VPDES PERMIT FACT SHEET

This document provides the pertinent information concerning the legal basis, scientific rationale and justification for the proposed Virginia Pollutant Discharge Elimination System (VPDES) permit action listed below. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9VAC25-260.

1. Proposed Permit Action: Issuance

2. Permit Classification: Minor Municipal

3. Permit No. VA0093165

4. Facility Name: Luray RV Resort and Campground
   Mailing Address: 4253 US Hwy 211 West, Luray, VA 22835
   Location: 4253 US Hwy 211 West, Luray, VA 22835
   Contact Name: Steven Kremer
   Title: Project Manager
   Telephone No.: 410-213-1900
   Email: skremer@bwdc.com

5. Owner Name: Camp Luray OPCO, LLC
   Contact Name: Todd Burbage
   Title: General Manager
   Mailing Address: 9919 Stephen Decatur Highway, Ocean City, MD 21842
   Telephone No.: 410-231-1900
   Email: tburbage@bwdc.com

6. Description of Discharge: The discharge results from the operation of a sewage treatment plant (SIC Code: 4952 - Sewerage Systems).

7. Description of Treatment Works Treating Domestic Sewage: The proposed facility will receive sewage wastewater generated by a campground and RV park. The application provided preliminary information regarding the proposed treatment units; however, it will ultimately be the permittee's responsibility to design a treatment plant capable of meeting the effluent limits specified in the permit.

   Design Flow = 0.05 MGD
   Total Number of Outfalls: 1

8. Application Complete Date: November 2, 2022
   Permit Writer: Megan O'Gorek Date: December 8, 2022
   Reviewed By: Keith Showman Date: December 8, 2022

9. Receiving Stream Name: South Fork Shenandoah River
   River Mile: 53.60
   Use Impairment(s): Yes
   Tidal Waters: No
   Watershed Name: PS40-South Fork Shenandoah River-Hawksclaw Creek
   Basin: Potomac; Subbasin: Shenandoah
   Section: 2; Class: IV
   Special Standards: None

10. Operator License Requirements per 9VAC25-31-200.C: Class III

11. Reliability Class per 9VAC25-790: Class II

12. Permit Characterization: ☑ Private ☐ Federal ☐ State ☐ POTW ☐ PVOTW
☐ Possible Interstate Effect ☐ Interim Limits in Other Document (attach copy of CSO)

13. Discharge Location Description and Receiving Waters Information: AppeIndix A

14. Influent Monitoring and Confirmation of 85% Removal: Appendix B

15. Effluent Screening and Effluent Limitations: Appendix C

16. Bases for Special Conditions: Appendix D

17. Antidegradation (AD) Review & Comments per 9VAC25-260-30: Tier Designation: Tier 1

The State Water Control Board's WQS include an AD policy. All state surface waters are provided one of three levels of AD protection. For Tier 1 or existing use protection, existing uses of the water and the water quality to protect these uses must be maintained. Tier 2 waters have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 waters are exceptional waters and are so designated by regulatory amendment. The AD policy prohibits new or expanded discharges into exceptional waters.

The AD review begins with a Tier determination. The South Fork Shenandoah River in the immediate vicinity of the discharge is determined to be a Tier 1 water because the stream does not meet the General Standard (Benthic) for aquatic life use. AD baselines are not calculated for Tier 1 waters.

18. Impaired Use Status Evaluation and Total Daily Maximum Load (TMDL) waste load allocations (WLAs) per 9VAC25-31-220.D: The South Fork Shenandoah River in the immediate vicinity of the discharge is listed as impaired for bacteria, for mercury in fish tissue, and for not meeting the General Standard (Benthic) for aquatic life use. The facility was not included in the original Bacteria TMDL Development and Benthic Stressor Analysis for South Fork Shenandoah River that was approved by the EPA on December 3, 2009; however, there is sufficient future growth remaining in the TMDL equation to allocate the following WLA for this discharge:

E. coli = 8.70×10^{10} cfu/yr (based on a design flow of 0.05 MGD and a concentration of 126 cfu/100 mL)

The Shenandoah River watershed is addressed in the TMDL Development for Mercury in the South River, South Fork Shenandoah River, and Shenandoah River, Virginia (approved by EPA on June 3, 2010) and the Development of Shenandoah River PCB TMDL (approved by EPA on October 1, 2001). This facility was not assigned a mercury or PCB WLA in these TMDLs.

A TMDL addressing the General Standard (Benthic) for aquatic life use impairment has not been prepared. The permit contains a re-opener condition that allows the permit limits to be modified, in compliance with section 303(d)(4) of the Act, once a TMDL is approved.

19. Stormwater Management per 9VAC25-31-120: Application Required? ☐ Yes ☑ No
This STP does not have a design flow $\geq$ 1.0 MGD, nor is it required to have an approved POTW pretreatment program under 9VAC25-31-10 et seq.

20. Standards for sewage sludge use or disposal per 9VAC25-31-220.B:
    Sewage sludge generated at this facility will be transported to the North River WWTF for treatment. The VPDES Permit application serves as the Sludge Management Plan to be approved with the issuance of the permit.

21. Effluent toxicity testing requirements included per 9VAC25-31-220.D: ☐ Yes ☑ No
    This STP has a design flow < 1.0 MGD, has no Significant Industrial Users (SIUs) or Categorical Industrial Users (CIUs), and is not deemed to have the potential to cause or contribute to instream toxicity.

22. Antibacksliding Review per 9VAC25-31-220.L: NA

23. Compliance Schedule per 9VAC25-31-250: There are no compliance schedules included in this permit issuance.

24. Material Storage per 9VAC25-31-280.B.2: This permit requires that the facility's O&M Manual include information to address the management of wastes, fluids, and pollutants which may be present at the facility, to avoid unauthorized discharge of such materials. A list of the chemicals used/stored at this facility is included in the permit issuance application.

25. Regulation of Users per 9VAC25-31-280.B.9: NA – There are no industrial users contributing to the treatment works.

26. Variances/Alternative Limits or Conditions per 9VAC25-31-280.B, 100.K, and 100.N: None

27. Pretreatment Program Requirements included per 9 VAC25-31-800: ☐ Yes ☑ No
    Pretreatment Program requirements are only applicable to POTWs. This facility is not a POTW.

28. Financial Assurance Applicability per 9VAC25-650-10: NA – The design flow of this facility is greater than or equal to 0.040 MGD.

29. Nutrient Trading Regulation per 9VAC25-820: See Appendix C
    General Permit Required: ☑ Yes ☐ No
    This facility is required to maintain coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen (TN) and Total Phosphorus (TP) Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia ("WGP"; 9VAC25-820) because it is a treatment works permitted to discharge > 1,000 gpd that commenced discharging on or after January 1, 2011.

30. Nutrient monitoring included per Guidance Memo No. 14-2011: ☐ Yes ☑ No
    This facility is monitoring and reporting nutrients under the WGP. This permit does not include any outfalls that discharge solely stormwater exposed to industrial activity.

31. Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1-1187.1-7: At the time of this issuance, is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level? ☐ Yes ☑ No

32. Other Agency Comments:
    By memo dated November 14, 2022, the Virginia Department of Health, Office of Drinking Water – Lexington Field Office (VDH) noted that the nearest downstream public water supply intake is located approximately 48 miles from of the discharge. VDH also noted that one groundwater source was found within a 1-mile radius from the discharge.

    Threatened and Endangered (T&E) Species Screening per 9VAC25-260-20 B.8: Because this is an issuance, T&E screening is required. T&E screening was coordinated on November 2, 2022 through Virginia Department of Conservation and Recreation (DCR), Virginia Department of Wildlife Resources (DWR) and United States Fish & Wildlife Service (USFWS). A response was received from USFWS on November 7, 2022 with no comments. No response was received from DCR or DWR.

33. Public Notice Information per 9VAC25-31-280.B: All pertinent information is on file, and may be inspected and copied by contacting Megan O'Gorek at: DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801, Telephone No. (540) 217-7155, megan.ogorek@deq.virginia.gov.

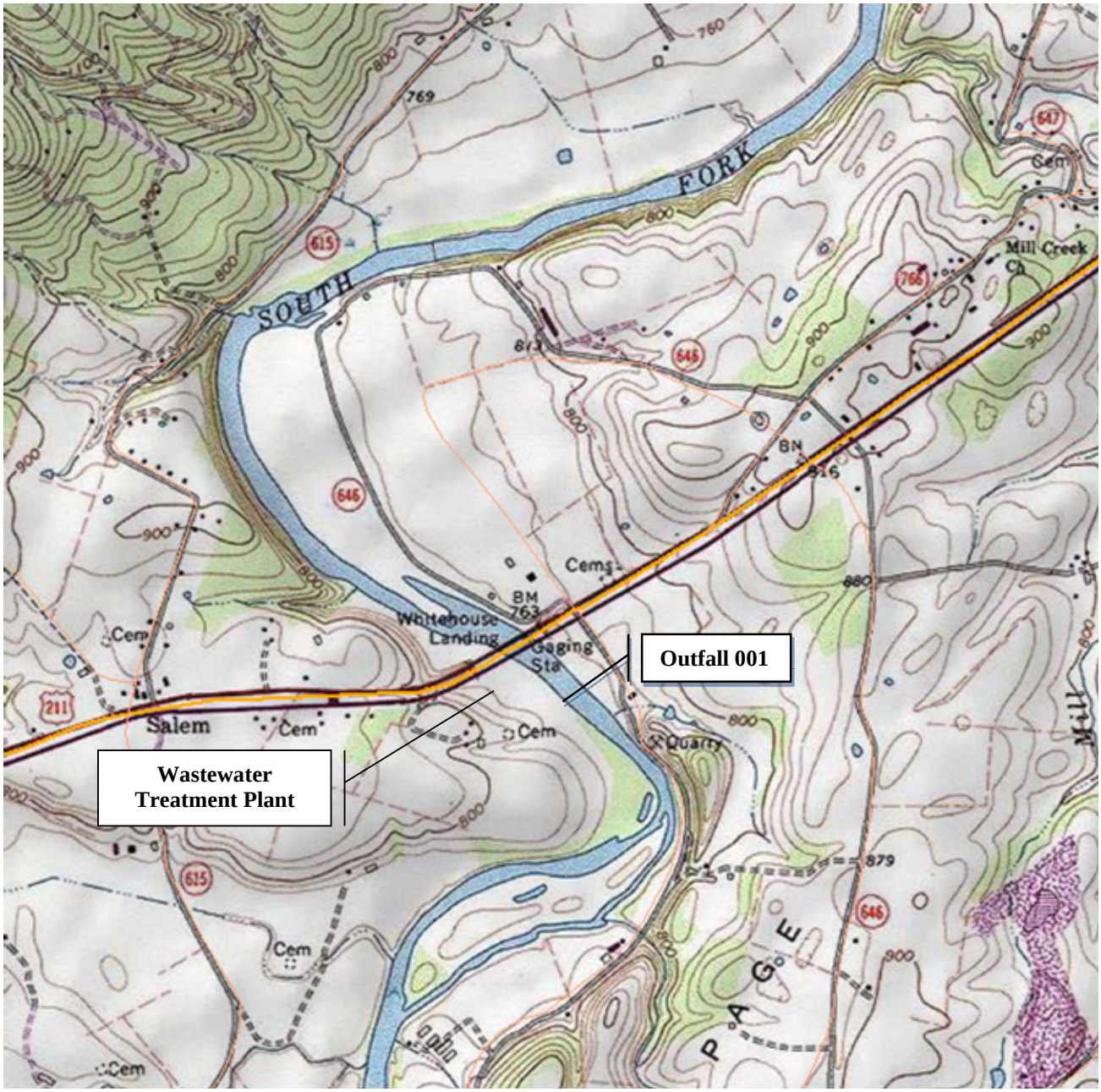
    Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, DEQ will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

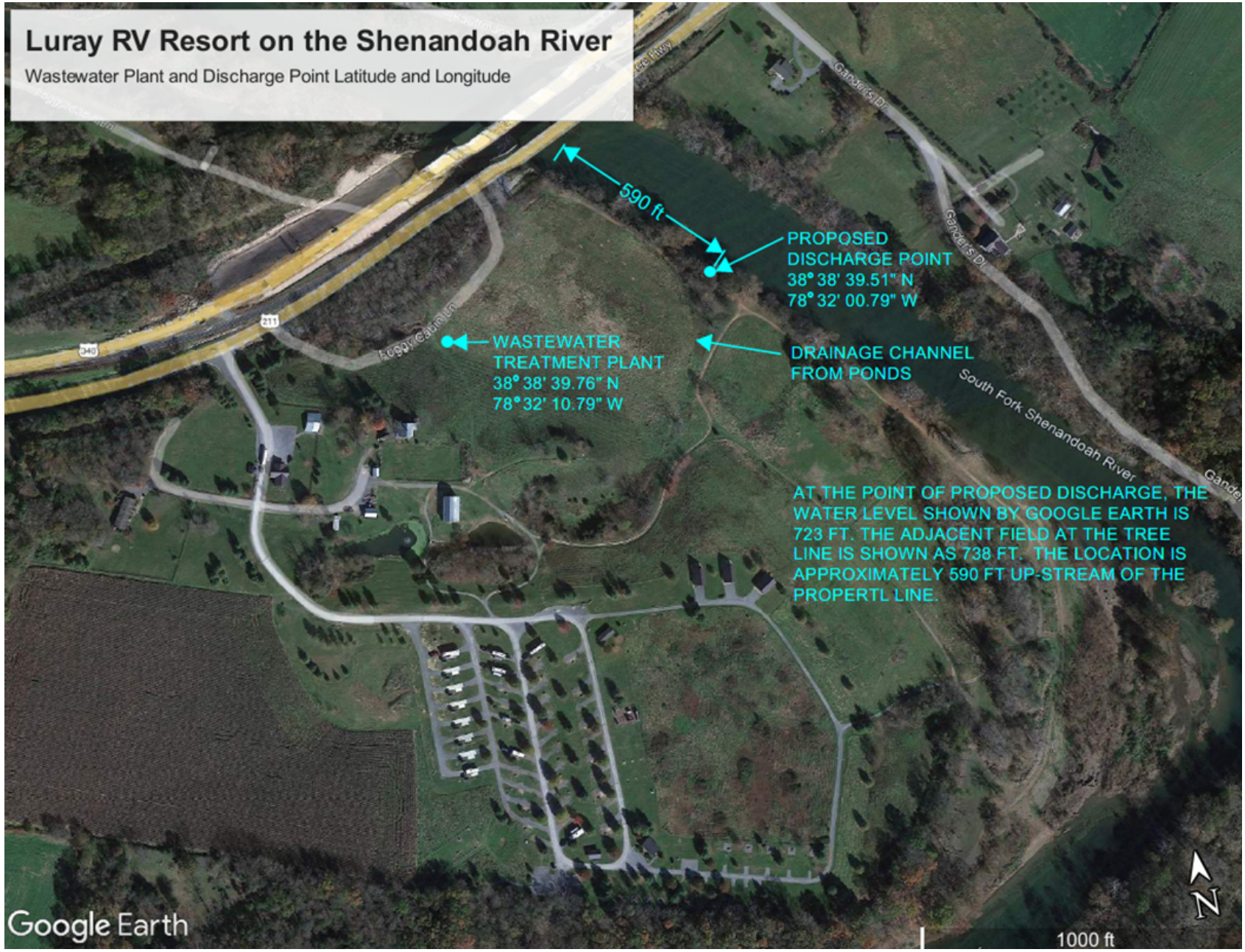
    Public Comment Period: DATE to DATE

APPENDIX A

DISCHARGE LOCATION AND RECEIVING WATERS INFORMATION

Luray RV Resort and Campground is proposed to discharge to the South Fork Shenandoah River in Page County. The locations of the wastewater treatment plant and Outfall 001 are shown on the topographic and aerial maps below.




Luray RV Resort on the Shenandoah River
Wastewater Plant and Discharge Point Latitude and Longitude
590 ft
PROPOSED
DISCHARGE POINT
38° 38' 39.51" N
78° 32' 00.79" W
WASTEWATER
TREATMENT PLANT
38° 38' 39.76" N
78° 32' 10.79" W
DRAINAGE CHANNEL
FROM PONDS
South Fork Shenandoah River
AT THE POINT OF PROPOSED DISCHARGE, THE WATER LEVEL SHOWN BY GOOGLE EARTH IS 723 FT. THE ADJACENT FIELD AT THE TREE LINE IS SHOWN AS 738 FT. THE LOCATION IS APPROXIMATELY 590 FT UP-STREAM OF THE PROPERTL LINE.
Google Earth
1000 ft
N

PLANNING INFORMATION:

TMDL and Water Quality Assessment information within the watershed and in the vicinity of the discharge are shown on the table below.

PLANNING & TMDL REVIEW

PERMITS

PERMIT	PERMIT ACTION	FACILITY	OUTFALL	RECEIVING STREAM	RIVER MILE	COORDINATES	
VA0093165	Issuance	Luray RV and Resort Campground	001	South Fork Shenandoah River	53.60	38.64431	-78.53355

REVIEW BASED ON INTERGRATED REPORT YEAR

2022

WATER QUALITY MANAGEMENT PLANNING & NUTRIENT GENERAL PERMIT REGULATIONS

Non-TMDL Wasteload Allocation		Nutrient Wasteload Allocation	
PARAMETER	ALLOCATION (kg/d)	PARAMETER	ALLOCATION (lbs/yr)
None		None	

RECEIVING STREAM INFORMATION

WATERSHED ID & NAME	BASIN NAME	SUBBASIN NAME	SPECIAL STANDARDS	SECTON	CLASS
PS40 - South Fork Shenandoah River-Hawksclaw Creek	Potomac	Shenandoah	None	2	IV

OUTFALL SEGMENT INFORMATION

ASSESSMENT UNIT ID	IMPAIRMENT(S)		
VAV-B38R_SSF02A10	Benthic	Bacteria	Hg in Fish Tissue

APPLICABLE TMDL

SOURCE TMDL ID	TMDL NAME	EPA APPROVAL	TMDL POLLUTANT(S)
1	Bacteria TMDL Development and Benthic Stressor Analysis for South Fork Shenandoah River	12/3/2009	E. coli
2	Development of Shenandoah River PCB TMDL	10/1/2001	PCB
3	TMDL Development for Mercury in the South River, South Fork Shenandoah River, and Shenandoah River, Virginia	6/3/2010	Mercury

FACILITY TMDL WLA

APPLICABLE TMDL	TMDL POLLUTANT	TMDL WLA	FLOW	CONCENTRATION
1	E. coli	8.70E+10 cfu/yr	0.05 MGD	126 cfu/100 mL
2	PCB	None	NA	NA
3	Mercury	None	NA	NA

FLOW FREQUENCY DETERMINATION:

VDEQ has operated a continuous record gage on the South Fork Shenandoah River near Luray, VA (#01629500) since 1952. Due to the proximity of the gage to the facility's outfall, the flow frequencies for the reference gage were applied directly to the discharge point. Flow frequencies for the reference gage were calculated using the DEQ's DFLOW statistical program. The flow frequencies are presented below:

South Fork Shenandoah River near Luray, VA (#01629500):

Drainage Area = 1372 mi^2

1Q10 =	196 cfs	(127 MGD)	High Flow 1Q10 =	271 cfs	(175 MGD)
7Q10 =	230 cfs	(148 MGD)	High Flow 7Q10 =	306 cfs	(197 MGD)
30Q10 =	260 cfs	(168 MGD)	High Flow 30Q10 =	373 cfs	(241 MGD)
30Q5 =	287 cfs	(185 MGD)	Harmonic Mean =	706 cfs	(456 MGD)

The high flow months are December through May for this analysis.

EFFLUENT/STREAM MIXING EVALUATION:

Mixing zone predictions were made with the Virginia DEQ Mixing Zone Analysis program. The predictions are based on the discharge and receiving stream characteristics, and are presented below.

Effluent Flow:	0.05 MGD
Stream 1Q10:	127 MGD
Stream 7Q10:	148 MGD
Stream 30Q10:	168 MGD
Stream Width:	285 ft
Stream Slope:	0.0006 ft/ft
Bottom Scale:	3
Channel Scale:	1

Mixing Zone Predictions @ 1Q10

Depth:	1.5580 ft
Velocity:	0.4427 ft/sec
Length:	53209.01 ft
Residence Time:	1.3911 days

Recommendation: A complete mix assumption is appropriate for this situation providing no more than **3%** of the 1Q10 may be used.

Mixing Zone Predictions @ 7Q10

Depth:	1.7085 ft
Velocity:	0.4704 ft/sec
Length:	49239.64 ft
Residence Time:	1.2114 days

Recommendation: A complete mix assumption is appropriate for this situation and the **entire** 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth:	1.8442 ft
Velocity:	0.4947 ft/sec
Length:	46173.36 ft
Residence Time:	1.0803 days

Recommendation: A complete mix assumption is appropriate for this situation and the **entire** 30Q10 may be used.

APPENDIX B

INFLUENT MONITORING AND CONFIRMATION OF 85% REMOVAL

This VPDES permit requires 85% removal of BOD_5 and TSS in accordance with the federal effluent guidelines for Secondary Treatment included in 40 CFR § 133.102. Because this facility provides advanced secondary or tertiary treatment with effluent BOD_5 and TSS substantially less than 30 mg/l, a reduced reporting frequency of annually is included in the permit.

Raw Sewage Influent **Design Flow: 0.05 MGD**

PARAMETER	LIMITATIONS		MONITORING REQUIREMENTS		REPORTING REQUIREMENTS
	Monthly Average	Minimum	Frequency	Sample Type	Frequency
Influent BOD_5 (mg/L)	NL	NA	1/Week in any month of each calendar year	Grab	Annually
Influent TSS (mg/L)	NL	NA	1/Year	Grab	Annually

Outfall 001 **Design Flow: 0.05 MGD**

PARAMETER	LIMITATIONS		MONITORING REQUIREMENTS		REPORTING REQUIREMENTS
	Monthly Average	Minimum	Frequency	Sample Type	Frequency
BOD_5, Percent Removal (%)	NL	85	1/Year	Calculated	Annually
TSS, Percent Removal (%)	NL	85	1/Year	Calculated	Annually

APPENDIX C

EFFLUENT SCREENING AND EFFLUENT LIMITATIONS

EFFLUENT LIMITATIONS:

A comparison of technology and water quality-based limits was performed and the most stringent limits were selected, as summarized in the table below.

Outfall 001 – Final Limits **Design Flow: 0.05 MGD**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		Continuous	TIRE
---	---	Monthly Average		Weekly Average		---	---
BOD_5	2,3,4	30 mg/L	5.7 kg/d	45 mg/L	8.5 kg/d	1/Week	4 HC
TSS	2	30 mg/L	5.7 kg/d	45 mg/L	8.5 kg/d	1/Month	4 HC
Effluent Chlorine (TRC)(mg/L)*	3	0.68		0.75		3/Day at 4-hour intervals	Grab
E. coli (N/100 mL) (geometric mean)	3,5	126		NA		4/Month in any month of each calendar year* or 4/Month** 10 am to 4 pm	Grab
---	---	Annual Average		Maximum		---	---
TN – Year to Date (mg/L)	7	NL		NA		1/Month	Calculated
TN – Calendar Year (mg/L)	7,8	8.0		NA		1/Year	Calculated
TP – Year to Date (mg/L)	7	NL		NA		1/Month	Calculated
TP – Calendar Year (mg/L)	7,8	1.0		NA		1/Year	Calculated
---	---	Minimum		Maximum		---	---
pH (SU)	2	6.0		9.0		1/Day	Grab
Dissolved Oxygen (mg/L)	3,4	5.0		NA		1/Day	Grab
Contact Chlorine (TRC)(mg/L)*	3,6	1.0		NA		3/Day at 4-hour intervals	Grab

Refer to permit for definitions of monitoring frequencies and sample types
** Applicable only when chlorination is used for disinfection*
*** Applicable if an alternative to chlorination is used for disinfection*

BASIS DESCRIPTIONS

1. *VPDES Permit Regulation (9VAC25-31)*
2. *Federal Effluent Requirements (Secondary Treatment Regulation - 40CFR133)*
3. *Water Quality Standards (9VAC25-260)*
4. *Regional Stream Model simulation*
5. *Bacteria TMDL Development and Benthic Stressor Analysis for South Fork Shenandoah River*
6. *Professional Judgment (PJ)*
7. *Guidance Memo No. 07-2008, Amendment No. 2, Permitting Considerations for Facilities in the Chesapeake Bay Watershed*
8. *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed (9VAC25-40)*

LIMITING FACTORS – OVERVIEW:
The following potential limiting factors have been considered in developing this permit and fact sheet:

Water Quality Management Planning (WQMP) Regulation (9VAC25-720)	
A. Local TMDL WLAs	**E. coli**
B. Non-TMDL WLAs	**None**
C. Chesapeake Bay TMDL WLAs	**TN and TP via GP VAN010179**
Federal Effluent Guidelines (FEG)	**BOD_5, TSS, pH**
PJ/Agency Guidance Limits	**TRC (contact)**
Water Quality-based Limits - numeric	**BOD_5, DO, TRC (effluent), E. coli, pH, Ammonia-N, TKN**
Water Quality-based Limits - narrative	**None**
Technology-based Limits (9VAC25-40-70)	**TN and TP**
Whole Effluent Toxicity (WET)	**None**
Stormwater Limits	**Not Applicable**

The monitoring frequencies imposed with issuance of the permit are in accordance with Guidance Memo No. 14-2003.

EVALUATION OF THE EFFLUENT – CONVENTIONAL POLLUTANTS:
The discharge for this facility was modeled using the Regional Stream Model. The values below were demonstrated to maintain the DO WQS. The modeling information is available for review at the DEQ-Valley Regional Office or electronically upon request.

$CBOD_5$ (mg/L)	25
TKN (mg/L)	20
DO (mg/L)	5.0

Because a $CBOD_5$ concentration of 25 mg/L is equivalent to a BOD_5 concentration of 30 mg/L, a BOD_5 permit limit of 30 mg/L has been imposed. The BOD_5 limits are consistent with the Secondary Treatment Regulation.

Based on the model, it was determined that no TKN limits were needed because a sewage treatment plant designed to achieve an annual average TN concentration of 8.0 mg/L is not expected to discharge effluent with TKN concentrations greater than 20 mg/L.

A DO limit of 5.0 mg/L has been imposed.

The TSS limits are consistent with the Secondary Treatment Regulation.

The pH limits are consistent with the Secondary Treatment Regulation and reflect the WQS for pH in the receiving stream.

EVALUATION OF THE EFFLUENT – DISINFECTION:
The E. coli limits are consistent with the TMDL WLA of 8.70×10^{10} cfu/yr and are protective of the WQS for E. coli in the receiving stream.

Should the facility need to utilize chlorine disinfection:
- Effluent and "Contact" chlorine monitoring and limits are specified in the permit.
- In accordance with Guidance Memo No. 14-2003, E. coli monitoring at a frequency of 4/Month sampling during at least 1 month in each calendar year of the permit term has been imposed to demonstrate compliance with the monthly geometric mean limit and to ensure adequate disinfection

EVALUATION OF THE EFFLUENT – NUTRIENTS:

This facility has applied and obtained coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9VAC25-820). Because this facility has zero allocation for TN and TP loadings, an offset plan was provided to DEQ. Camp Luray OPCO, LLC entered into an agreement with the Town of Leesburg to purchase 914 pounds of TN and 123 pounds of TP per year for calendar years 2023 through 2027. These purchases were based on the facility design flow and treatment technology to be installed.

The Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed (9VAC25-40-70) stipulates the inclusion of technology-based effluent concentration limits in the individual permit for any facility that has installed technology for the control of nitrogen and phosphorous whether by new construction, expansion, or upgrade. Technology-based annual average effluent concentration limits of TN = 8.0 mg/L and TP = 1.0 mg/L have been included in the permit based on the technology to be installed.

EVALUATION OF THE EFFLUENT – TOXICS:

Stream: Water quality data for the receiving stream were obtained from Ambient Monitoring Station No. 1BSSF054.20 on the South Fork Shenandoah River located downstream of the discharge point.

Stream Information			
90% Annual Temp (°C) =	24.9	90% pH (SU) =	8.8
Mean Hardness (mg/L) =	132	75% pH (SU) =	8.5
		50% pH (SU) =	8.2
		10% pH (SU) =	7.7

All toxic pollutants, including Ammonia-N and TRC, are assumed absent in the receiving stream because there are no data for these parameters directly above the discharge.

Discharge: Because this is a proposed facility and there are no site specific effluent data, the default effluent values shown below were utilized per PJ.

Effluent Information			
90% Annual Temp (°C) =	25.0	90% pH (SU) =	7.5
Mean Hardness (mg/L) =	150	75% pH (SU) =	7.5
		50% pH (SU) =	7.5
		10% pH (SU) =	7.0

WQC and WLAs were calculated for the WQS parameters for which data are available. The resulting WQC and WLAs are presented in this appendix. Guidance Memo No. 00-2011 recommends the evaluation of toxic pollutant limits for Ammonia-N and TRC be based on default effluent concentrations of 9 mg/L and 20 mg/L, respectively. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

- Ammonia-N: Limits were not determined to be necessary for Ammonia-N.
- TRC: Limits were determined to be necessary for TRC
- A complete WQS toxics scan is required to be performed within one year following the issuance of the CTO for the 0.05 MGD facility. This monitoring must be performed and submitted in accordance with Part I.D.8 of the permit and Attachment A of the permit.

FRESHWATER
WATER QUALITY CRITERIA/WASTELOAD ALLOCATION ANALYSIS

Facility Name: Luray RV Resort and Campground Permit No.: VA0093165

Receiving Stream: South Fork Shenandoah River Version: OWP Guidance Memo 00-2011 (9/17/2020)

Stream Information:			Stream Flows:			Mixing Information:			Effluent Information:		
Mean Hardness (as CaCO3) =	132	mg/L	1Q10 (Annual) =	127	MGD	Annual - 1Q10 MIX =	3	%	Mean Hardness (as CaCO3) =	150	mg/L
90% Temperature (Annual) =	24.9	deg C	7Q10 (Annual) =	148	MGD	- 7Q10 Mix =	100	%	90% Temperature (Annual) =	25	deg C
90% Temperature (Wet Season) =		deg C	30Q10 (Annual) =	168	MGD	- 30Q10 Mix =	100	%	90% Temperature (Wet Season) =		deg C
90% Maximum pH =	8.8	SU	30Q5	185	MGD	Wet Season - 1Q10 Mix =		%	90% Maximum pH =	7.5	SU
75% Maximum pH =	8.5	SU	Harmonic Mean =	456	MGD	- 30Q10 Mix =		%	75% Maximum pH =	7.5	SU
50% Maximum pH =	8.2	SU	1Q10 (Wet Season) =		MGD				50% Maximum pH =	7.5	SU
10% Maximum pH =	7.7	SU	30Q10 (Wet Season) =		MGD				10% Maximum pH =	7	SU
Tier Designation (1 or 2) =	1								Discharge Flow =	0.05	MGD
Public Water Supply (PWS)?	No										
Trout Present?	No										
Mussels Present?	Yes										
Early Life Stages Present?	Yes										
New Ammonia Criteria?	Yes										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**				**Method**
(Units)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**	**Target Value**
Ammonia (Yearly) (mg N/l)	0.00E+00	6.76E-01	4.18E-01			5.22E+01	1.40E+03											**5.22E+01**	**1.40E+03**			**1.57E+01**
TRC (mg/l)	0.00E+00	1.90E-02	1.10E-02			1.47E+00	3.26E+01											**1.47E+00**	**3.26E+01**			**4.40E-01**

NOTES:

1. This spreadsheet was developed using the DEQ MSTRANTI R program V5.3.3.
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals.
3. Metals measured as Dissolved, unless specified otherwise.
4. Regular WLA are mass balances (minus background concentration) using the %of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
5. Antidegradation Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic.
Antidegradation Baseline = (0.10(WQC - background conc.) + background conc.) for human health.
6. The method target value is calculated as the minimum of the following: the human health criteria, 0.3 times the limiting acute WLA, or 0.5 times the limiting chronic WLA.
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio-1), effluent equal to 1 and 100% mix.
8. The following water effect ratios (WERs) were applied to metal water quality criteria computations: Cd = 1, Cr = 1, Cu = 1, Pb = 1, Ni = 1, Ag = 1, Zn = 1
9. New ammonia criteria were used to determine ammonia dry season WLAs using the 50% maximum pH and the 75% pH to determine antidegradation WLAs per current DEQ guidance for chronic exposure (DS mix ratio = 3361, DS complete mix ratio = 3361).
10. New ammonia criteria were used to determine ammonia wet season WLAs using the 90% maximum pH per current DEQ guidance for chronic exposure (WS mix ratio = 1, WS complete mix ratio = 1).
11. Mussel presence likelihood estimator tool was not used.

STAT.EXE RESULTS

Ammonia-N	**TRC**
Chronic Averaging Period: 30 day WLAa: 52.2 mg/L WLAc: 1400 mg/L Q.L.: 0.2 mg/L # Samples/Mo.: 4 # Samples/Wk.: 1 Statistical Results # Observations: 1 Expected Value: 9.0000 mg/L Variance: 29.1600 mg2/L2 C.V.: 0.6000 97th percentile daily values: 21.8983 mg/L 97th percentile 4 day average: 14.9732 mg/L 97th percentile 30 day average: 10.8543 mg/L # Observations < Q.L.: 0 Limit Results Model Used: BPJ Assumptions, Type 2 data Limit Needed?: NO Basis for Limit?: NA Maximum Daily Limit: NA 4-Day Average Limit: NA Weekly Average Limit: NA Monthly Average Limit: NA Input Data 9 mg/L	Chronic Averaging Period: 4 day WLAa: 1.47 mg/L WLAc: 32.6 mg/L Q.L.: 0.1 mg/L # Samples/Mo.: 90 # Samples/Wk.: 21 Statistical Results # Observations: 1 Expected Value: 20.0000 mg/L Variance: 144.0000 mg2/L2 C.V.: 0.6000 97th percentile daily values: 48.6628 mg/L 97th percentile 4 day average: 33.2738 mg/L 97th percentile 30 day average: 24.1206 mg/L # Observations < Q.L.: 0 Limit Results Model Used: BPJ Assumptions, Type 2 data Limit Needed?: YES Basis for Limit?: Acute Toxicity Maximum Daily Limit: 1.4700 mg/L Weekly Average Limit: 0.7529 mg/L Monthly Average Limit: 0.6760 mg/L Input Data 20 mg/L

PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS:

Toxic pollutants were evaluated in accordance with Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh}, the WLA_{hh} was imposed as the limit.

Since there are no data available for any toxic pollutants immediately upstream of this discharge, all upstream (background) pollutant concentrations are assumed to be "0".

The steps used in evaluating the effluent data are as follows:

A. If all data are reported as "below detection" and at least one detection level is ≤ the required Quantification Level (QL) or if all data are below the required QL then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.

B. If all data are reported as "below detection", and all detection levels are > the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.

B.1. If the evaluation indicates that no limits are needed, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.

B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.

CASRN	Parameter	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
766-41-7	Ammonia-N (mg/L)	0.2 mg/L	**Default = 9 mg/L**	**a**	**B.1**
7782-50-5	TRC (mg/L)	0.1 mg/L	**Default = 20 mg/L**	**a**	**B.2**
All other toxic pollutants with applicable WQC will be evaluated after monitoring is performed for 0.05 MGD facility as required by Part I.D.8 of the permit.					

The **superscript "C"** following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10^{-5}.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

"Source of Data" codes:
a = default effluent concentration

"Data Evaluation" codes:
See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

APPENDIX D

BASES FOR PERMIT SPECIAL CONDITIONS

Tabulated below are the sections of the permit with the basis for each of the permit special conditions.

Cover Page	Content and format as prescribed by the Guidance Memo No. 14-2003.
Part I.A.1	**Effluent Limitations and Monitoring Requirements:** Bases for effluent limits and monitoring requirements are provided in previous pages of this fact sheet.
Part I.B	**Total Residual Chlorine (TRC) and E. coli Limitations and Monitoring Requirements:** Specifies both disinfection and effluent limits and monitoring requirements should the permittee elect to switch from alternate disinfection to chlorine disinfection. Required by the Sewage Collection and Treatment (SCAT) Regulations (9VAC25-790) and Water Quality Standards (9VAC25-260-170). Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.
Part I.C	**Effluent Limitations and Monitoring Requirements – Additional Instructions:** Authorized by the VPDES Permit Regulation (9VAC25-31-190 J.4 and 220.I). This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values. The State Water Control Law (§ 62.1 44.19:13) defines how annual nutrient loads are to be calculated; this is carried forward in the WGP. As annual concentrations (as opposed to loads) are limited in the individual permit, this special condition is intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.
Part I.D.1	**95% Capacity Reopener:** Required by the VPDES Permit Regulation (9VAC25-31-200.B.4) for certain permits. Included for this facility to ensure that adequate treatment capacity will continue to be provided as influent flows and/or loadings increase.
Part I.D.2	**Materials Handling/Storage:** The VPDES Permit Regulation (9VAC25-31-50.A) prohibits the discharge of any waste into State waters unless authorized by permit. The State Water Control Law (§62.1-44.16 and §62.1-44.17) authorizes the Board to regulate the discharge of industrial waste or other waste.
Part I.D.3	**O&M Manual Requirement:** Required by the State Water Control Law (§ 62.1-44.19), VPDES Permit Regulation (9VAC25-31-190.E), and Sewage Collection and Treatment Regulations (9VAC25-790) for all STPs.
Part I.D.4	**CTC/CTO Requirement:** Required by the State Water Control Law (§62.1-44.19), VPDES Permit Regulation (9VAC25-31-190.E), and Sewage Collection and Treatment Regulations (9VAC25-790) for all STPs.
Part I.D.5	**SMP Requirement:** The VPDES Permit Regulation (9VAC25-31-100.Q, 220.B.2, and 420 through 720), and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements are derived from the Virginia Pollution Abatement Permit Regulation (9VAC25-32).
Part I.D.6	**Licensed Operator Requirement:** The State Water Control Law (§54.1-2300 through 1-2302), VPDES Permit Regulation (9VAC25-31-200.C), and Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-30), require licensure of operators. A class III license is indicated for this facility.

Part I.D.7	**Reliability Class:** Required by the SCAT Regulations (9VAC25-790) for all municipal facilities.
Part I.D.8	**Water Quality Criteria Monitoring:** The State Water Control Law (§ 62.1-44.21) authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, Subpart 131.11. To ensure that water quality standards are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit.
Part I.D.9	**Treatment Works Closure Plan:** This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected to close. This is necessary to ensure treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks and exposure to raw materials is eliminated and water quality maintained. The State Water Control Law (§62.1-44.21) requires every owner to furnish when requested plans, specification, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purposes of the State Water Control Law.
Part I.D.10	**Reopeners:** a. Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other WLA prepared under section 303 of the Act. b. The VPDES Permit Regulation (9VAC25-40-70.A) authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. c. The VPDES Permit Regulation (9VAC25-31-390.A) authorizes DEQ to modify VPDES permits to promulgate amended water quality standards. d. Required by the VPDES Permit Regulation (9VAC25-31-220.C) for all permits issued to treatment works treating domestic sewage.
Part I.D.11	**Suspension of concentration limits for E3/E4 facilities:** The Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed (9VAC25-40-70.B) authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.
Part II	**Conditions Applicable to All VPDES Permits:** The VPDES Permit Regulation (9VAC25-31-190) requires all VPDES permits to contain or specifically cite the conditions listed.