Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

SUMMARY REPORT & FACT SHEET(SRFS)

Permit Application Numbers: **State:** 18-DP-3850 **NPDES:** MD0072001

Name of Facility: Mountain Christian Church WWTP

Mailing Address: 1824 Mountain Road
Joppa, Maryland 21085

Facility's Location: 1824 Mountain Road
Joppa, Harford County, Maryland 21085

Facility Organization: Mountain Christian Church

Contact Person's Name: Mr. Paul Joe Leturgez, Jr.
-Title: Administrator and Director of Finance
-Phone: (410) 877-1824

Applicant engaged in: The treatment of domestic wastewater.

Number of outfalls: 001A- (Facility Effluent) **SIC Code:** 8661

MDE Engineer: Joey Adia JMA **Completion Date:** 11/30/2018

Reviewed by: _____ 11-30-2018
Gurusharan C. Pancholi, P.E. Date
Municipal Surface Discharge Permits Division

Accepted by: _____ 11/30/2018
Yen-Der Cheng, Chief Date
Municipal Surface Discharge Permits Division

Is EPA joint review required? Yes ☐ Date sent: _____ No ☒

State/EPA comment/agreement received: Yes ☐ Date received: _____ N/A ☒

New or Updates to the Discharge Permit

Is the permit application for a new discharge permit? ☒ Yes, ☐ No

If No, are there any new or Update(s) to Discharge Permit Requirement(s) proposed in this permit Renewal? ☐ Yes ☐ No ☒ N/A

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I. Description of Facility, Outfall and Receiving Stream

Description of Facility & Outfall(s)

Details for Facility:

POTW ☐ Privately Owned Facility ☒

EPA MAJOR ☐ EPA MINOR ☒ Chesapeake Bay Significant ☐

The proposed facility will replace the private septic system with a permitted Groundwater Discharge Permit (14-DP-3429) for 2,400 gallons per day (gpd) average flow with a peak flow of 5,000 gpd. It will eliminate the groundwater discharge with surface water discharge to continue serving Mountain Christian Church which has a regular attendance of 5,400 members. Mountain Christian Church supports programs for families, women, young mothers, students, addiction recovery, and the community on their seventy acre campus.

Population Served: 5,400, 5-year Projected Flow: 0.005 MGD

The Harford County Department of Public Works Division of Water and Sewer has updated the latest Harford County's Comprehensive/Master Water and Sewer Plan, as amended and adopted in 2018 by Harford County incorporating the discharge flow related requirements for the proposed facility for surface discharge permit as follows: The proposed discharge permit is for both discharge capacities at 2,400 gallons per day (gpd) and a future expansion to 4,999 gpd. As the results, the proposed discharge flows of 2,400gpd and 4,999 gpd are consistent with the most updated Water and Sewer Plan. It is also in conformance with the State's Smart Growth initiatives.

Design Capacity of the Proposed Facility: 4,999 GPD

Which of the following documents were used as the base of the design capacity? (Check boxes as appropriate.)

☐ Construction Permit (Issued by MDE), ☒ Most updated W/S Plan (2018)
☒ Permit Application ☒ Other (Existing groundwater discharge permit)

Additional comments on the plant capacity: The proposed Mountain Christian Church WWTP will be constructed to replace the existing failing Onsite Sewage Disposal System of Mountain Christian Church.

Type of Discharge: ☒ Surface Discharge, Discharge Period: 12 months (January – December)
☐ Groundwater Discharge, Discharge Period: Not Applicable

Wastewater Treatment Processes:
The facility has yet to be constructed for the surface water discharge to replace the septic system discharging to the groundwater. It will be designed with treatment processes for Total Nitrogen (TN) and Total Phosphorus (TP) removal using Membrane Bio Reactor (MBR) Treatment System to achieve annual maximum limitations of 43 lbs/year for TN and 2.3 lbs/year for TP for 2,400 gpd. (NOTE: The facility may be required to acquire additional nutrient credits through trading or offset activities prior to allowing annual average discharge flows exceeding 2,400 gpd up to 4,999 gpd.)

I. Description of Facility, Outfall and Receiving Stream

Details for Outfall:				
Outfall Type:	*Non-submerged discharge*: Yes ☒ No ☐ Pipe ☒ Ditch ☐ Outfall Distance from the last sampling point: 1,000 ft *Submerged Discharge*: Yes ☐ No ☒ Distance from the last sampling point: _____, Diameter of the Outfall Pipe:_____ Distance from Shore:_____ , Depth: ____ , No. of Diffuser(s)/Opening(s): _____			
Outfall Location:	**GPS Readings**		**Maryland Coordinates (NAD27), feet**	
	Latitude	Longitude	North	East
	39° 28' 06" (N)	76° 22' 43" (W)	596,009	975,347

Details for Effluent Receiving Stream	
Name of Stream	Unnamed tributary of Little Gunpowder Falls which flows into Little Gunpowder Falls.
Type of Stream	Non-tidal Intermittent
Stream Use Designation	Unnamed tributary and Little Gunpowder Falls are designated as Use III water which are protected for the growth and propagation of trout.
River Mile	0.9 Miles (from Outfall 001A to confluence of Little Gunpowder Falls)
Watershed	8-Digit Sub-watershed: 02-13-08-04 – Little Gunpowder Falls Chesapeake Bay Program Segment (CBPSEG): GUNOH – Gunpowder River
Tier II Waters	Receiving stream(s) designated as Tier II water Yes ☐ No ☒ Tier II rules applicable to discharge Yes ☐ No ☐ N/A ☒ Refer to Section "Anti-degradation Policy review" on page 22 for further details.
Does the facility discharge into impaired waters included on (303(d) list)?	Yes ☒ No ☐ As per the approved Integrated Report of Surface Water Quality (formerly known as the 303(d) List and 305(b) Report), the streams in the Little Gunpowder Falls sub-watershed are listed as impaired water bodies due to temperature.

I. Description of Facility, Outfall and Receiving Stream

Details for Effluent Receiving Stream

Approved Total Maximum Daily Load (TMDL) / Water Quality Analysis (WQA) for concerned parameter(s)	Are there any approved TMDL(s) / WQA(s) for the Little Gunpowder Falls Sub-watershed? Yes ☒ No ☐ There are two approved WQAs listed below: - WQA for Metals approved by EPA on 02/20/2003. It was delisted in 2004. - WQA for Nutrients WQA approved by EPA on 08/26/2009. It was delisted in 2010.
	Is the unnamed tributary of Little Gunpowder Falls a part of the Chesapeake Bay TMDL (as accepted by EPA on 12/29/2010)? Yes ☒ No ☐

Background Stream Flows (See PROJECT FILE for details):

Period	7Q10 Low-flow, cfs	30Q5 Low-flow, cfs	Average Flow, cfs *
5/1 To 10/31	0.000	0.000	N/A
11/1 To 4/30	0.000	0.000	N/A
Annual	0.000	0.000	0.000

* Annual average flow applies to free-flowing streams.

The unnamed tributary to Little Gunpowder Falls is an intermittent stream; therefore, low flows of 0.000 cfs were used in the analysis.

Summary of Effluent Quality and Compliance History during Previous Discharge Permit

This will be a new facility with wastewater discharge to surface water. It will replace the existing facility and abandon the groundwater discharge. Refer to Appendix A for a summary of effluent quality of the groundwater discharged covered under discharge permit 14-DP-3429.

II. Special Requirements and Conditions

WWTP meeting at least 85% reduction of BOD_5 and TSS Yes ☐ No ☐ N/A ☒

This will be a new facility to be designed and constructed using Advanced Wastewater Treatment (AWT) to achieve the proposed AWT limits for BOD_5 and Nutrients. It should have no difficulty of achieving the minimum 85% reduction of BOD_5 and TSS, as required by 40 CFR Part 133, §133.102 for secondary or equivalent treatment requirements.

Rationale: 40CFR, PART 133, §133.102

Enhanced Nutrient Removal (ENR) Requirements: ENR Limits ☒ ENR Goal ☐ N/A ☐

The proposed facility will be required to meet the annual maximum loading rate limitations of ***Net zero*** pounds/year for TN and TP. Refer to Section "Nutrient Control Requirements" below for ENR related requirements.

Rationale: Maryland's Chesapeake Bay Tributary Strategy Statewide Implementation Plan, 2008. Chesapeake Bay Watershed Implementation Plan as amended, and Maryland's Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed.

TMDL Implementation Requirements: Yes ☐ No ☒ N/A ☐

There were two WQAs (for heavy metals and nutrients) accepted and approved by USEPA for delisting from the 303(d) list. Currently, there are no approved TMDLs for the Little Gunpowder Falls watershed.

Rationale: 40 CFR §130.7

Nutrient Control Requirements:

According to the Maryland's Enhanced Nutrient Removal (ENR) Strategy for the Chesapeake Bay and Maryland's Chesapeake Bay Watershed Implementation Plan (WIP), Phase II, no nutrient waste load allocations (WLAs) have been assigned to the proposed Mountain Christian Church WWTP for the surface water discharge. As the proposed facility will replace the failing On-site Sewage Disposal System (OSDS) at Mountain Christian Church and eliminate the groundwater discharge, the permittee will be required to design and construct a wastewater treatment plant with the nutrient removal capacity incorporating the following eligible available nutrient credits to comply with the nutrient annual maximum loading rate limit of net-zero pounds/year.

The permittee shall fulfill the following requisites prior to allowing effluent discharge from the Mountain Christian Church WWTP at Outfall 001A:

1. The permittee shall apply for and obtain a construction permit from MDE's Engineering and Capital Projects Program (ECPP) for the permitted flow of 2,400 gpd.

2. The Mountain Christian Church has an existing groundwater discharge permit (14-DP-3429) with TN maximum annual load limit of 146 pounds/year for TN. The permittee shall

II. Special Requirements and Conditions

permanently retire the existing OSDS serving Mountain Christian Church and totally eliminate the groundwater discharge, and convey wastewater to the proposed Mountain Christian Church WWTP for the surface water discharge at Outfall 001A. After retirement of the existing OSDS and total elimination of the groundwater discharge confirmed by the Department, the facility will be eligible for a credit load of 43 pounds/year for TN.

3. In order to support the elimination of the existing failing septic system discharging to the groundwater, the Department will reallocate to the permittee an existing TP waste load allocation in the GUNOH Bay Model segment of up to 2.3 pounds per year for TP to support the design and construction of the proposed facility with phosphorus removal to discharge flows up to 2,400 gpd at Outfall 001A.

4. The facility must be maintained and operated at optimum level all the times to meet the concentration-based loading limits for TN and TP as per footnote 9 of Special Condition II.A.

5. If the annual average effluent discharge flows approach or are anticipated to exceed 2,400 gpd; at least 180 days in advance of such anticipated exceedance of the discharge flows, the permittee shall be required to take following actions:

   a. Submit a written request to the Department to reopen the discharge permit for modification. The discharge permit (MD0072001) will be reopened and modified through public participation to incorporate nutrient credit loads, as appropriate, and to specify the corresponding allowed increase in discharge flows exceeding 2,400 gpd; and

   b. Provide supporting documentation including but not limited to the agreements and certifications for any additional nutrient credits secured by the permittee through offsets or trading to support the facility's operation at a higher flow volume. Any nutrient credits generated or acquired through trade are required to be reviewed and approved by the Department to ensure compliance with the permit requirement of net-zero pounds/year increase in TN and TP load contribution to the Gunpowder River watershed resulting from this permitted discharge, or

   c. The permittee shall apply for and obtain a construction permit from MDE's Engineering and Capital Projects Program (ECPP) to upgrade the facility to achieve nutrient removal at levels of the annual maximum loading rates of 43 pounds/year for TN and 2.3 pounds/year, in case the permittee does not acquire the additional nutrient loads as stated above in section b to meet the concentration-based loading rates established for discharge flows up to 2,400 gpd.

II. Special Requirements and Conditions

Rationale For Nutrient Control Requirements:

- Maryland's Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed
- Department Guidelines
- Harford County Comprehensive Water and Sewer Plan Amendment

Rationale For Total Nitrogen (TN) Credit Load:

0.3 delivery rate x 146 lbs/yr TN (from groundwater permit 14-DP-3429) = **43 lbs/yr TN credit**

Rationale For Total Phosphorus (TP) Credit Load:

WLA of up to 2.3 lbs/yr TP part of the aggregate waste load allocation of 1,396 pounds/year assigned to all non-significant point sources within the Chesapeake Bay Segment GUNOH.

Was Whole Effluent Toxicity (WET) testing required in the previous discharge permit? Yes ☐ No ☐ N/A ☒

This is a new discharge permit for domestic wastewater.

Is WET testing proposed for the permit? Yes ☐ No ☒ N/A ☐

Estimation of Instream Waste Concentration (IWC) for WET:

$$IWC(\%) = \left[\frac{Q_D \times 1.5472}{(Q_D \times 1.5472) + Q_{RW}} \right] \times 100 = \mathbf{100\ \%}$$

Where, Q_D = Plant permitted flow = 0.002400 and 0.004999, MGD
Q_{RW} = Receiving Water annual 30Q5 low-flow = 0.000, cfs (intermittent stream)

Are WET limits proposed? Yes ☐ No ☒ N/A ☐

Rationale: *COMAR 26.08.03.07D(1,) COMAR 26.08.03.07E and MDE's "Effluent Biotoxicity Testing Protocol, revised on 12/14/2012" .*

Was Toxic Chemical Testing required in the previous discharge permit? Yes ☐ No ☐ N/A ☒

Is Toxic Chemical Testing (TCT) proposed? Yes ☐ No ☒ N/A ☐

Rationale: *COMAR 26.08.03.07D(1) and MDE's "Toxic Pollutant Analytical and Reporting Requirements Protocol, revised on 9/18/2017"*

II. Special Requirements and Conditions

Wastewater Capacity Management

Does the proposed permit include condition pertaining to the wastewater flow capacity management? Yes ☐ No ☒

The facility serves a church in which a growth potential is not anticipated during the life of the discharge permit being processed.

If Yes, does the proposed permit require submittal of Capacity Management Plan (CMP)? Yes ☐ No ☒

This is a new facility with no flow data to be reviewed.

Rationale: MDE's Guidance Document "Wastewater Capacity Management Plans, 2006"

Pretreatment Program/Influent Restriction

WWTP with approved pretreatment program ☐ Non-pretreatment program WWTP ☒

Does the non-pretreatment WWTP require the influent restriction? Yes ☒ No ☐

Privately owned treatment works are defined in 40 CFR 122.2 as "any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a POTW." Based on this statement, privately owned facilities are therefore not subject to pretreatment regulations. As a privately owned treatment works it is your responsibility to comply with all permit requirements and limitations in your permit. In order to provide assistance in complying with effluent limitations, we suggest that pretreatment requirements or similar be utilized in your permit. Regardless, your plant is subject to technology-based limits that require BPT, BAT, BCT and/or NSPS.

Rationale: COMAR 26.08.08 and Department Guidelines

Reapplication Due Date for Next Permit Renewal

Per the Departmental guidelines for the watershed permitting, the next renewal of a discharge permit for Mountain Christian Church WWTP is scheduled for 4th quarter, 2nd year in cycle with the projected renewal application date of 10/01/2020 and reissuance date of 01/01/2022.

The issuance date of this proposed permit will be established after fulfilling all the formalities of the public participation process. It is anticipated that a period between the proposed permit issuance date and the above stated reapplication date for the next permit cycle year would likely be less than three years. As per the USEPA's guidelines for NPDES discharge permit, it is suggested that the facility's performance results for at least three years period should be considered for the next permit renewal processing; and therefore , the reapplication due date for the proposed discharge permit will be set as "No later than 12 months" before the expiration date of the proposed permit.

Rationale: COMAR 26.08.04.01 and Departmental Guidelines.

II. Special Requirements and Conditions

Are temperature requirements included? Yes ☒ No ☐

1. For Effluent:

   The effluent temperature shall be measured in degrees Celsius at the end of outfall 001A or nearest manhole. Effluent temperature shall be limited to 20°C (68°F) or ambient temperature, whichever is greater at any time.

2. For Stream:

   When the effluent temperature is 20°C (68°F) or less, stream monitoring is not required. Otherwise, in order to include ambient temperatures of the effluent receiving stream with the effluent temperatures for evaluation, the permittee must measure the ambient stream temperatures in degrees Celsius at the surrogate monitoring location indicated on the outfall map on page 26 (39°27'41"(N), 76°23'25" (W)). If the recommended sampling point is not accessible; the permittee can propose an alternative location with the approval of the Department. The permittee shall submit a map showing the locations of the sampling point with latitude and longitude of the sampling point with the first monthly operating report. This location shall remain the same for the duration of the permit unless the permittee notifies the Compliance Program in advance of the need for a change.

3. Timing for Effluent and Stream Sampling:

   The water temperature measurements of the effluent and the ambient surrogate stream at the sampling locations as described above in Sections 1 and 2 shall be taken as grab samples using immersion-stabilization on the same day in the morning between 7:00 to 10:00 AM as well as in the afternoon between 2:00 to 5:00 PM.

4. Reporting of Effluent and Stream Temperatures:

   a. Monthly Operating Report (MOR)

      All measurements shall be reported in degrees Celsius on the MOR as individual results.

   b. Discharge Monitoring Report (DMR)

      If at any time the effluent temperature exceeds 20°C (68°F) or ambient temperature, whichever is greater, it shall count as an excursion. The maximum daily temperature observed each month and number of excursions per month shall be reported on the DMR.

Rationale: COMAR 26.08.02.03-3D

II. Special Requirements and Conditions

Does the WWTP use lagoon(s) for wastewater treatment?	Yes ☐	No ☒

Rationale: Department Policy.

Is the emergency holding pond required?	Yes ☐	No ☒

Rationale: COMAR 26.08.04.04C(2)(c)

III. Proposed Effluent Limits and Monitoring Requirements

A. <u>For discharge flows up to 2,400 gpd</u>:
This permit does not authorize the effluent discharge from the newly constructed WWTP until 1) Special Condition II.H has been fulfilled and 2) the permittee has provided written notification to MDE's Wastewater Permits Program and Compliance Program with the commencement date at least 30 days prior to the anticipated start of operations.

Upon the start of operation of the WWTP, the quality of the effluent discharged by the facility at a discharge point location – 001A shall be limited at all times as shown below: [(1)(2)(3)(4)]:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
BOD_5	**Limits**	5/1 – 10/31	0.1 lbs/d (max mo ave) 0.2 lbs/d (max wk ave)	6 mg/l (max mo ave) 9 mg/l (max wk ave)	N/A
		11/1 – 4/30	0.3 lbs/d (max mo ave) 0.5 lbs/d (max wk ave)	15 mg/l (max mo ave) 23 mg/l (max wk ave)	
	Minimum Monitoring	All Year	**Frequency** One per week	**Sample Type** 24-hour composite	(12)
Total Suspended Solids (TSS)	**Limits**	All Year	0.6 lbs/d (max mo ave) 0.9 lbs/d (max wk ave)	30 mg/l (max mo ave) 45 mg/l (max wk ave)	N/A
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	(12)
Total Kjedahl Nitrogen (TKN)	**Limits**	5/1 – 10/31	0.05 lbs/d (max mo ave) 0.07 lbs/d (max wk ave)	2.4 mg/l (max mo ave) 3.6 mg/l (max wk ave)	N/A
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	(12)
Total Ammonia Nitrogen as N	**Limits**	5/1 – 10/31	0.01 lbs/d (max mo ave) 0.02 lbs/d (max da ave)	0.7 mg/l (max mo ave) 1.0 mg/l (max da ave)	N/A
		11/1 – 4/30	0.02 lbs/d (max mo ave) 0.04 lbs/d (max da ave)	1.0 mg/l (max mo ave) 2.1 mg/l (max da ave)	
	Minimum Monitoring	All Year	**Frequency** One per week	**Sample Type** 24-hour composite	(12)(14)
Organic Nitrogen as N (Monitoring only parameter)	**Reporting**	All Year	N/A	REPORT mg/l (mo ave)	(12)(13)(14)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	
(Nitrite + Nitrate) as N (Monitoring only parameter)	**Reporting**	All Year	N/A	REPORT mg/l (mo ave)	(12)(13)(14)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	

III. Proposed Effluent Limits and Monitoring Requirements

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Total Nitrogen as N (Gross)	**Reporting**	All Year	REPORT lbs/mo (mo load) REPORT lbs/yr (annual max)	REPORT mg/l (mo ave)	(5)(6)(7)(8)(9)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** Calculated	(12)(14)(15)
Total Nitrogen as N (Net)	**Limits**	All Year	REPORT lbs/mo (mo load) REPORT lbs/yr (YTD load) Zero[8] lbs/yr (Annual Load)	N/A	(5)(6)(7)(8)(9)
	Minimum Monitoring	All Year	**Frequency** One per month	**Sample Type** Calculated	(12)(14) (15)(16)
Orthophosphate as P (Monitoring only parameter)	**Reporting**	All Year	N/A	REPORT mg/l (mo ave)	(12)(13)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	
Total Phosphorus as P (Gross)	**Reporting**	All year	REPORT lbs/mo (mo load) REPORT lbs/yr (annual max)	REPORT mg/l (mo ave)	(5)(6)(7)(8)(9)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	(12)(15)
Total Phosphorus as P (Net)	**Limits**	All year	REPORT lbs/mo (mo load) REPORT lbs/yr (YTD load) Zero[8] lbs/yr (Annual Load)	N/A	(5)(6)(7)(8)(9)
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(12)(15)(16)
E. Coli	**Limits**	All year	N/A	126 MPN/100 ml (max mo geo mean)	N/A
	Minimum Monitoring		**Frequency** One per week	**Sample Type** Grab	(12)
Total Residual Chlorine (TRC)	**Limits**	All Year	N/A	(See footnote- 10)	(10)
	Minimum Monitoring		**Frequency** (See footnote 10)	**Sample Type** N/A	(21)
pH	**Limits**	All Year	N/A	6.5 SU (min) 8.5 SU (max)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Grab	(12)

III. Proposed Effluent Limits and Monitoring Requirements

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
Dissolved Oxygen (DO)	**Limits**	All Year	N/A	7.0 mg/l (min at anytime)	N/A
	Minimum Monitoring	All Year	**Frequency** One per day	**Sample Type** Grab	(12)
Temperature (Effluent and Stream)	**Limits**	All Year	N/A	(See footnote -11)	(11)
	Minimum Monitoring	All Year	**Frequency** One set per week*	**Sample Type** (i-s)	(12)(20)
Temperature Excursions (Effluent)	**Reporting**	All Year	N/A	(See footnote -11)	(11)
	Minimum Monitoring	All Year	**Frequency** One per month	**Sample Type** Count	(12)(20)
Flow	**Reporting**	All Year	REPORT mgd (max mo ave) REPORT mgd (da max)	N/A	N/A
	Minimum Monitoring	All Year	**Frequency** Continuous	**Sample Type** Recorded	(12)(17)(18)
Total Flow	**Reporting**	All Year	REPORT Mgal/MO (mo total)	N/A	(12)(19)
	Minimum Monitoring	All Year	**Frequency** Monthly	**Sample Type** Calculated	

*One set of temperature monitoring shall consist of two measurements, first between 7AM-10AM and second between 2PM-5PM, taken on the same day.

An annual average flow of **0.0024** million gallons per day (mgd) was used in waste allocation calculations (expressed as waste loading rate limit), and this unit shall be used when reporting on the Discharge Minimum Monitoring Report (DMR). Notification is to be provided to the Department at least 180 days before the annual average flow is expected to exceed this flow level. If a permit modification is required, the Department will initiate the public participation NPDES process.

III. Proposed Effluent Limits and Monitoring Requirements

B. For discharge flows exceeding 2,400 gpd up to 4,999 gpd:

At least 180 days prior to when the average discharge flows at the facility are anticipated to exceed the discharge flow of 2,400 gpd, the permittee shall submit a written request to reopen the discharge permit for a modification (including public participation) consistent with the requirements of Special Condition II.H.5 of the discharge permit. The quality of the effluent discharged by the facility at a discharge point location – 001A shall be limited at all times as shown below:

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
BOD_5	**Limits**	5/1 – 10/31	0.2 lbs/d (max mo ave) 0.3 lbs/d (max wk ave)	6 mg/l (max mo ave) 9 mg/l (max wk ave)	N/A
		11/1 – 4/30	0.6 lbs/d (max mo ave) 0.9 lbs/d (max wk ave)	15 mg/l (max mo ave) 23 mg/l max wk ave)	
	Minimum Monitoring	All Year	**Frequency** One per week	**Sample Type** 24-hour composite	(12)
Total Suspended Solids (TSS)	**Limits**	All Year	0.1.2 lbs/d (max mo ave) 0.1.8 lbs/d (max wk ave)	30 mg/l (max mo ave) 45 mg/l (max wk ave)	N/A
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	(12)
Total Kjedahl Nitrogen (TKN)	**Limits**	5/1 – 10/31	0.1 lbs/d (max mo ave) 0.15 lbs/d (max wk ave)	2.4 mg/l (max mo ave)) 3.6 mg/l (max wk ave	N/A
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	(12)
Total Ammonia Nitrogen as N	**Limits**	5/1 – 10/31	0.02 lbs/d (max mo ave) 0.04 lbs/d (max da ave)	0.71 mg/l (max mo ave) 1.0 mg/l (max da ave)	N/A
		11/1 – 4/30	0.04 lbs/d (max mo ave) 0.08 lbs/d (max da ave)	1.0 mg/l (max mo ave) 2.14 mg/l (max da ave)	
	Minimum Monitoring	All Year	**Frequency** One per week	**Sample Type** 24-hour composite	(12)(14)
Organic Nitrogen as N (Monitoring only parameter)	**Reporting**	All Year	N/A	REPORT mg/l (mo ave)	(12)(13)(14)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	

III. Proposed Effluent Limits and Monitoring Requirements

(Nitrite + Nitrate) as N (Monitoring only parameter)	**Reporting**	All Year	N/A	REPORT mg/l (mo ave)	(12)(13)(14)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	
Total Nitrogen as N (Gross)	**Reporting**	All Year	REPORT lbs/mo (mo load) REPORT lbs/yr (annual max)	REPORT mg/l (mo ave)	(5)(6)(7)(8)(9)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** Calculated	(12)(14)(15)
Total Nitrogen as N (Net)	**Limits**	All Year	REPORT lbs/mo (mo load) REPORT lbs/yr (YTD load) Zero[8] Annual Net Loading	N/A	(5)(6)(7)(8)(9)
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(12)(14) (15)(16)
Orthophosphate as P (Monitoring only parameter)	**Reporting**	All Year	N/A	REPORT mg/l (mo ave)	(12)(13)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	
Total Phosphorus as P (Gross)	**Reporting**	All year	REPORT lbs/mo (mo load) REPORT lbs/yr (annual max)	REPORT mg/l (mo ave)	(5)(6)(7)(8)(9)
	Minimum Monitoring		**Frequency** One per week	**Sample Type** 24-hour composite	(12)(15)
Total Phosphorus as P (Net)	**Limits**	All year	REPORT lbs/mo (mo load) REPORT lbs/yr (YTD load) Zero[8] lbs/yr (Annual Load)	N/A	(5)(6)(7)(8)(9)
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Calculated	(12)(15)(16)
E. Coli	**Limits**	All year	N/A	126 MPN/100 ml (max mo geo mean)	N/A
	Minimum Monitoring		**Frequency** One per week	**Sample Type** Grab	(12)
Total Residual Chlorine (TRC)	**Limits**	All Year	N/A	(See footnote- 10)	(10)
	Minimum Monitoring		**Frequency** (See footnote 10)	**Sample Type** N/A	(21)
pH	**Limits**	All Year	N/A	6.5 SU (min) 8.5 SU (max)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Grab	(12)

III. Proposed Effluent Limits and Monitoring Requirements

Dissolved Oxygen (DO)	**Limits**	All Year	N/A	7.0 mg/l (min at anytime)	N/A
	Minimum Monitoring		**Frequency** One per day	**Sample Type** Grab	(12)
Temperature (Effluent and Stream)	**Limits**	All Year	N/A	(See footnote -11)	N/A
	Minimum Monitoring		**Frequency** One set per week*	**Sample Type** (i-s)	(12)(20)
Temperature Excursions (Effluent)	**Reporting**	All Year	N/A	(See footnote -11)	(11)
	Minimum Monitoring		**Frequency** One per month	**Sample Type** Count	(12)(20)
Flow	**Reporting**	All Year	N/A REPORT mgd (da max)	(See footnote -11)	N/A
	Minimum Monitoring	All Year	**Frequency** Continuous	**Sample Type** Recorded	(12)(17)(18)
Total Flow	**Reporting**	All Year	REPORT Mgal/MO (mo total)	N/A	(12)(19)
	Minimum Monitoring	All Year	**Frequency** Monthly	**Sample Type** Calculated	

*One set of temperature monitoring shall consist of two measurements, first between 7AM-10AM and second between 2PM-5PM, taken on the same day.

An annual average flow of **0.004999** million gallons per day (mgd) was used in waste allocation calculations (expressed as waste loading rate limit), and this unit shall be used when reporting on the Discharge Monitoring Report (DMR). Notification is to be provided to the Department at least 180 days before the annual average flow is expected to exceed this flow level. If a permit modification is required, the Department will initiate the public participation NPDES process.

Footnotes:

For Effluent Limitations

(1) When this permit is renewed, the new limitations may not be equal to the above limitations.

(2) There shall be no discharge of floating solids or visible foam other than trace amounts.

(3) The permit may also be reopened in accordance with the requirements of MDE's Watershed Permitting Plan under which all discharge permits in a watershed are issued the same year.

III. Proposed Effluent Limits and Monitoring Requirements

(4) Little Gunpowder Falls is on the 303(d) list as the impaired waters for temperature. This permit is in conformance with the "**Chesapeake Bay TMDL for Nitrogen, Phosphorus and Sediment"** established on December 29, 2010.

When TMDLs for other parameters are completed, limits may be imposed, after the public participation process, to incorporate any TMDL requirements.

(5) Total monthly load (in pounds/month) for Total Nitrogen (TN) and Total Phosphorus (TP) shall be calculated for each calendar month as specified in Definition I.H.5 of the discharge permit.

(6) The Annual Maximum Loading Rate (Definition I.H.7a) for nutrients is a calculated value to be reported monthly as the year-to-date cumulative loads (Definition I.H.6) from January through December of the current calendar year. See also Special Conditions II.H for details.

(7) Consistent with the Chesapeake Bay Nutrient Strategy, any new facility discharging into the Chesapeake Bay Watershed will be assigned initial waste load allocations for TN and TP of zero pounds/year. The permittee is required to offset the increased TN and TP loads through generating credits or through nutrient trading/transfer per all applicable regulations and requirements.

(8) The permittee shall fulfill requirements of the Special Conditions II.H prior to allowing discharge of treated wastewater from the Mountain Christian Church WWTP at Outfall 001A. The facility shall be operated in a manner that optimizes the nutrient removal capability of the facility at all times.

The first exceedance of the permit limit shall be counted and reported as daily exceedances beginning from the first exceedance, determined to the nearest day, through December 31. In addition, after any such exceedance, the permittee shall demonstrate to the Department's satisfaction that the facility is optimizing its nutrient removal capability, and neither the arrival of the next calendar year nor the issuance of a permit renewal during a period of noncompliance shall obviate continuance of any noncompliance status related to treatment optimization requirements.

(9) At the end of each calendar year, the permittee shall comply with the *concentration-based* limitations for the Annual Maximum Loading Rate defined below:

(a) TN Limitation (lbs/year): 5.0 mg/l x annual total flow (calendar year based in million gallons per year) x 8.34. To the extent that the permittee alleges that temperature levels of 12 degrees C or lower have diminished the treatment system's capability of complying with this *concentration-based* loading rate limitation for Total Nitrogen, the permittee shall provide notification beginning with the calendar year report under the "Upset" provision in Section III.B.6 of this permit. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

(b) TP Limitation (lbs/year): 0.30 mg/l x annual total flow (calendar year based in million gallons per year) x 8.34.

The details and results of all required annual calculations shall be submitted to the Department with the Discharge Monitoring Report for December. See Special Condition II.H for further details.

The *concentration-based* loading requirements may be revised if the limits or schedule are determined to be impracticable based on actual performance and the Department re-opens the permit as a major modification (which requires public participation) to impose (an) alternate effluent limitation(s) or revised schedule. For further details, see Special Conditions II.H for Nutrient Control Requirements of the permit.

III. Proposed Effluent Limits and Monitoring Requirements

(10) According to COMAR 26.08.03.06 B (1), the use of chlorine or any chlorine-containing compound is prohibited in the treatment of wastewater discharging to Use III-P waters. If a chlorine containing compound is used for occasional cleaning and maintenance to the membranes used in membrane biological reactor (MBR) to improved efficiency of the system, the wastewater generated from the cleaning and maintenance process shall be isolated, de-chlorinated to remove total residual chlorine below 0.011 mg/l during the entire event, and returned to the headworks of the treatment process prior to being discharged to the receiving stream.

(11) The effluent temperature shall not exceed 20°C (68°F) or ambient water temperature, whichever is greater at anytime. See Special Condition II.F for ambient temperature monitoring as well as reporting requirements. The permittee shall comply above stated effluent temperature requirement at all times.

For Monitoring Requirements

(12) "STORET" (short for STOrage and RETrieval) is a widely-used repository for water quality data reporting and monitoring. The STORET codes for the effluent characteristics described as limitations and/or monitoring requirements are: BOD_5 (00310), Total Suspended Solids (00530), TKN (00625), Total Ammonia Nitrogen as N (00610), Total Phosphorus as P (00665), Total Nitrogen as N (00600), (Nitrite + Nitrate) as N (00630), Organic Nitrogen as N (00605), Orthophosphate as P (04175), E. Coli (51040), Dissolved Oxygen (00300), pH (00400), Flow (50050), Total Flow (82220), Temperature (00010), and Temperature Excursions (45600).

(13) This parameter (without effluent limitations) must be monitored, and it shall be reported on the Monthly Operating Report (MOR) as individual results and on the Discharge Monitoring Report (DMR) (EPA Form 3320-1) as monthly average concentrations.

(14) Total nitrogen as N (in mg/l) is a calculated parameter as the sum of individual results for total ammonia nitrogen as N, organic nitrogen as N and (nitrite + nitrate) as N. All the nitrogen species must be sampled on the same day.

(15) The permittee shall calculate and report on the monthly DMR the TN and TP total monthly loads (Definition I.H.5) plus year-to-date cumulative loads (Definition I.H.6) for the calendar year in question for the Outfall 001A. For each calendar year, the year-to-date cumulative loads of TN and TP for the month of December shall represent the total annual loads discharged, and they must be incorporated toward complying with the respective nutrient annual maximum load limit.

(16) The permittee shall also calculate and report on the monthly DMR as the Net Monthly Total Loading Rate for TN and TP (expressed as pounds/month) using the following formulas:

TN net Monthly Load (Pounds/month) = (TN Gross monthly Load discharged – TN monthly Credit Load Available through transfer/trading).

TP net Monthly Load (Pounds/month) = (TP Gross monthly Load discharged – TP monthly Credit Load Available through transfer/trading).

The monthly credit load shall be calculated as the total available annual credit load divided by 12.

The permittee shall also calculate and report the TN and TP year-to-date net cumulative load in pounds/year on the monthly DMR. If the TN or TP year-to-date net cumulative load for the month of December month is calculated below zero pounds/year, it shall be reported as zero pounds/year for the respective nutrient; and it shall be used to comply with the net zero maximum annual load limit. See Definitions I.H.5(c) and I.H.7(b).

III. Proposed Effluent Limits and Monitoring Requirements

(17) Flows shall be reported in millions gallons per day (mgd) to at least the nearest 100 gallons per day. (Example: A flow of 4,699 gallons per day shall be reported as 0.0047 mgd.). For each calendar month, flows shall be reported on the Monthly Operating Report (MOR) as daily individual results and on the Discharge Monitoring Report (DMR) as monthly average (mgd) and daily maximum (mgd).

(18) Continuous electronic flow measurement and recording which can produce a permanent record are acceptable to the Department.

(19) Total monthly flow is a calculated parameter equal to sum of the daily flow results in a calendar month. It shall be reported on the monthly DMR as Total monthly flow in millions gallons (MG) to at least the nearest 100 gallons. (Example: A flow of 135,699 gallons shall be reported as 0.1357 MG).

(20) Temperatures of the effluent and stream as well as temperature excursions shall be monitored and reported in accordance with the Special Condition II.F of the discharge permit.

Refer to Definition I.J of the discharge permit for Sample Type "i-s (immersion stabilization)". The temperatures shall be measured using a device which has accuracy of at least 0.1° C and meeting the appropriate standards stated in 40CFR Part 136.

(21) The Minimum monitoring requirements of **one per day-grab samples** for total residual chlorine shall be applicable during the entire cleaning period of the membranes at the Mountain Christian Church WWTP. The minimum level (quantification level) for total residual chlorine is 0.10 mg/l. The permittee may report all results below the minimum level as <0.10 mg/l. All results reported below the minimum level shall be considered in compliance.

III. Proposed Effluent Limits and Monitoring Requirements

Regulations and Rationale for Effluent Limitations:	
BOD_5	**Regulations:** COMAR 26.08.02.03-3D(2), COMAR 26.08.04.04C(1), COMAR 26.08.0l.01B(80), and 40 CFR§133.102. **Discussion and Rationale(s):** The technical analysis was performed in 2018 using a mathematical model (INPRG) to establish the effluent limits requirements for discharge flows up to 0.005 MGD. the BOD_5 and dissolved oxygen effluent limits established in 2018 have been considered at this time for the proposed permit. These limits will be protective of meeting the dissolved oxygen criteria in downstream portion of the effluent receiving stream(s). The BOD_5 minimum removal requirement is discussed in detail on page 7.
Total Suspended Solids (TSS)	**Regulations:** COMAR 26.08.02.03-3D(5), COMAR 26.08.02.03-3A(5), COMAR 26.08.04.04C(1), COMAR 26.08.0l.01B(80) and 40 CFR§133.102 - §133.105. **Discussion and Rationale(s):** The TSS 85% minimum removal requirement is discussed in detail on page 7.
Total Kjedahl Nitrogen (TKN)	**Regulations:** COMAR 26.08.02.03-3D(2). **Discussion and Rationale(s):** Refer to Discussion and Additional Rationale for BOD_5.
Total Ammonia Nitrogen as N	**Regulations:** COMAR 26.08.02.03-2H & COMAR 26.08.02.03-2I and COMAR 26.08.02.05C, COMAR 26.08.02.05D. **Discussion and Rationale(s):** The reasonable potential of the Mountain Christian Church WWTP effluent to cause a violation of the receiving stream's ammonia water quality criteria was investigated to process the discharge permit renewal. An in-house SPREADSHEET program (developed by the Municipal Surface Discharge Permits Division) was used as a tool for the toxicity analysis. The dilution factors, based on the applicable mixing zone criteria, were incorporated in the analysis. As the ammonia toxicity criteria are pH dependent, the effluent pH of 8.0 was used in the analysis.
Total Nitrogen as N	**Regulations:** COMAR 26.08.02.04, COMAR 26.08.03.01C(3), COMAR 26.08.04.04C, and in addition, the Chesapeake Bay Nutrient Reduction Strategy and the Enhanced Nutrient Removal (ENR) Policy. **Discussion and Rationale(s):** Refer to Section II (Special Requirements and Conditions) on page 8 for Nutrient Control Requirements.
Total Phosphorus as P	**Regulations:**, COMAR 26.08.02.04, COMAR 26.08.03.01C(3), COMAR 26.08.04.04C, and in addition, the Chesapeake Bay Nutrient Reduction Strategy and the Enhanced Nutrient Removal (ENR) Policy. **Discussion and Rationale(s):** Refer to Section II (Special Requirements and Conditions) on page 8 for Nutrient Control Requirements.

III. Proposed Effluent Limits and Monitoring Requirements

Regulations and Rationale for Effluent Limitations:	
E. Coli	**Regulations:** COMAR 26.08.02.03-3D(1) and COMAR 26.08.02.03-3A(1). **Discussion and Rationale(s):** None.
Total Residual Chlorine	**Regulations:** COMAR 26.08.02.03-3D(7). **Discussion and Rationale(s):** The use of chlorine or any chlorine-containing compound is prohibited in the treatment of wastewater.
pH	**Regulations:** COMAR 26.08.02.03-3D(4) and COMAR 26.08.02.03-3A(4). **Discussion and Rationale(s):** The limits are set equal to the stream water quality criteria. Also, refer to Discussion and Additional Rationale for Total Ammonia Nitrogen as N.
Dissolved Oxygen (DO)	**Regulations:** COMAR 26.08.02.03-3D(2) **Discussion and Rationale(s):** The limits are set equal to the stream water quality criteria. Also, refer to Discussion and Additional Rationale for BOD_5.
Flow	**Regulations:** COMAR 26.08.04.02A(2). The discharge is consistent with the Harford County water and sewer master plan. **Discussion and Rationale(s):** The permit flow considered for this permit renewal is equivalent to the rated design capacity of the facility. It is not a limitation, but it incorporated with concentration limits to calculate the waste load limits for BOD_5, TKN, and DO.
Temperature	**Regulations:** COMAR 26.08.02.03-3D(3). **Discussion and Rationale(s):** Refer to Section II "Special Requirements and Conditions" on page 11 for additional information pertaining to the temperature requirements.

Additional Rationale for Effluent Limitations:

(A) Anti-backsliding Policy Review:

As this is a newly proposed facility, the anti-backsliding policy review does not apply at this time.

III. Proposed Effluent Limits and Monitoring Requirements

Regulations and Rationale for Effluent Limitations:

(B) Anti-Degradation Policy Review:

(a) Is there Tier II water downstream of the Point of Discharge Location (Outfall 001A) for this facility?

Yes ☐ No ☒

Rationale: *COMAR 26.08.02.04 and COMAR 26.08.02.04-1*

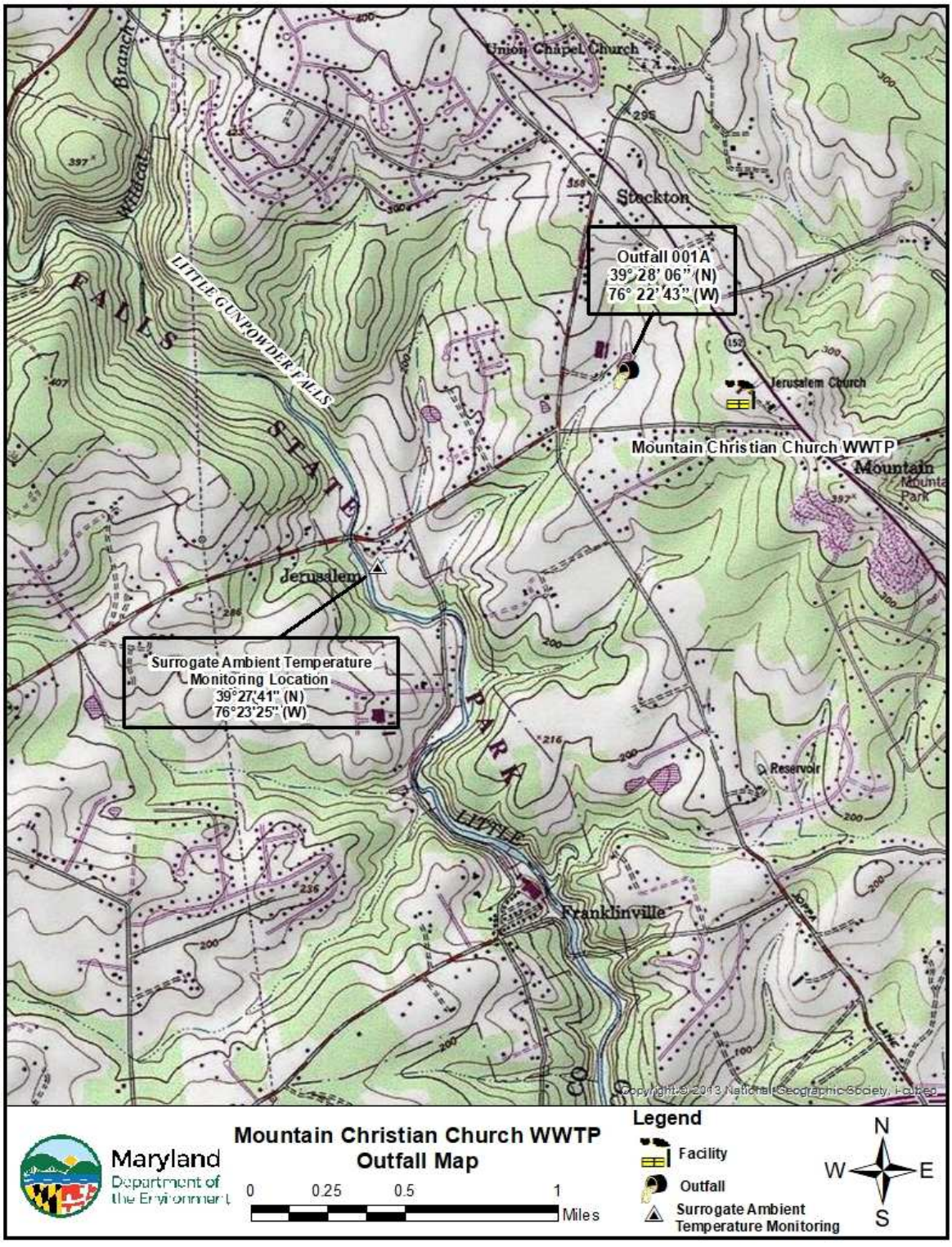
Regulations and Rationale(s) for Monitoring Requirements:

COMAR 26.08.04.03A. Also, the memorandums dated 7/24/1996 and 3/6/2008 referred as the Department Guidelines to establish the minimum monitoring requirements to process the discharge permit (re)issuance for this facility.

IV. Chronological Log of Activities:

DATE	ACTIVITY DESCRIPTION
08/23/2017	Received discharge permit application completed and signed by Mr. Paul J. Leturgez, Administrator & Director of Finance
10/23/2017	Report narrating information gathered during the site visit of Mountain Christian Church WWTP along with photographs.
03/02/2018	Notified applicant and interested person(s) by letters concerning Notice of Application publication on 03/09/18 and 03/16/18 in ***The Aegis*** newspaper.
03/26/2018	Received an amended discharge permit application from 5,000 to 4,999 gallons per day completed and signed by Mr. Paul J. Leturgez, Administrator & Director of Finance
10/22/2018	Report narrating information gathered during the meeting with Mountain Christian Church and Maryland Department of Natural Resources.
12/19/2018	Received memo from MDE's Water Resources Planning Division stating that the proposed discharge flow is consistent with the Harford County Water and Sewer Plan.

V. MAP SHOWING POINT OF DISCHARGE LOCATION



VI. APPENDIX A

Summary of Effluent Quality of Existing Groundwater Discharge Permit (14-DP-3429):

Duration of Plant Performance History Reviewed: January 2013 – August 2018

Source(s) of Plant Performance History: EPA's ICIS Database

Parameter	Effluent to Drainfield	Monitoring Wells
BOD_5	12 mg/L monthly average	
Chloride		17 mg/L annual average
Fecal Coliform		1 MPN/100mL annual average
Flow	1,630 gal/d monthly average	
pH	7.6 quarterly average	6.4 annual average
Total Nitrite + Nitrate [as N]	8.7 mg/L monthly average	
TKN	16 mg/L monthly average	0.9 mg/L annual average
Total Nitrogen [as N]	16.1 mg/L monthly average	1.1 mg/L annual average
Total Phosphate [as PO4]		0.2 mg/L annual average
TSS	9.8 mg/L monthly average	