≥ 0.4		
Near Threshold	≥ 250	≥ 28	≥ 16	≥ 40	≤ 5.15	≤ 14.5	≥ 0.43	≥ 0.35		
Non-Support	< 250	< 28	< 16	< 40	> 5.15	> 14.5	< 0.43	< 0.35		

*Scoring Guidelines for Stream Type MHG and WQ Class B.

Total Phosphorus:
Instream Phosphorus Concentrations were calculated using the low monthly median flow (LMM) of 3.65 CFS at design flow of 0.155 CFS (0.1 MGD) and using the effluent phosphorus concentration of 5.0 mg/L assuming no phosphorus removal since there was no effluent data available. The calculated phosphorus concentration at these conditions attributable to discharge was 0.205 mg/L (205µg/L-TP). Data collected (Table 1) above and below the outfall show a TP increase of 116 – 143 µg/L-TP.

Facility flow records indicate that the plant has been operating at about 50% of the new design flow (0.05 MGD). Phosphorus concentrations at these conditions attributable to the discharge would be 102 µg/L-TP; very close to the instream values observed below the facility. These computations likely reflect the facilities phosphorus discharge and resulting water quality chemistry observed below the outfall. Monthly effluent monitoring detailed in the draft permit will provide effluent TP and TN values which will provide needed data for accurate computations.

The potential impacts of phosphorus discharges from this facility to the receiving water have been assessed in relation to the narrative criteria in §3-01.B.2 of the 2011 VWQS, which states:

> *In all waters, total phosphorous loadings shall be limited so that they will not contribute to the acceleration of eutrophication or the stimulation of the growth of aquatic biota in a manner that prevents the full support of uses.*

To interpret this standard, MAPP relies on a framework which examines TP concentrations in relation to existing response criteria in the water quality standards. Under the framework, MAPP can make a positive finding of compliance with the narrative standard when specific nutrient response variables; pH, Turbidity, Dissolved Oxygen, and aquatic life use, all display compliance with their respective criteria in the Water Quality Standards.

Notwithstanding the significant observed increase in total phosphorus attributable to the facility, aquatic life use is shown to be fully supported, and the stream complies with VWQS for all identified response

variables, and thus the narrative standard presented in §3-01.B.2 of the VWQS is supported (Table 3). As described below, for facilities where there are increases in phosphorus attributable to the discharge, and biological monitoring results do consistently indicate attainment of all thresholds, MAPP does not recommend biomonitoring be included in the permit. However, to better assess compliance with the 2014 nutrient criteria at the next permit issuance, MAPP recommends instream water quality monitoring as described below, in addition to the current effluent monitoring in the draft Permit.

Table 3. Assessment of phosphorus response variables for Putney WWTF. The relevant target values are referenced to the appropriate section of the VWQS.

Response variable (VWQS reference)	Target Value	River-mile 0.7 (Upstream)	River-mile 0.5 (Downstream)
pH (§3-01.B.9)	<8.5 s.u.	7.65	7.94
Turbidity (§3-04.B.1)	< 10 NTU at low mean annual flow	1.12	1.02
Dissolved Oxygen (min) (§3-04.B.2)	>6 mg/L and 70% saturation	11.1 (100%)	10.27 (94%)
Aquatic biota, based on macroinvertebrates, (§3-04-B.4), also see Table 2.	Attaining an assessment of good, or better.	Meets WQS (2012)	Meets WQS (2012)

Whole Effluent Toxicity (WET) and Priority Pollutant Testing:

40 CFR Part 122.44(d)(1) requires the Agency to assess whether the discharge causes, or has the reasonable potential to cause or contribute to an excursion above any narrative or numeric water quality criteria. The goal of the Vermont Toxic Discharge Control Strategy is to assure that the state water quality standards and receiving water classification criteria are maintained. The draft permit includes a requirement to conduct a two-species WET test in August of September of 2019. If the results of this test indicate a reasonable potential to cause an instream toxic impact, the Agency may require additional WET testing, establish a WET limit, or require a Toxicity Reduction Evaluation. Previous WET test conducted in 1999 indicated instream toxicity would not be a problem, based on a No Observable Effect Concentration (NOEC) at 25% effluent, and a 7Q10 IWC of 11.3%.

Sediment, Hardness, and Metals:

Instream total suspended solids were calculated using the 7Q10 of 1.21 CFS at design flow of 0.155 CFS (0.1 MGD), assuming the maximum permitted daily concentration of 50 mg/L. The calculated suspended sediment concentration at these conditions was 5.65 mg/l, indicating a minor augmentation of instream ambient suspended sediment concentrations in receiving waters.

The hardness of Sackett's Brook below the Putney outfall was recorded to be 85 mg/l CaCO3. The below hardness data is utilized to determine compliance with Vermont's aquatic biota based metals criteria as specified in Section 3-01 B.10.c. and Appendix C of the Vermont Water Quality Standards. Due to the moderate dilution of the receiving waters and the domestic nature of this discharge there are no concerns for metals exceeding criteria. There currently is no priority metal chemistry data from below the outfall. Metals data from above the outfall RM 0.9 (Table 4) did not detect any exceedances and most analytes were below detection.

Table 4. Sacketts Brook Metals (Total) Water Chemistry – above the Putney WWTF outfall.

Date	9/25/2012
Site (River Mile)	Above (0.9)
Calcium (mg/l)	28.8
Magnesium (mg/l)	4.02
Sodium (mg/l)	6.53
Potassium (mg/l)	1.21
Aluminum (µg/l)	47
Arsenic (µg/l)	<1
Cadmium (µg/l)	<1
Chromium (µg/l)	<5
Copper (µg/l)	<10
Iron (µg/l)	675
Lead (µg/l)	<1
Manganese (µg/l)	278
Nickel (µg/l)	<5
Selenium (µg/l)	<5
Zinc (µg/l)	<50

E. coli Bacteria

In response to concerns articulated by DEC staff on behalf of recreational boating users of the receiving water, MAPP has reviewed data provided by SeVWA regarding *E. coli* concentrations above (RM 1.0) and below (RM 0.15) the facility, as shown by Table 5. The data indicate that upstream and downstream of the facility, E. coli concentrations are in excess of the applicable water quality criterion for E. coli, though more data is needed to document an impairment. Therefore, MAPP examined monitoring data from the facility to determine the incidence of *E. coli* violations of permit limits (the limit is 77 E. coli /100mL), of which none were noted. Further, we note that the downstream concentrations are lower than upstream, suggesting that the WWTF is not the source of the bacteria, that it may in fact dilute concentrations. We conclude that the facility does not contribute to the observed E. coli concentrations.

Table 4. Sacketts Brook E. coli, from Southeast Vermont Watershed Alliance.

Location	22-Jun	6-Jul	20-Jul
Sacketts Brook, end of Mill St (Upstream)	2420	866	687
Sacketts Brook, above I-91 (Downstream)	1203	548	816

Recommended Biological and Water Quality Monitoring:

In light of the fact that biological monitoring results indicate attainment of all thresholds, and the stream presently complies with VWQS for all identified response variables the narrative nutrient standard presented in §3-01.B.2 of the VWQS is supported (Table 3), and thus MAPP does not recommend that biomonitoring be included in the permit. However, in light of the significant increases in observed total phosphorus downstream of the facility, to better assess compliance with the 2014 nutrient criteria at the next permit issuance, MAPP does support effluent monitoring detailed in the draft permit, and further recommends that the permittee undertake instream monitoring for total phosphorus, dissolved oxygen (and saturation), pH, and turbidity, at locations representive locations up and downstream of the discharge.

Should the permit contain conditions for water quality assessment, samples for TP, TN, pH, and turbidity should be collected monthly for the period of June through October during the years 2017, 2018, and 2019. Samples should be collected both upstream (RM 0.7) and downstream (RM 0.5) of the discharge.

Conclusion:

The available data indicate that this discharge does not cause, have a reasonable potential to cause, or contribute to an instream toxic impact or instream excursion above the water quality criteria, and as such, the development of a WQBEL's will not be necessary. The water quality monitoring (chemical and biological) conducted above and below the Putney WWTF discharge to date supports this conclusion.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters is based on state and federal laws and regulations, the discharge permit application, and the recent self-monitoring data.

III. Limitations and Conditions

The effluent limitations of the permit, the monitoring requirements, and any implementation schedule (if required), may be found on the following pages of the permit:

Effluent Limitations:	Page 2
Monitoring Requirements:	Pages 6-8

IV. Receiving Water

The receiving water for this discharge is Sackett's Brook, a designated Cold Water Fish Habitat. At the point of discharge, the river has a contributing drainage area of 13.5 square miles. The summer 7Q10 flow of the river is 1.21 cubic feet per second (CFS) and the summer Low Median Monthly flow is 3.65 CFS. The instream waste concentration at the summer 7Q10 flow is 0.113 and the instream waste concentration at the summer Low Median Monthly flow is 0.041.

V. Permit Basis and Explanation of Effluent Limitation Derivation

History and Summary:
The Town of Putney owns the Putney Wastewater Treatment Facility. The Facility provides secondary treatment using an extended aeration activated sludge process followed by chlorination and dechlorination. Effluent is discharged to Sackett's Brook, at the deepest section of the stream, through a 6" outfall pipe. There are four pump stations within the collection system.

The facility was constructed in 1975 and upgraded in 2006. The upgrade included modifications to the aeration system in the oxidation ditch, installation of a secondary clarifier, construction of new chlorine contact chambers, and improvements to the sludge pumping system.

Antidegradation Discussion:
See attachment.

Flow – Based on the conditions of the current permit the effluent flow limitation is 0.1 MGD, annual average, which reflects the new design capacity from the facility upgrade. The facility maintains a continuous discharge.

Biochemical Oxygen Demand (BOD_5) – The effluent limitations for BOD_5 remain unchanged from the current permit. The monthly average (30 mg/L) and weekly average (45 mg/L) reflect the minimum level of effluent quality specified for secondary treatment in 40 CFR Part 133.102. In addition, the permit contains a 50 mg/L, maximum day, BOD_5 limitation. This is the Agency standard applied to all such discharges pursuant to 13.4 c. of the Vermont Water Pollution Control Permit Regulations. The Agency implements the limit to supplement the federal technology-based limitations to prevent a gross one-day permit effluent violation to be offset by multiple weekly and

monthly sampling events which would enable a discharger to comply with the weekly average and monthly average permit limitations. The mass limits for the facility are calculated using the concentration limitations outlined above and the flow of the wastewater treatment facility *prior* to the upgrade (0.080 MGD) and are thus unchanged from the current permit. The mass limitations are 20 lbs/day, monthly average, and 30 lbs/day, weekly average. The BOD_5 monthly monitoring requirement is unchanged from the current permit.

Total Suspended Solids (TSS) - The effluent limitations for TSS remain unchanged from the current permit. The monthly average (30 mg/L) and weekly average (45 mg/L) reflect the minimum level of effluent quality specified for secondary treatment in 40 CFR Part 133.102. In addition, the permit contains a 50 mg/L, maximum day, TSS limitation. This is the Agency standard applied to all such discharges pursuant to 13.4 c. of the Vermont Water Pollution Control Permit Regulations. The Agency implements the limit to supplement the federal technology-based limitations to prevent a gross one-day permit effluent violation to be offset by multiple weekly and monthly sampling events which would enable a discharger to comply with the weekly average and monthly average permit limitations. The mass limits for the facility are calculated using the concentration limitations outlined above and the flow of the wastewater treatment facility *prior* to the upgrade (0.080 MGD) and are thus unchanged from the current permit. The mass limitations are 20 lbs/day, monthly average, and 30 lbs/day, weekly average. The TSS monthly monitoring requirements are unchanged from the current permit.

Total Phosphorus (TP) – This draft permit contains a phosphorous mass effluent limit of 4.17 total pounds, monthly average. In considering the increase in design flow due to the facility upgrade, the Agency reviewed whether the increased flow was consistent with the Antidegradation Policy contained in the Vermont Water Quality Standards. The proposed mass limit identifies the total phosphorous loading attributable to the Facility prior to the upgrade; maintaining the phosphorus load at, or below, levels of pre-upgrade will protect the water quality and minimize the risk to existing and designated uses.

Total Nitrogen (TN) – On November 10, 2011, a letter from the EPA (Region I) to the Vermont Agency of Natural Resources indicated that Vermont must establish TN limitations in permits such that the TN load from all facilities in the Connecticut River watershed is consistent with the requirements of the Long Island Sound Total Maximum Daily Load (TMDL).

Section I.B in this permit requires the Permittee have a qualified consultant develop and submit a Nitrogen Removal Optimization Plan by December 31, 2016. The plan shall be provided to the Agency before implementation. Additionally, an annual report will be due to the Agency documenting the pounds of TN discharged as well as removal optimization and efficiencies; the first annual report shall be submitted by January 15, 2018, as an attachment to the December 2017 DMR WR-43 report. Finally, this Condition contains as clause that allows the Agency to reopen the permit to include a wasteload allocation for this facility based on the LIS TMDL.

TN is a calculated value based on Total Kjeldahl Nitrogen (TKN) and Nitrate/Nitrite (NO_x) Nitrogen. Monthly monitoring will be required for TKN and NO_x. The sum of TKN and NO_x shall be used to derive TN.

Settleable Solids - The limitation of 1.0 mL/L instantaneous maximum and daily monitoring remain unchanged from the current permit. This numeric limit was established in support of the narrative standard in Section 3-01 B.5 of the Vermont Water Quality Standards.

Escherichia coli - The *E. coli* limitation is 77 colonies/100 mL as specified in Section 3-04 B.3, of the 2011 Vermont Water Quality Standards. Monthly monitoring remains the same as in the current permit.

Total Residual Chlorine – The Total Residual Chlorine limits of 1.0 mg/l instantaneous max is based on meeting the instream water quality acute and chronic chlorine criteria (0.019 mg/l and 0.011 mg/l respectively) in the Vermont Water Quality Standards for the protection of aquatic biota. Monitoring requirement remains daily.

pH - The pH limitation remains at 6.5 - 8.5 Standard Units as specified in Section 3-01 B.9 in the Vermont Water Quality Standards. Monitoring remains at daily.

Waste Management Zone - As defined under 10 V.S.A. §1251(16), a waste management zone is "a specific reach of Class B waters designated by a permit to accept the discharge of properly treated wastes that prior to treatment contained organisms pathogenic to human beings. Throughout the receiving waters, water quality criteria must be achieved but increased health risks exist due to the authorized discharge".

The draft permit retains the existing waste management zone that extends downstream from the outfall for approximately 1 mile through Sackett's Brook, terminating in the Connecticut River.

Instream Monitoring – The most recent biological assessments conducted above and below the Facility outfall in 2012 meet Class B water quality standards for aquatic biota and aquatic habitat uses for Medium High Gradient streams. However, the assessment below the outfall indicates a moderate level of nutrient enrichment, which can be attributed to the Putney Wastewater Treatment Facility. In addition, instream water chemistry data collected by the Agency show that TP is significantly and consistently higher below the outfall than above the outfall.

Therefore, several nutrient response conditions shall be monitored to ensure continued compliance with the narrative standard presented in § 3-01.B.2 of the Vermont Water Quality Standards. If the results of this monitoring indicate a reasonable potential to cause an instream excursion above the water quality criteria, the Agency may reopen and amend this permit to include additional effluent limitations and/or additional monitoring requirements.

Whole Effluent Toxicity (WET) Testing - 40 CFR Part 122.44(d)(1) requires the Agency to assess whether the discharge causes, or has the reasonable potential to cause or contribute to an excursion above any narrative or numeric water quality criteria. The goal of the Vermont Toxic Discharge Control Strategy is to assure that the state water quality standards and receiving water classification criteria are maintained. The draft permit includes a requirement to conduct a two-species WET test in August of September of 2020. If the results of this test indicate a reasonable potential to cause an instream toxic impact, the Agency may require additional WET testing, establish a WET limit, or require a Toxicity Reduction Evaluation.

Monitoring and Reporting – The draft permit requires the Permittee to submit all monitoring data using an Agency-approved DMR form (WR-43). The Permittee shall submit all monitoring data using an electronic reporting system designated by the Agency once directed to do so by the Agency.

Operation, Management, and Emergency Response Plans - As required by the revisions to 10 V.S.A. Section 1278, promulgated in the 2006 legislative session, Section I.H has been included in the draft permit. This condition requires that the Permittee implement the Operation, Management and Emergency Response Plan for the wastewater treatment facility, sewage pump/ejector stations, and stream crossings as approved by the Agency on January 13, 2009, and for the wastewater collection system as approved by the Agency on September 21, 2010.

Electric Power Failure - Within 30 days of the effective date of the permit, the Permittee must submit to the Agency updated documentation addressing how the discharge will be handled in the event of an electric power outage. The effluent must receive a minimum of primary treatment (or in the case of ultraviolet light disinfection systems, not less than secondary treatment) plus disinfection and dechlorination.

Noncompliance Notification – As required by the passage of 10 V.S.A. §1295, promulgated in the 2016 legislative session, Section II.A.2 has been included in the proposed permit. This condition requires the Permittee to provide public notification of untreated discharges from wastewater facilities. The Permittee is required to post a public alert within one hour of discovery, and submit to the Agency specified information regarding the discharge within 12 hours of discovery.

VI. Procedures for Formulation of Final Determinations

The public comment period for receiving comments on this draft permit is from **August 15 through September 15, 2016** during which time interested persons may submit their written views on the draft permit. All written comments received by 4:30 PM on **September 15, 2016** will be retained by the Agency and considered in the formulation of the final determination to issue, deny or modify the draft permit. The period of comment may be extended at the discretion of the Agency.

Written comments should be sent to:

Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division
One National Life Drive, Main Building, 2nd Floor
Montpelier, VT 05620-3522

Comments may also be faxed to: 802-828-1544 or submitted by e-mail using the e-mail comment provisions included at http://www.watershedmanagement.vt.gov/

Any interested person or groups of persons may request or petition for a public hearing with respect to this draft permit. Any such request or petition for a public hearing shall be filed within

the public comment period described above and shall indicate the interest of the party filing such request and the reasons why a hearing is warranted.

The Agency will hold a hearing if there is significant public interest in holding such a hearing. Any public hearing brought in response to such a request or petition will be held in the geographical area of the proposed discharge or other appropriate area, at the discretion of the Agency and may, as appropriate, consider related groups of draft permits. Any person may submit oral or written statements and data concerning the draft permit at the public hearing. The Agency may establish reasonable limits on the time allowed for oral statements and may require the submission of statements in writing. All statements, comments, and data presented at the public hearing will be retained by the Agency and considered in the formulation of the final determination to issue, deny, or modify the draft permit.

The complete application, draft permit, and other information are on file and may be inspected by appointment on the 2nd floor of the Main Building at One National Life Drive, Montpelier, Vermont. Copies may be obtained by calling 802-828-1535 from 7:45 AM to 4:30 PM Monday through Friday, and will be made at a cost based upon the current Secretary of State Official Fee Schedule for Copying Public Records. The draft permit and fact sheet may also be viewed on the Watershed Management Division's website at http://www.watershedmanagement.vt.gov/

Town of Putney
Putney Wastewater Treatment Facility
21 Treatment Plant Road, Putney, VT

Antidegradation Policy (WQS Section 1-03), Interim Antidegradation Implementation Procedure (10/12/2010), and Discharge Policy (WQS Section 1-04)

Due to the proposed increase in total discharge from 0.080 to 0.100 MGD at the Putney Wastewater Treatment Facility, the Department has determined the need to conduct an analysis to document attainment of the Antidegradation Policy contained in the applicable VWQS. This analysis is conducted relative to the increased flow proposed in the draft Permit.

Section 1-03.B.1. of the Vermont Water Quality Standards and Section VII.F. of the Interim Antidegradation Procedure require that the existing uses of receiving waters be protected and maintained and the Secretary must consider the following factors in making a determination:

a. Aquatic biota and wildlife that utilize or are present in the waters;
b. Habitat that supports existing aquatic biota, wildlife, or plant life;
c. The use of the waters for recreation of fishing;
d. The use of the water for water supply, or commercial activity that depends directly on the preservation of an existing high level of water quality; and
e. With regarding to the factors consider under paragraphs (a) and (b) above, evidence of the use's ecological significance in the functioning of the ecosystem or evidence of the use's rarity.

These factors have been considered in conjunction with this discharge and it has been determined that the existing uses of the receiving water will be maintained. The existing waste management zone extends downstream from the outfall for approximately 1 mile through Sackett's Brook, terminating in the Connecticut River. The discharge will sufficiently achieve the necessary 20:1 dilution upon entering the Connecticut River. Therefore, the existing waste management zone is appropriately sized for the flow increase from 0.080 to 0.100 MGD.

Section 1-03.C.2. of the Vermont Water Quality Standards requires that higher quality water be protected and the risk minimized to existing and designated uses. In addition, a limited reduction in the existing higher quality of water may only be allowed if:

a. The adverse economic and social impacts on the people of the state specifically resulting from the maintenance of the higher quality of the waters would be substantial and widespread;
b. These adverse impacts would exceed the environmental, economic, social, and other benefits of maintaining the high water quality; and
c. There shall be achieved the highest statutory and regulatory requirements for all new and existing point sources, and all cost effective and reasonable accepted agricultural practices and best managements practices, as appropriate for nonpoint source control, consistent with state law.

The volume of discharge from the Putney Wastewater Treatment Facility will increase from the previous permit. Mass limits for biochemical oxygen demand and total suspended solids will be maintained at prior permitted levels. Given the increase in flow, the concentrations of these pollutants within the discharge will decline. A mass limit for total phosphorous will be imposed to prevent further acceleration of eutrophication, or the stimulation of growth of aquatic biota in a manner that prevents the full support of designated uses.

Given these effluent limitations, the Facility completed an upgrade in 2006, which included improvements to the oxidation ditch aeration system, installation of a secondary clarifier, construction of new chlorine contact chambers, and improvements to the sludge pumping system. These improvements will allow the Facility to effectively and reliably produce an effluent quality which conforms with the established effluent limitations. The provisions of §1-03.C.2 are not applicable here.

Per §1-04.A. of the Vermont Water Quality Standards (*Discharge Criteria*), new discharges of wastes may be allowed only when all of the following criteria are met:

1. The proposed discharge is in conformance with all applicable provisions of these rules including the classification of the receiving waters adopted by the Secretary as set forth in Chapter 4 of the Vermont Water Quality Standards.
2. There is neither an alternative method of waste disposal, nor an alternative location for waste disposal, that would have a lesser impact on water quality including the quality of groundwater, or if there is such an alternative method or location, it would be clearly unreasonable to require its use.
3. The design and operation of any waste treatment or disposal facility is adequate and sufficiently reliable to ensure the full support of uses and to ensure compliance with these rules and with all applicable state and federal treatment requirements and effluent limitations.
4. Except as provided for in 10 V.S.A. §1259(d) and (f), the discharge of wastes other than nonpolluting wastes and stormwater runoff is prohibited in Class A waters regardless of the degree of treatment provided.
5. Except as provided for in 10 V.S.A. §1259, the discharge of wastes that, prior to treatment, contained organisms pathogenic to human beings into waters is prohibited.
6. The receiving waters will have sufficient assimilative capacity to accommodate the proposed discharge.
7. Assimilative capacity has been allocated to the proposed discharge consistent with the classification set forth in Chapter 4 of these rules.
8. The discharge of wastes to the thermocline or hypolimnion of any lake in manner that may prevent the full support of uses is prohibited.
9. The discharge of sewage into Class B waters shall not pose more than a negligible risk to public health. Compliance with this criterion shall include an assessment of both the level and reliability of treatment achieved and the impact of the discharge on the water quality of the receiving waters.

The Agency finds that these criteria have been met. Specifically:

1. The discharge conforms with the Class B receiving water. Further, insofar as the effluent concentrations are being held constant despite augmented flows, the instream mixed concentration of wastewater pollutants will be reduced.
2. Due to the volume of water and site limitations, infiltration or spray irrigation is not a feasible alternative for disposal of this wastewater. Therefore, the only alternative is to discharge wastewater to waters of the State.
3. Based on the current design of the facility, the pollutants discharged by this facility will not result in any measurable change in the receiving water and will ensure full support of all uses.
4. The discharge is not to a Class A water.
5. The discharge will enter the existing one-mile waste management zone and receive adequate disinfection.
6. Because there is no increase in permitted pollutants, adequate assimilative capacity exists to accommodate this discharge.
7. See 6. above.
8. This facility does not discharge to a lake.
9. The design of the facility's disinfection system was reviewed by the Department and has been determined that the level and reliability of treatment meets or exceeds its ability to meet the *E. coli.* water quality standard and permitted effluent limitation.

AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
1 NATIONAL LIFE DRIVE – MAIN 2
MONTPELIER, VERMONT 05620-3522

NOTICE:	DRAFT DISCHARGE PERMIT
PUBLIC NOTICE NUMBER:	3-1211
PUBLIC COMMENT PERIOD:	August 15 – September 15, 2016

PERMITTEE INFORMATION

PERMITTEE NAME:	Town of Putney
PERMITTEE ADDRESS:	P.O. Box 233 Putney, VT 05346
PERMIT NUMBER:	3-1242
PROJECT ID NUMBER:	NS95-0163

DISCHARGE INFORMATION

NATURE:	Treated and disinfected municipal wastewater
VOLUME:	0.100 MGD, annual average
RECEIVING WATER:	Sacketts' Brook
EXPIRATION DATE:	September 30, 2021
DESCRIPTION:	This is a draft discharge permit proposed for issuance to the Town of Putney for the discharge of treated municipal wastewater from the Putney Wastewater Treatment Facility. This permit is a renewal, and implements the requirements for the Long Island Sound Total Maximum Daily Load for Nitrogen.

TENTATIVE DETERMINATIONS

Tentative determinations regarding effluent limitations and other conditions to be imposed on the pending Vermont permit have been made by the State of Vermont Agency of Natural Resources (VANR). The limitations imposed will assure that the Vermont Water Quality Standards and applicable provisions of the Federal Clean Water Act, PL 92-500, as amended, will be met.

FURTHER INFORMATION

The complete application, proposed permit, and other information are on file and may be inspected by appointment on the 2nd floor of the Main Building at 1 National Life Drive, Montpelier, Vermont. Copies, obtained by calling 802-828-1535 from 7:45 AM to 4:30 PM Monday through Friday, will be made at a cost based upon the current Secretary of State Official Fee Schedule for Copying Public Records. The draft permit and fact sheet may also be viewed on the Division's website at http://dec.vermont.gov/watershed/wastewater/public-notices--fact-sheets--draft-permits

PUBLIC COMMENTS/PUBLIC HEARINGS

Written public comments on the proposed permit are invited and must be received on or before the close of the business day (4:30 pm) on **September 15, 2016** to the Agency of Natural Resources, Department of Environmental Conservation, Watershed Management Division, 1 National Life Drive – Main 2, Vermont 05620-3522. Comments may also be submitted by e-mail using the e-mail comment provisions included at http://dec.vermont.gov/watershed/wastewater/public-notices--fact-sheets--draft-permits. All comments received by the above date will be considered in formulation of the final determinations.

During the notice period, any person may submit a written request to this office for a meeting to consider the proposed permit. The request must state the interest of the party filing such request and the reasons why a meeting is warranted. A meeting will be held if there is a significant public interest (including the filing of requests or petitions for such meeting) in holding such a meeting.

FINAL ACTION/RIGHTS TO APPEAL TO THE ENVIRONMENTAL COURT

At the conclusion of the public notice period and after consideration of additional information received during the public notice period, the VANR will make a final determination to issue or to deny the permit. Pursuant to 10 V.S.A. Chapter 220, any appeal of this decision must be filed with the clerk of the Environmental Court within 30 days of the date of the decision. The appellant must submit the Notice of Appeal and include the applicable filing fee, payable to the state of Vermont.

The Notice of Appeal must specify the parties taking the appeal and the statutory provision under which each party claims party status; must designate the act or decision appealed from; must name the Environmental Court; and must be signed by the appellant or their attorney. In addition, the appeal must give the address or location and the description of the property, project or facility with which the appeal is concerned and the name of the applicant or any permit involved in the appeal.

The appellant must also serve a copy of the Notice of Appeal in accordance with Rule 5(b)(4)(B) of the Vermont Rules for Environmental Court Proceedings.

The address for the Vermont Environmental Court is: Vermont Superior Court, Environmental Division, 32 Cherry Street, 2nd Floor, Suite 303, Burlington VT 05401 (Tel. (802) 951-1740). For further information, see the Vermont Rules for Environmental Court Proceedings, available online at www.vermontjudiciary.org.

Alyssa B. Schuren, Commissioner
Department of Environmental Conservation

Agency of Natural Resources
Department of Environmental Conservation

Watershed Management Division
1 National Life Drive 2 Main
802-828-1535

MEMORANDUM

To: Mary Borg, Deputy Director (WSWD)

From: Neil Kamman, Manager, Monitoring, Assessment and Planning Program (MAPP)

Cc: Pete LaFlamme, Director, Watershed Management Division (WSMD)
Rick Levey, MAPP
Nick Giannetti, WWM

Date: August 8, 2016

Subject: MAPP Reasonable Potential Determination for the Putney Wastewater Treatment Facility (WWTF).

MAPP has evaluated the draft permit limits for the Putney WWTF in Putney, Vermont pursuant to the 2012 procedure outlining WWM-WSMD roles and responsibilities. This memo provides MAPP's concurrence with the permit limits set forth by the draft permit for Putney WWTF prepared by the WWM. MAPP notes in the draft Permit an increase in flows relative to the prior authorization, resulting in an increase is flow from 0.8 to 0.10 MGD. As such, MAPP has also reviewed the Antidegradation Analysis referenced by the draft Permit Fact Sheet. We note that the increased discharge authorizes an increase of 0.02MGD in volume, but the permit does not authorize an increase in weekly or monthly load limits for BOD and TSS. As such, while effluent volume is authorized to increase in this discharge relative to the prior permit, the concentration of these wastewater pollutants in the effluent, which is what impacts instream designated uses, will remain at their maximum at prior permitted levels. The net effect is a reduced overall concentration of wastewater pollutants in receiving waters.

Facility:
Putney Wastewater Treatment Facility
Permit No. 3-1211
NPDES No. VT0100277

Hydrology for Putney WWTF used in this evaluation:
Design Flow: 0.10 MGD = 0.155 CFS
7Q10 = 1.21 CFS, LMM = 3.65 CFS
IWC-7Q10 =0.113 (>10%)
IWC-LMM= 0.041 (>1%)

Receiving Water:
Sacketts Brook, Putney, VT
Facility Location: Lat. 42.97081 Long. 72.51952 (NAD 83)

Sacketts Brook downstream of the Putney WWTF is classified as Class B and is designated Cold Water Fish Habitat. At the point of discharge, the river has a contributing drainage area of 13.5 square miles. The proposed permit retains the existing waste management zone (WMZ) that extends downstream from the outfall for approximately 1.0 mile from the facility outfall at river mile 0.6 in Sackett's Brook (Figure 1) before terminating in the Connecticut River. There are no permitted discharges upstream of this discharge.

General Assessment – VTDEC Assessment Database:
MAPP maintains the VTDEC assessment database, an EPA-required database which describes the conditions of Vermont's surface waters with respect to their attainment of VWQS. For Sackett's Brook the segment to which this facility discharges, the database indicates Sacketts Brook is altered from below Putney Paper withdrawal (River Mile 1.5) to the confluence with the Connecticut River. Impairment is to aquatic life/ habitat altered due to artificial and insufficient flow below Putney Paper water withdrawal.

Ambient Chemistry Data for Sackett's Brook above and below the Putney WWTF:
There is ambient chemistry data available from VTDEC sampling that occurred in July, August and September 2012, bracketing the facility outfall with sites at RM 0.7 and RM 0.5. Additionally, Southeastern Vermont Watershed Alliance's (SeVWA's) water quality program made possible by the VTDEC LaRosa Partnership Program provides water chemistry data (TP, TN, Turbidity) below the Putney WWTF at station 0.15 (above I91 bridge) in 2015.

The VTDEC water chemistry data provided sufficient data for evaluation and represented flow conditions suitable for evaluating water quality changes and nutrient impacts; as such the SeVWA's data which did not bracket the facility as well and represented variable flow conditions was not utilized in this review, with the exception of the E. coli discussion presented later in this document. Results of VTDEC water chemistry measures for the following parameters: total phosphorus (TP), total nitrogen (TN), nitrate + nitrite (NOX), ammonia (NH3), turbidity, pH and dissolved oxygen (DO) and percent saturation are summarized in Table 1. Data repesentiveness was assessed by evaluating the flow conditions at which samples were collected from field sheets and from the most proximally-located USGS gauge for which data were available, and in consideration of possible downstream sensitive reaches.

Table 1: Concentrations of surface-water chemistry above and below the Putney Wastewater Treatment Facility (River Mile 0.7 and RM 0.5 refer to stations above and below the outfall respectively).

Date	River Mile	TP µg/L	TN Mg/L	NOX mg/L	TNH3 mg-N/L	Turb (NTU)	pH	DO mg/L	% Saturation
7/23/2012	0.7	13.4	0.36	0.28	<0.05	1.77	-	-	-
7/23/2012	0.5	157	1.16	1.05	<0.05	2.29	-	-	-
8/22/2012	0.7	13.2	0.3	0.27	<0.05	1.12	-	-	-
8/22/2012	0.5	129	1.21	1.13	<0.05	1.02	-	-	-
9/25/2012	0.7	12.6	0.2			1.2	7.65	11.1	100
9/25/2012	0.5						7.94	10.27	94

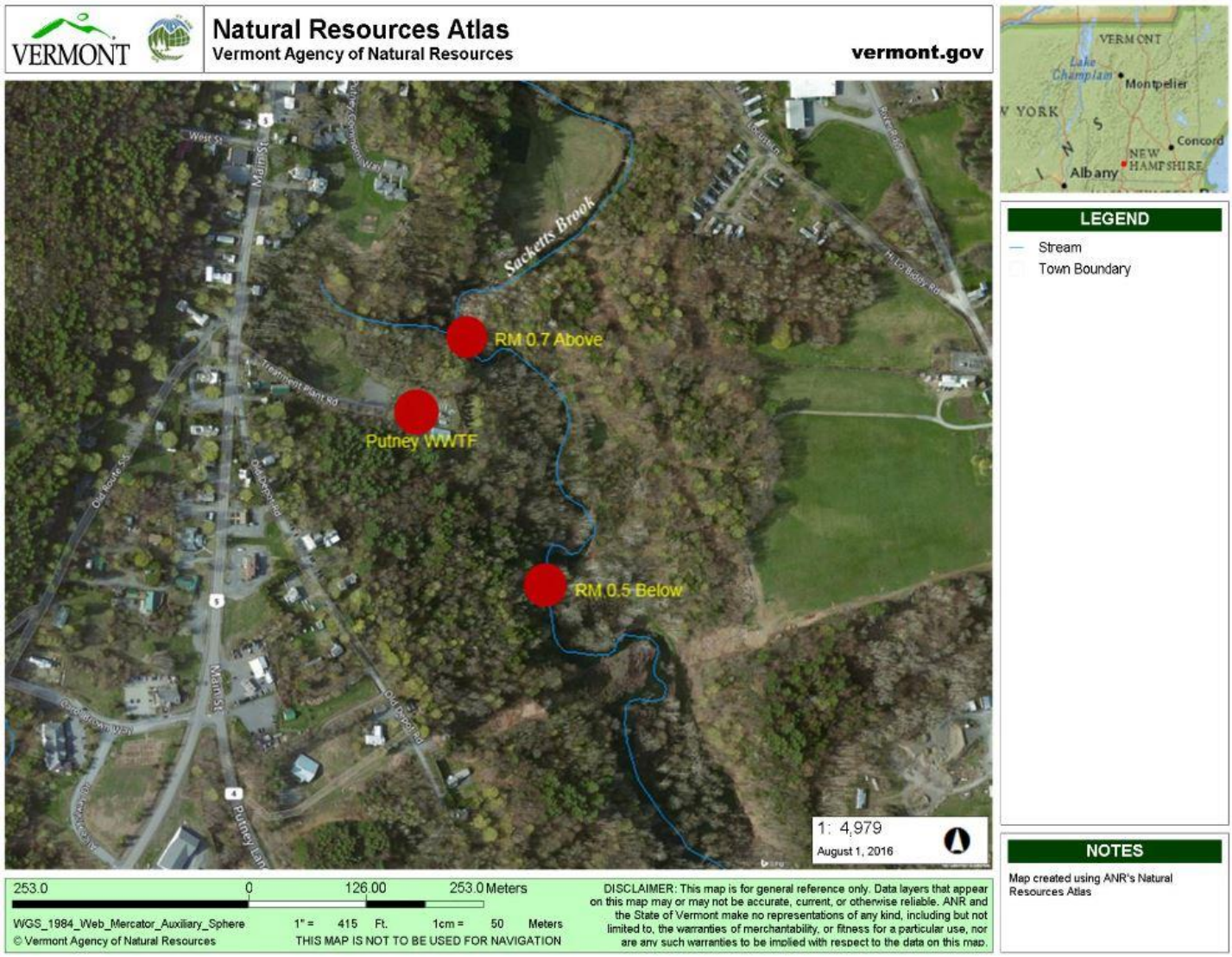

Figure 1. Sackett's Brook in the vicinity of the Putney WWTF, showing upstream and downstream sampling locations. Figure taken from the Vermont Integrated Watershed Assessment System on the VTANR Atlas (https://anrweb.vt.gov/DEC/IWIS/).

Total Phosphorus (TP) values above the outfall ranged from 12.6 µg/L to 13.4 µg/L. TP values below the outfall ranged from 129 µg/L to 157 µg/L illustrating an increase of over 100 µg/L-TP downstream of the facility.

Total Nitrogen (TN) values above the outfall ranged from 0.20 mg/L – 0.36 mg/L. TN values below the outfall ranged from 1.16 mg/L – 1.21 mg/L, indicating an increase of almost 1.0 mg/L-TN.

Turbidity, Dissolved Oxygen, pH:

Turbidity values above the outfall ranged from 1.12 – 1.77 Nephelometric Turbidity (NTU). Turbidity values below the outfall ranged from 1.02 – 2.29 NTU, well below the 10 NTU criteria. Dissolved oxygen and percent saturation were 11.1 mg/L and 100% respectively, above at RM 0.7 and 10.27 mg/L and 94% below at RM 0.5 on 9/25/2012. The pH above at RM 0.7 was 7.65, and 7.94 below on 9/25/2012.

Biological Assessments:
Biological assessments conducted above and below the outfall in 2012 (Table 2) scored "Very Good" and "Good" respectively. The biological condition has met or exceeded Class B standards for aquatic biota and aquatic habitat uses for the Medium High Gradient (MHG) stream type. The bioassessment below the outfall did have high density, moderately elevated BI value, as well as moderately low EPT; all of which indicate a moderate level of nutrient enrichment below the outfall.

Total Nitrogen:
MAPP notes that EPA, in a November 10, 2011 letter to the Agency indicated that Vermont must establish total nitrogen limitations in permits such that the total nitrogen load from all facilities in the Connecticut River watershed is consistent with the requirements of the Long Island Sound Total Maximum Daily Load (TMDL). Section I.B in this permit requires the Permittee have a qualified consultant develop and submit a Nitrogen Removal Optimization Plan by December 31, 2016. The plan shall be provided to the Agency before implementation. Additionally, an annual report will be due to the Agency documenting the pounds of TN discharged as well as removal optimization and efficiencies; the first annual report shall be submitted by January 15, 2018, as an attachment to the December 2017 DMR WR-43 report. Finally, this Condition contains as clause that allows the Agency to reopen the permit to include a wasteload allocation for this facility based on the LIS TMDL.

Optimization Plan:
By December 31, 2016 the Permittee shall develop and submit to the Agency of Natural Resources (Agency) for review and approval a Nitrogen Removal Optimization Evaluation Plan for the evaluation of alternative methods of operating the existing wastewater treatment facility to optimize the removal of nitrogen. The methods to be evaluated include: operational, process, equipment changes designed to enhance nitrification and denitrification (seasonal and year-round); incorporation of anoxic zones; septage receiving policies and procedures; and side stream management. The Permittee shall implement these recommended operational changes to maintain a mass discharge of total nitrogen (TN) lower than the existing mass loading of TN, notwithstanding the increased discharge volume of 0.02MGD. The baseline annual average daily TN load discharge from this facility is estimated to be approximately 16 lbs./day. This plan shall be developed by a qualified professional with experience in the operation and/or design of municipal wastewater treatment facilities in conjunction with the Chief Operator of the facility.

Table 2. Results of biological monitoring for macroinvertebrates on Sacketts Brook, above and below the Putney WWTF discharge.

Macroinvertebrate Site Summary			
Location:	Sacketts Brook	**Location ID:**	501274
Town:	Putney	**Bio Site ID:**	040000000009/05
Description:	Sites RM 0.9 (above) and RM 0.5 Blw Putney WWTF	**WBID:**	VT13-12
Stream Type:	Medium High Gradient		

Date	Density	Richness	EPT Richness	PMA-O	B.I.	Oligo.	EPT/EPT + Chiro	PPCS-F	Community Assessment	Attainment Status
Above 9/25/2012	669	42.0	21.0	58.2	3.95	2.56	0.74	0.45	Vgood	Meets WQS
Below 9/25/2012	1131	46.0	18.0	65.0	4.31	1.82	0.72	0.5	Good	Meets WQS
Full Support	≥ 350	≥ 32	≥ 20	≥ 50	≤ 4.85	≤ 9.5	≥ 0.47	≥ 0.45		
Meets Threshold	≥ 300	≥ 30	≥ 18	≥ 45	≤ 5	≤ 12	≥ 0.45	≥ 0.4		
Near Threshold	≥ 250	≥ 28	≥ 16	≥ 40	≤ 5.15	≤ 14.5	≥ 0.43	≥ 0.35		
Non-Support	< 250	< 28	< 16	< 40	> 5.15	> 14.5	< 0.43	< 0.35		

*Scoring Guidelines for Stream Type MHG and WQ Class B.

Total Phosphorus:
Instream Phosphorus Concentrations were calculated using the low monthly median flow (LMM) of 3.65 CFS at design flow of 0.155 CFS (0.1 MGD) and using the effluent phosphorus concentration of 5.0 mg/L assuming no phosphorus removal since there was no effluent data available. The calculated phosphorus concentration at these conditions attributable to discharge was 0.205 mg/L (205µg/L-TP). Data collected (Table 1) above and below the outfall show a TP increase of 116 – 143 µg/L-TP.

Facility flow records indicate that the plant has been operating at about 50% of the new design flow (0.05 MGD). Phosphorus concentrations at these conditions attributable to the discharge would be 102 µg/L-TP; very close to the instream values observed below the facility. These computations likely reflect the facilities phosphorus discharge and resulting water quality chemistry observed below the outfall. Monthly effluent monitoring detailed in the draft permit will provide effluent TP and TN values which will provide needed data for accurate computations.

The potential impacts of phosphorus discharges from this facility to the receiving water have been assessed in relation to the narrative criteria in §3-01.B.2 of the 2011 VWQS, which states:

> *In all waters, total phosphorous loadings shall be limited so that they will not contribute to the acceleration of eutrophication or the stimulation of the growth of aquatic biota in a manner that prevents the full support of uses.*

To interpret this standard, MAPP relies on a framework which examines TP concentrations in relation to existing response criteria in the water quality standards. Under the framework, MAPP can make a positive finding of compliance with the narrative standard when specific nutrient response variables; pH, Turbidity, Dissolved Oxygen, and aquatic life use, all display compliance with their respective criteria in the Water Quality Standards.

Notwithstanding the significant observed increase in total phosphorus attributable to the facility, aquatic life use is shown to be fully supported, and the stream complies with VWQS for all identified response

variables, and thus the narrative standard presented in §3-01.B.2 of the VWQS is supported (Table 3). As described below, for facilities where there are increases in phosphorus attributable to the discharge, and biological monitoring results do consistently indicate attainment of all thresholds, MAPP does not recommend biomonitoring be included in the permit. However, to better assess compliance with the 2014 nutrient criteria at the next permit issuance, MAPP recommends instream water quality monitoring as described below, in addition to the current effluent monitoring in the draft Permit.

Table 3. Assessment of phosphorus response variables for Putney WWTF. The relevant target values are referenced to the appropriate section of the VWQS.

Response variable (VWQS reference)	Target Value	River-mile 0.7 (Upstream)	River-mile 0.5 (Downstream)
pH (§3-01.B.9)	<8.5 s.u.	7.65	7.94
Turbidity (§3-04.B.1)	< 10 NTU at low mean annual flow	1.12	1.02
Dissolved Oxygen (min) (§3-04.B.2)	>6 mg/L and 70% saturation	11.1 (100%)	10.27 (94%)
Aquatic biota, based on macroinvertebrates, (§3-04-B.4), also see Table 2.	Attaining an assessment of good, or better.	Meets WQS (2012)	Meets WQS (2012)

Whole Effluent Toxicity (WET) and Priority Pollutant Testing:

40 CFR Part 122.44(d)(1) requires the Agency to assess whether the discharge causes, or has the reasonable potential to cause or contribute to an excursion above any narrative or numeric water quality criteria. The goal of the Vermont Toxic Discharge Control Strategy is to assure that the state water quality standards and receiving water classification criteria are maintained. The draft permit includes a requirement to conduct a two-species WET test in August of September of 2019. If the results of this test indicate a reasonable potential to cause an instream toxic impact, the Agency may require additional WET testing, establish a WET limit, or require a Toxicity Reduction Evaluation. Previous WET test conducted in 1999 indicated instream toxicity would not be a problem, based on a No Observable Effect Concentration (NOEC) at 25% effluent, and a 7Q10 IWC of 11.3%.

Sediment, Hardness, and Metals:

Instream total suspended solids were calculated using the 7Q10 of 1.21 CFS at design flow of 0.155 CFS (0.1 MGD), assuming the maximum permitted daily concentration of 50 mg/L. The calculated suspended sediment concentration at these conditions was 5.65 mg/l, indicating a minor augmentation of instream ambient suspended sediment concentrations in receiving waters.

The hardness of Sackett's Brook below the Putney outfall was recorded to be 85 mg/l CaCO3. The below hardness data is utilized to determine compliance with Vermont's aquatic biota based metals criteria as specified in Section 3-01 B.10.c. and Appendix C of the Vermont Water Quality Standards. Due to the moderate dilution of the receiving waters and the domestic nature of this discharge there are no concerns for metals exceeding criteria. There currently is no priority metal chemistry data from below the outfall. Metals data from above the outfall RM 0.9 (Table 4) did not detect any exceedances and most analytes were below detection.

Table 4. Sacketts Brook Metals (Total) Water Chemistry – above the Putney WWTF outfall.

Date	9/25/2012
Site (River Mile)	Above (0.9)
Calcium (mg/l)	28.8
Magnesium (mg/l)	4.02
Sodium (mg/l)	6.53
Potassium (mg/l)	1.21
Aluminum (µg/l)	47
Arsenic (µg/l)	<1
Cadmium (µg/l)	<1
Chromium (µg/l)	<5
Copper (µg/l)	<10
Iron (µg/l)	675
Lead (µg/l)	<1
Manganese (µg/l)	278
Nickel (µg/l)	<5
Selenium (µg/l)	<5
Zinc (µg/l)	<50

E. coli Bacteria

In response to concerns articulated by DEC staff on behalf of recreational boating users of the receiving water, MAPP has reviewed data provided by SeVWA regarding *E. coli* concentrations above (RM 1.0) and below (RM 0.15) the facility, as shown by Table 5. The data indicate that upstream and downstream of the facility, E. coli concentrations are in excess of the applicable water quality criterion for E. coli, though more data is needed to document an impairment. Therefore, MAPP examined monitoring data from the facility to determine the incidence of *E. coli* violations of permit limits (the limit is 77 E. coli /100mL), of which none were noted. Further, we note that the downstream concentrations are lower than upstream, suggesting that the WWTF is not the source of the bacteria, that it may in fact dilute concentrations. We conclude that the facility does not contribute to the observed E. coli concentrations.

Table 4. Sacketts Brook E. coli, from Southeast Vermont Watershed Alliance.

Location	22-Jun	6-Jul	20-Jul
Sacketts Brook, end of Mill St (Upstream)	2420	866	687
Sacketts Brook, above I-91 (Downstream)	1203	548	816

Recommended Biological and Water Quality Monitoring:

In light of the fact that biological monitoring results indicate attainment of all thresholds, and the stream presently complies with VWQS for all identified response variables the narrative nutrient standard presented in §3-01.B.2 of the VWQS is supported (Table 3), and thus MAPP does not recommend that biomonitoring be included in the permit. However, in light of the significant increases in observed total phosphorus downstream of the facility, to better assess compliance with the 2014 nutrient criteria at the next permit issuance, MAPP does support effluent monitoring detailed in the draft permit, and further recommends that the permittee undertake instream monitoring for total phosphorus, dissolved oxygen (and saturation), pH, and turbidity, at locations representive locations up and downstream of the discharge.

Should the permit contain conditions for water quality assessment, samples for TP, TN, pH, and turbidity should be collected monthly for the period of June through October during the years 2017, 2018, and 2019. Samples should be collected both upstream (RM 0.7) and downstream (RM 0.5) of the discharge.

Conclusion:

The available data indicate that this discharge does not cause, have a reasonable potential to cause, or contribute to an instream toxic impact or instream excursion above the water quality criteria, and as such, the development of a WQBEL's will not be necessary. The water quality monitoring (chemical and biological) conducted above and below the Putney WWTF discharge to date supports this conclusion.