pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NORTHCENTRAL REGIONAL OFFICE
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0208922**
Facility Type	**Sewage**	APS ID	**1012897**
Major / Minor	**Minor**	Authorization ID	**1308175**

NPDES PERMIT FACT SHEET ADDENDUM

Applicant and Facility Information

Applicant Name	**Woodward Township Sewer & Water Authority Clearfield County**	Facility Name	**Woodward Township S & W Authority Sanitary Sewer STP**
Applicant Address	PO Box 6 131 Punkin Hollow Drive	Facility Address	131 Punkin Hollow Road
	Houtzdale, PA 16651-0006		Houtzdale, PA 16651-9651
Applicant Contact	David Stodart	Facility Contact	David Stodart
Applicant Phone	(814) 378-8211	Facility Phone	(814) 378-8211
Client ID	64368	Site ID	258054
SIC Code	4952	Municipality	Woodward Township
SIC Description	Trans. & Utilities - Sewerage Systems	County	Clearfield
Date Published in PA Bulletin	March 26, 2022	EPA Waived?	No
Comment Period End Date	April 25, 2022	If No, Reason	Significant CBAY Discharger

Purpose of Application: Application for a renewal of an NPDES permit for discharge of treated Sewage

Internal Review and Recommendations

On March 9, 2022 the Department issued a draft permit to the Woodward Township Sewer & Water Authority (Authority) for renewal of NPDES Permit No. PA0208922. The Department received comments on the draft permit from the US EPA (Appendix A) and the Authority (Appendix B). No comments were received internally or from the general public. Below is a summary of comments received and the Department's responses to those comments. As a result, the Department is redrafting the permit with changes as detailed below.

US EPA Comments:

1. EPA understands PADEP's position for removing the monitoring requirements for iron, aluminum, and manganese, the TMDL pollutants of concern in the Moshannon Creek Watershed TMDL. It is EPA's expectation that at a minimum, this facility would continue to evaluate and submit discharge data for these pollutants with each subsequent permit renewal application. The purpose of this data collection would be to continue to evaluate the levels of these TMDL pollutants in the discharge to inform any potential TMDL revisions, or new permit requirements to ensure consistency with the assumptions of the TMDL.

Response: As required by the current version of the Individual NPDES Permit Application for Minor Sewage Facilities (3800-PM-BCW0342, Rev 8/2021), "If the facility's discharge is directly to waters that are covered by an EPA-approved TMDL, the applicant must analyze for the parameters of concern in the TMDL." The Authority will be required to provide a minimum of one effluent sample result for each TMDL parameter at the time of renewal application. No monitoring requirements will be included in the NPDES permit as it was originally drafted.

Approve	Deny	Signatures	Date
X		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	August 26, 2022
X		Thomas M. Randis / Environmental Program Manager	August 26, 2022

Internal Review and Recommendations

Authority Comments:

1. The coordinates identified on page two of the Fact Sheet are not consistent with subsequent coordinates.

Response: The Department recognizes this inconsistency and will include the correct coordinates of 40º 48' 17.50" N, 78º 20' 31.00" W in all subsequent documents.

2. The draft permit contains a new effluent limitation for ammonia-nitrogen commencing on the permit effective date. The Department believes that exceedances of the proposed limits can be avoided through operational oversite based on the most recent 12 months of DMR data. This conjecture was based on data available at the time when the application for renewal of the permit was prepared and submitted (March 2020).

   Wastewater flows to the treatment facility are principally derived from the State Correctional Institution – Houtzdale, historically representing approximately 95% of the total influent flow and loading. In 2021, SCI Houtzdale completed an energy savings project that resulted in a notable reduction in wastewater flows. This is evident from the hydraulic loading graph included in the 2021 Chapter 94 Report (attached). The reduction in flow resulted in a corresponding increase in concentration of ammonia-nitrogen. It is believed that this was compounded by an additional increase in influent ammonia-nitrogen due to disinfection measures to control COVID-19 outbreaks. Furthermore, these impacts were experienced during the colder months when wastewater temperatures decrease and nitrifiers are inhibited.

   Consequently, the WTSWA experienced nitrification inhibition resulting in uncharacteristically high effluent ammonia concentrations (attached effluent data). The operational staff has been working diligently to adjust operations to combat these changes; however, it is not yet known if operational changes alone will be effective.

   Therefore, it is respectfully requested that the Department incorporate a compliance schedule for ammonia-nitrogen. The following schedule is proposed:

Milestone	*Completion Date*
Evaluate season treatment inhibition	12 Months from Permit Issuance
Submit Water Quality Management Permit	24 Months from Permit Issuance
Progress Report	36 Months from Permit Issuance
Meet Final Effluent Limitation	48 Months from Permit Issuance

   The proposed compliance schedule extends beyond the 36-month schedule typically permitted by the Department; however, given the substantial impact on influent wastewater characteristics and the sensitivity of nitrifiers to inhabitation, it is believed that an initial seasonal evaluation will be critical to determine if a capital improvements project is necessary. If capital improvements to the treatment process are required, then Act 537 Sewage Facilities Planning will be necessary, which could extend the overall compliance schedule.

Response: The Department does not object to the proposal to incorporate a compliance schedule to meet the proposed ammonia-nitrogen effluent limits and agrees that an extended schedule up to 48-months is warranted due to the extensive seasonal evaluation required to determine appropriate measures to be taken to reliably and consistently meet the proposed effluent limit. A reporting requirement will be established for ammonia-nitrogen while the compliance schedule is in effect. The proposed schedule will be as follows:

Milestone	*Completion Date*
Evaluate seasonal ammonia-nitrogen treatment inhibition	12 Months from Permit Effective Date
Obtain Act 537 Planning Approval (if required) and Submit Water Quality Management Permit Application	24 Months from Permit Effective Date
Construction Update/Progress Report	36 Months from Permit Effective Date
Completion of Construction and Compliance with Final Effluent Limitation	48 Months from Permit Effective Date

Internal Review and Recommendations

3. Total ammonia in an aqueous system is an equilibrium between un-ionized ammonia (NH3-N) and the ionized ammonia ion (NH4+). NH3-N is highly toxic to fish and aquatic life, whereas NH4+ is much less toxic. Low temperatures and low pH favor the formation of the less toxic ionized ammonia ion.

   The following comments are presented regarding the model inputs:

   ▪ Input data to WQM 7.0 does not appear to consider seasonal effluent limitations for ammonia.
   ▪ Discharge pH (SU) for the Sewage Effluent is identified as 6.7; however, the model input uses 7.0. Between December 2020 and November 2021, the effluent pH range was 6.2-6.9.
   ▪ The Tributary Temperature Input was 20.0 °C; however, on May 18, 2021 (95.5 Aquatic Survey Memorandum) the water temperature was 15.7 °C.
   ▪ An effluent discharge temperature of 25.0 °C was used. Attached are discharge temperatures between March 2021 and February 2022.

   It is requested that the Department re-evaluate the ammonia-nitrogen limits using a lower discharge pH and temperature and consider seasonal (cold weather) limits.

Response: The Department considered this comment and reevaluated the ammonia-nitrogen as well as the $CBOD_5$ and DO limits established in the original draft permit by rerunning the WQM model with the information provided above for model inputs along with site specific data acquired from the § 95.5 Aquatic Survey conducted in May 2021. Note that an error was discovered in the original model where NH3-N was not a selected parameter in the model specifications. This was resolved in the revised model that was run for this draft permit where both DO and NH3-N were selected for the model specifications. Site specific and discharge data used for the model included an upstream pH of 6.75 and temperature of 12.5 °C, a downstream pH of 7.00 and temperature of 15.7 °C, and a discharge pH of 6.70 and temperature of 21.0 °C.

The technology-based limits for $CBOD_5$ (25 mg/l) and NH_3-N (25.0 mg/l) were again used as inputs for the modeling. The DO minimum criterion from §93.7 (5.0 mg/L for CWF) was used for the in-stream objective for the model. The summary of the output is as follows and detailed results can be found in Appendix C:

Parameter	Effluent Limitations (mg/L)		
	30 Day Average	Maximum	Minimum
$CBOD_5$	21.22		
NH_3-N	4.51	9.02	
DO			4.0

All Average Monthly limits were then rounded down in accordance with the rounding rules established in Chapter 5 of DEP guidance document, Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001). Weekly Average and Instantaneous Maximum effluent limit concentrations were calculated using multipliers of 1.5 and 2.0, respectively. These multipliers are outlined in Chapter 3 of that guidance document.

In accordance with the Department Standard Operating Procedure (SOP) for establishing effluent limits for individual sewage permits (SOP No. BCW-PMT-033) and the Implementation Guidance of Section 93.7 Ammonia Criteria (Guidance No. 391-2000-013) a seasonal multiplier of 3 times the summertime average monthly limit will be established for the winter period (November-April).

The associated mass-based limits (lbs/day) are based on the formula: design flow (0.56 MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34).

As detailed in the response to comment No. 2 above, the seasonal ammonia-nitrogen limits will go into effect following a 48-month compliance schedule. This is necessary since the Authority is not currently meeting the proposed winter monthly average or weekly average effluent limits as referenced in the compliance history from the past 12 months detailed below.

Internal Review and Recommendations

4. The draft permit includes a DO effluent limitation of 4.0 mg/L with a sample frequency of 1/day. Historical data demonstrates a high level of consistency with effluent DO concentrations. The facility is not fully staffed on weekends and holidays. Therefore, it is requested that the Department eliminates the requirement to sample for DO on weekends and holidays.

Response: In previous reviews, the Authority was required to only monitor and report effluent DO concentrations at a frequency of twice per week. During the permit renewal review, it was determined that water quality based effluent limits apply for the discharge to Whiteside Run and thus a limit for DO was developed. The monitoring frequency of once per day was established in accordance with *Standard Operating Procedure: New and Reissuance Sewage Individual NPDES Permit Applications* and Table 6-3 of *Technical Guidance for the Development and Specification of Effluent Limitations* (DEP Doc. No. 362-0400-001).

Table 6-3 outlines once per day monitoring for DO for facilities ranging from 500 gpd to 25.0 MGD. Additionally, the Authority is required to monitor for pH and TRC once per day. Because the facility is expected to discharge on a daily basis, it is expected that these three parameters be monitored on a daily basis. For this reason, the Department will not be accommodating the Authority's request for a reduction in the proposed monitoring frequency for DO.

Other Changes:

In accordance with the Bureau of Clean Water and EPA guidance, the compliance schedule for total residual chlorine (TRC) and the associated Part C Special Condition was modified to reflect federal compliance schedule requirements. The revised proposed compliance schedule will be as follows:

Milestone	*Completion Date*
Submit a TRC Minimization Plan	12 Months from Permit Effective Date
Begin Implementation of Actions in TRC Minimization Plan	12 Months from Permit Effective Date
Submit Water Quality Management Permit Application (if applicable)	12 Months from Permit Effective Date
Submit Progress Report	24 Months from Permit Effective Date
Complete Implementation of Actions in TRC Minimization Plan and Meet Final Effluent Limitation	36 Months from Permit Effective Date

Compliance History

DMR Data for Outfall 001 (from July 1, 2021 to June 30, 2022)

Parameter	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21
Flow (MGD) Average Monthly	0.172	0.186	0.179	0.190	0.201	0.190	0.186	0.192	0.181	0.192	0.190	0.0161
Flow (MGD) Daily Maximum	0.234	0.310	0.215	0.222	0.257	0.220	0.227	0.226	0.231	0.292	0.311	0.209
pH (S.U.) Minimum	6.6	6.6	6.6	6.5	6.6	6.5	6.6	6.2	6.4	6.5	6.5	6.5
pH (S.U.) Maximum	7.0	6.8	6.8	6.9	7.0	6.9	6.9	6.8	6.6	6.8	6.9	6.8
DO (mg/L) Minimum	4.8	5.1	4.7	5.0	5.0	4.6	4.2	3.8	4.3	4.8	4.0	4.7
TRC (mg/L) Average Monthly	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4
TRC (mg/L) Instantaneous Maximum	0.7	0.7	1.1	0.7	0.6	0.6	0.6	0.8	0.7	0.7	0.6	0.6
CBOD5 (lbs/day) Average Monthly	8	< 6	14	13	16	13	11	9	11	7	7	< 4
CBOD5 (lbs/day) Weekly Average	16	11	16	19	18	16	14	15	16	10	10	6
CBOD5 (mg/L) Average Monthly	6.0	< 4.0	9.0	8.0	10.0	7.0	7.0	5.0	8.0	5.0	5.0	< 3.0
CBOD5 (mg/L) Weekly Average	10.0	9.0	11.0	12.0	12.0	9.0	9.0	9.0	11.0	6.0	7.0	4.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	371	380	455	469	547	598	516	455	320	474	439	313
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	419	432	560	549	695	633	598	588	387	541	495	526
BOD5 (mg/L) Raw Sewage Influent Average Monthly	272	264	300	307	325	341	343	282	221	310	296	236
TSS (lbs/day) Average Monthly	9	7	13	14	12	13	13	14	12	6	6	5
TSS (lbs/day) Raw Sewage Influent Average Monthly	417	559	571	598	658	669	661	627	608	544	497	437
TSS (lbs/day) Raw Sewage Influent Daily Maximum	544	646	670	680	695	727	788	743	961	624	636	514

TSS (lbs/day) Weekly Average	15	9	16	17	17	16	17	18	22	12	6	6
TSS (mg/L) Average Monthly	7.0	5.0	8.0	9.0	7.0	7.0	8.0	8.0	8.0	4.0	4.0	4.0
TSS (mg/L) Raw Sewage Influent Average Monthly	302	382	376	390	395	382	436	389	413	356	332	328
TSS (mg/L) Weekly Average	9.0	7.0	10.0	11.0	11.0	10.0	10.0	11.0	14.0	6.0	4.0	5.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1	< 1	< 2	< 1	< 2	< 2	< 2	< 2
Fecal Coliform (No./100 ml) Instantaneous Maximum	1	< 1	1	1	< 1	< 1	96	3.1	8.6	14.5	4.1	7.3
Nitrate-Nitrite (mg/L) Average Monthly	< 3.04	< 8.59	< 7.42	< 1.29	< 1.2	< 1.20	< 1.20	< 2.86	< 8.50	< 10.0	< 10.27	< 5.81
Nitrate-Nitrite (lbs) Total Monthly	< 134	< 417	< 338	< 62	< 54	< 62	< 56	< 142	< 391	< 485	< 472	< 244
Total Nitrogen (mg/L) Average Monthly	< 5.63	< 10.05	< 10.73	< 14.86	< 28.63	< 31.76	< 17.46	< 9.62	< 10.30	< 11.26	< 10.89	< 6.48
Total Nitrogen (lbs) Effluent Net Total Monthly	< 242	< 486	< 488	< 726	< 1294	< 1643	< 824	< 473	< 475	< 541	< 501	< 272
Total Nitrogen (lbs) Total Monthly	< 242	< 486	< 488	< 726	< 1294	< 1643	< 824	< 473	< 475	< 541	< 501	< 272
Total Nitrogen (lbs) Effluent Net Total Annual										< 3812		
Total Nitrogen (lbs) Total Annual										< 3812		
Ammonia (lbs/day) Average Monthly	< 0.3	< 0.3	< 0.5	< 19	43	50	23	7	< 0.2	< 0.2	< 0.4	< 0.2
Ammonia (lbs/day) Daily Maximum	0.6	0.5	< 0.8	41	59	58	35	12	0.4	0.5	1.0	< 0.7
Ammonia (mg/L) Average Monthly	< 0.23	< 0.17	< 0.31	< 11.77	26.65	29.92	14.73	4.31	< 0.15	< 0.14	< 0.29	< 0.16
Ammonia (mg/L) Weekly Average	0.37	< 0.19	< 0.35	25.19	32.63	34.77	22.69	7.84	0.22	0.27	0.46	< 0.3
Ammonia (lbs) Total Monthly	< 10	< 8	< 14	< 579	1203	1547	698	212	< 7	< 7	< 14	< 7
Ammonia (lbs) Total Annual										< 823		
TKN (mg/L) Average Monthly	2.59	< 1.46	3.32	13.57	27.43	30.56	16.26	< 6.76	< 1.81	< 1.26	< 0.62	< 0.67
TKN (lbs) Total Monthly	108	< 69	149	664	1241	1581	768	< 331	< 84	< 56	< 29	< 28
Total Phosphorus (mg/L) Average Monthly	3.15	2.01	2.23	1.71	0.91	0.58	1.23	1.41	1.91	1.99	2.38	2.40
Total Phosphorus (lbs) Effluent Net Total Monthly	132	94	101	83	41	30	57	70	88	90	111	99

Total Phosphorus (lbs) Total Monthly	132	94	101	83	41	30	57	70	88	90	111	99
Total Phosphorus (lbs) Effluent Net Total Annual										1111		
Total Phosphorus (lbs) Total Annual										1111		
Total Aluminum (mg/L) Annual Average							0.103					
Total Iron (mg/L) Annual Average							< 0.20					
Total Manganese (mg/L) Annual Average							< 0.02					

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit and reflect the most stringent limitations amongst the technology, water quality, and BPJ. Average weekly limits are determined Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001) and/or BPJ.

Proposed Limits - Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date

Discharge Parameter	Limitations							
	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Monthly Average	Weekly Average	Minimum	Average Monthly	Average Weekly	Instantaneous Maximum	Minimum Frequency	Sample Type
Flow (MGD)	Report	Report (Daily Max)					Continuous	Meter
pH (Std. Units)			6.0			9.0	1/ Day	Grab
D.O.			4.0				1/ Day	Grab
TRC (Interim)				0.5		1.6	1/ Day	Grab
TRC (Final)$_1$				0.09		0.32	1/Day	Grab
C-BOD_5	98	147		21.0	31.5	42	1/ Week	8-hr Composite
BOD_5 Raw Sewage Influent	Report	Report		Report			1/ Week	8-Hr. Comp.
TSS	140	210		30	45	60	1/ Week	8-hr Composite
TSS Raw Sewage Influent	Report	Report		Report			1/ Week	8-Hr. Comp.
NH_3-N (Interim)	Report	Report		Report	Report		2/ Week	8-Hr. Comp.
NH_3-N (Final) (11/1-4/30)	63	93		13.5	20.2	27.0	2/ Week	8-Hr. Comp.
NH_3-N (Final) (5/1-10/31)	21	31		4.5	6.7	9.0	2/ Week	8-Hr. Comp.
Fecal Coliforms (5/1-9/30)	200 colonies/100 ml as a geometric mean					1,000	1/ Week	Grab
Fecal Coliforms (10/1-4/30)	2,000 colonies/100 ml as a geometric mean					10,000		
E.Coli						Report	1/quarter	Grab

*The proposed effluent limits for Outfall 001 were based on a design flow of 0.56 MGD.

1. Final TRC Effluent Limit will become effective approximately 3 years from the effective date of the permit.

Discharge Parameter	Limitations						
	Mass Units (lbs)		Concentration (mg/L)			Monitoring Requirements	
	Monthly	Annual	Minimum	Average Monthly	Maximum	Minimum Frequency	Sample Type
Ammonia – N	Report	Report		Report		2/week	8-Hr Composite
Kjeldahl---N	Report			Report		2/week	8-Hr Composite
Nitrate-Nitrite as N	Report			Report		2/week	8-Hr Composite
Total Nitrogen	Report	Report		Report		1/month	Calculation
Total Phosphorus	Report	Report		Report		2/week	8-Hr Composite
Net Total Nitrogen	Report	10,228				1/month	Calculation
Net Total Phosphorus	Report	1,364				1/month	Calculation

APPENDIX A

US EPA COMMENTS

Hartranft, Nicholas

From: Fulton, Jennifer <Fulton.Jennifer@epa.gov>
Sent: Monday, April 11, 2022 6:11 PM
To: Hartranft, Nicholas
Cc: Randis, Thomas; Furjanic, Sean; Schumack, Maria; Martinsen, Jessica; Hales, Dana; Blanco-Gonzalez, Joel; Camperson, Joseph
Subject: [External] Woodward Township STP, PA0208922

Nick,

According to our Memorandum of Agreement, the Environmental Protection Agency (EPA) Region III has received the draft National Pollutant Discharge Elimination System (NPDES) permit for:

Woodward Township S&W Authority Sanitary Sewer STP
Woodward Township Sewer& Water Authority Clearfield County
NPDES Number: PA0208922
EPA Received: March 11, 2022
30-day response due date: April 11, 2022

This is a minor permit that discharges to Whiteside Run, and is a significant discharger to the Chesapeake Bay. This permit is affected by the Chesapeake Bay Watershed and Moshannon Creek Watershed TMDLs. Therefore EPA has performed a limited review of the draft permit based on the wasteload allocation (WLA) requirements of the approved TMDLs. EPA offers the following comment:

1. EPA understands PADEP's position for removing the monitoring requirements for iron, aluminum, and manganese, the TMDL pollutants of concern in the Moshannon Creek Watershed TMDL. It is EPA's expectation that at a minimum, this facility would continue to evaluate and submit discharge data for these pollutants with each subsequent permit renewal application. The purpose of this data collection would be to continue to evaluate the levels of these TMDL pollutants in the discharge to inform any potential TMDL revisions, or new permit requirements to ensure consistency with the assumptions of the TMDL.

Please address the above and provide us with any changes to the draft permit and/or fact sheet. Please coordinate with Joe Camperson on my staff via telephone at 215-814-5784 or via electronic mail at camperson.joseph@epa.gov if you have any questions.

Thank you,
Jen Fulton

Jennifer Fulton
Acting Chief, Clean Water Branch
US EPA Mid-Atlantic Region
Phone 304-234-0248
Email fulton.jennifer@epa.gov

APPENDIX B

WOODWARD TOWNSHIP COMMENTS

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

2568 Park Center Boulevard
State College, PA 16801
814.238.7117
www.hrg-inc.com

2021 ENR MidAtlantic DESIGN FIRM OF THE YEAR

April 14, 2022

Nicholas W. Hartranft, P.E.
Environmental Engineer Manager
Clean Water Program
PA Department of Environmental Protection
Northcentral Regional Office
208 West Third Street, Suite 101
Williamsport, PA 17701

Re: Woodward Township Sewage and Water Authority
Draft NPDES Permit – Application No. PA0208922
Written Comments

Dear Mr. Hartranft:

The Draft NPDES permit (Application No. PA 0208922) has been received and reviewed. Thank you for reviewing the preliminary comments telephonically. On behalf of the Woodward Township Sewage and Water Authority (WTSWA), the following comments are submitted:

Outfall No. 001 Coordinates

The coordinates identified on page two of the Fact Sheet are not consistent with subsequent coordinates.

Ammonia-Nitrogen (Compliance Schedule)

The draft permit contains a new effluent limitation for ammonia-nitrogen commencing on the permit effective date. The Department believes that exceedances of the proposed limits can be avoided through operational oversite based on the most recent 12 months of DMR data. This conjecture was based on data available at the time when the application for renewal of the permit was prepared and submitted (March 2020).

Wastewater flows to the treatment facility are principally derived from the State Correctional Institution – Houtzdale, historically representing approximately 95% of the total influent flow and loading. In 2021, SCI Houtzdale completed an energy savings project that resulted in a notable reduction in wastewater flows. This is evident from the hydraulic loading graph included in the 2021 Chapter 94 Report (attached). The reduction in flow resulted in a corresponding increase in concentration of ammonia-nitrogen. It is believed that this was compounded by an additional increase in influent ammonia-nitrogen due to disinfection measures to control COVID-19 outbreaks. Furthermore, these impacts were experienced during the colder months when wastewater temperatures decrease and nitrifiers are inhibited.

Consequently, the WTSWA experienced nitrification inhibition resulting in uncharacteristically high effluent ammonia concentrations (attached effluent data). The operational staff has been working diligently to adjust operations to combat these changes; however, it is not yet known if operational changes alone will be effective.

Therefore, it is respectfully requested that the Department incorporate a compliance schedule for ammonia-nitrogen. The following schedule is proposed:

Milestone	Completion Date
Evaluate season treatment inhibition	12 Months from Permit Issuance
Submit Water Quality Management Permit	24 Months from Permit Issuance
Progress Report	36 Months from Permit Issuance
Meet Final Effluent Limitation	48 Months from Permit Issuance

The proposed compliance schedule extends beyond the 36-month schedule typically permitted by the Department; however, given the substantial impact on influent wastewater characteristics and the sensitivity of nitrifiers to inhabitation, it is believed that an initial seasonal evaluation will be critical to determine if a capital improvements project is necessary. If capital improvements to the treatment process are required, then Act 537 Sewage Facilities Planning will be necessary, which could extend the overall compliance schedule.

Ammonia-Nitrogen (Seasonal Limits)

Total ammonia in an aqueous system is an equilibrium between un-ionized ammonia (NH_3-N) and the ionized ammonia ion (NH_4^+). NH_3-N is highly toxic to fish and aquatic life, where as NH_4^+ is much less toxic. Low temperatures and low pH favor the formation of the less toxic ionized ammonia ion.

The following comments are presented regarding the model inputs:

- Input data to WQM 7.0 does not appear to consider seasonal effluent limitations for ammonia.
- Discharge pH (SU) for the Sewage Effluent is identified as 6.7; however, the model input uses 7.0. Between December 2020 and November 2021, the effluent pH range was 6.2-6.9.
- The Tributary Temperature Input was 20.0°C; however, on May 18, 2021 (§5.5 Aquatic Survey Memorandum) the water temperature was 15.7°C.
- An effluent discharge temperature of 25.0°C was used. Attached are discharge temperatures between March 2021 and February 2022.

It is requested that the Department re-evaluate the ammonia-nitrogen limits using a lower discharge pH and temperature and consider seasonal (cold weather) limits.

Dissolved Oxygen (DO) (Sample Frequency)

The draft permit includes a DO effluent limitation of 4.0 mg/L with a sample frequency of 1/day. Historical data demonstrates a high level of consistency with effluent DO concentrations. The facility is not fully staffed on weekends and holidays. Therefore, it is requested that the Department eliminates the requirement to sample for DO on weekends and holidays.

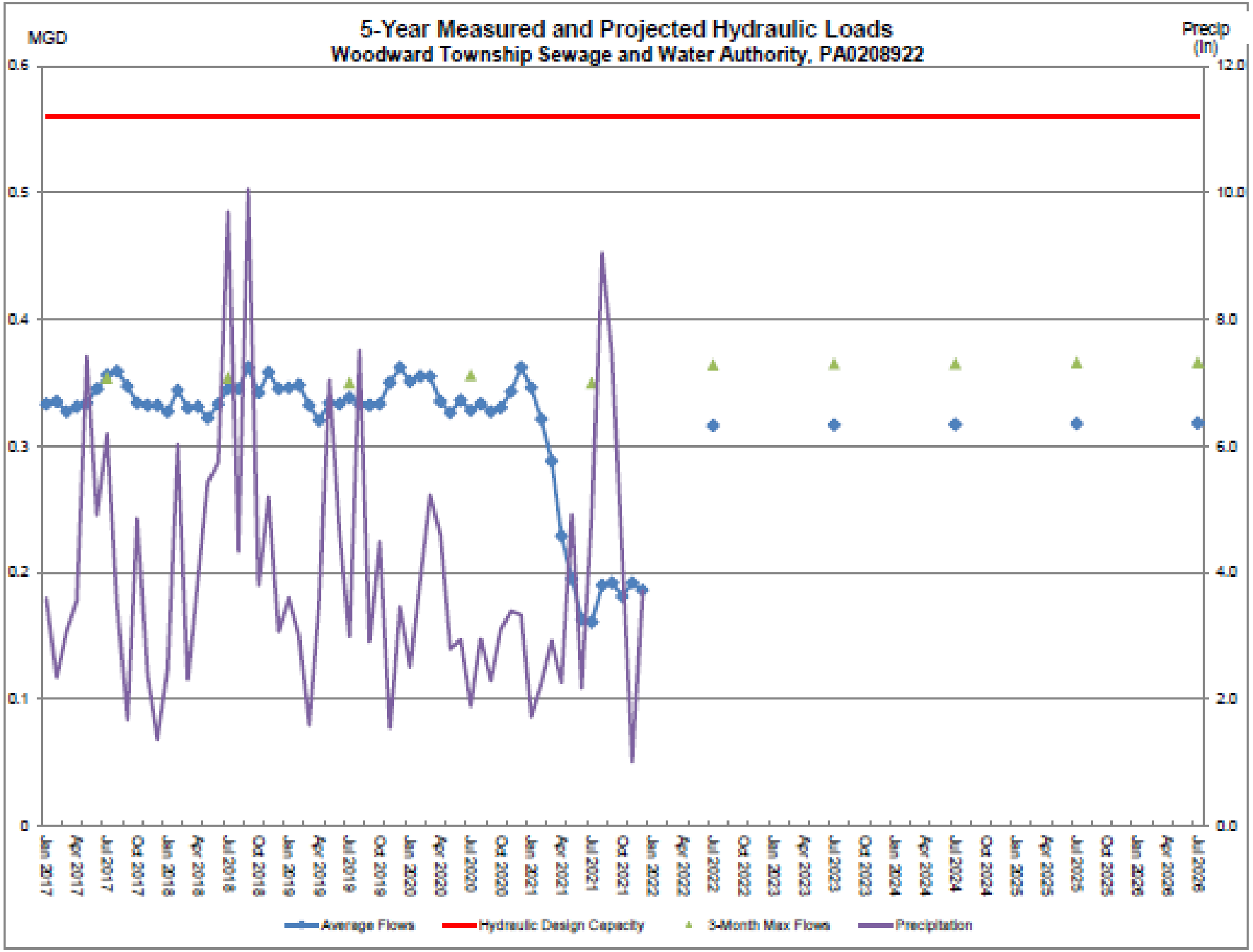
Sincerely,

HERBERT, ROWLAND & GRUBIC, INC.

Benjamin R. Burns, PE
Water & Wastewater Team Leader

BRB
R001070.0436

c: David Stodart, WTSWA
Tom Randis, DEP


5-Year Measured and Projected Hydraulic Loads
Woodward Township Sewage and Water Authority, PA0208922
MGD
Precip (In)
0.6
0.5
0.4
0.3
0.2
0.1
0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Jan 2017
Apr 2017
Jul 2017
Oct 2017
Jan 2018
Apr 2018
Jul 2018
Oct 2018
Jan 2019
Apr 2019
Jul 2019
Oct 2019
Jan 2020
Apr 2020
Jul 2020
Oct 2020
Jan 2021
Apr 2021
Jul 2021
Oct 2021
Jan 2022
Apr 2022
Jul 2022
Oct 2022
Jan 2023
Apr 2023
Jul 2023
Oct 2023
Jan 2024
Apr 2024
Jul 2024
Oct 2024
Jan 2025
Apr 2025
Jul 2025
Oct 2025
Jan 2026
Apr 2026
Jul 2026
Average Flows
Hydraulic Design Capacity
3-Month Max Flows
Precipitation

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

National Pollutant Discharge Elimination System (NPDES)
Electronic Discharge Monitoring Report (eDMR)

4/12/2022 10:38:00 AM

Region: NCRO
County: 17 - Clearfield
Municipality: 17951 - Woodward Twp
Permit #: All
Monitoring Period Date Range: 3/1/2021 To 4/12/2022
Client: WOODWARD TWP SEW & WATER AUTH CLEARFIELD CNTY (64368)
Parameter: Ammonia-Nitrogen (00610), Temperature (deg F) (00011), Temperature Increase (deg F) (51543), Temperature, Delta (Discharge - Intake) (deg F) (00018), Temperature, Delta (Discharge-Intake)(degC) (00016)

Permit #:	PA0208922	Facility Address:	WOODWARD TWP SEWAGE & WATER 131 PUNKIN HOLLOW ROAD HOUTZDALE, PA 16651-8651
Client ID / Name:	64368 - WOODWARD TWP SEW & WATER AUTH CLEARFIELD CNTY	County:	Clearfield
Primary Facility ID / Name:	272482 - WOODWARD TWP SEWAGE & WATER	Municipality:	Woodward Twp
Major Facility:	No	Latitude / Longitude:	40.803889 / -78.342222
Region:	NCRO		

Monitoring Period Begin Date	Monitoring Period End Date	DMR Received Date	Outfall	Discharge	Monitoring Location	Parameter Name	Parameter Code	DMR Value	Permit Limit	Units	Statistical Base Code
03/01/2021	03/31/2021	04/21/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	7.32	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	16	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	31	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	11.68	Monitor and Report	mg/L	Weekly Average
04/01/2021	04/30/2021	05/24/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 4	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 1.85	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	16	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	6.57	Monitor and Report	mg/L	Weekly Average

05/01/2021	05/31/2021	06/21/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.12	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.2	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	0.2	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	0.14	Monitor and Report	mg/L	Weekly Average
06/01/2021	06/30/2021	07/22/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.2	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.7	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Weekly Average
07/01/2021	07/31/2021	08/24/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.16	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.2	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.7	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	< 0.3	Monitor and Report	mg/L	Weekly Average
08/01/2021	08/31/2021	09/23/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.29	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.4	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	1.0	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	0.46	Monitor and Report	mg/L	Weekly Average
09/01/2021	09/30/2021	10/21/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.2	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.14	Monitor and Report	mg/L	Average Monthly

09/01/2021	09/30/2021	10/21/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	0.5	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	0.27	Monitor and Report	mg/L	Weekly Average
10/01/2021	10/31/2021	11/16/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	< 0.15	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	< 0.2	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	0.4	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	0.22	Monitor and Report	mg/L	Weekly Average
11/01/2021	11/30/2021	12/17/2021	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	4.31	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	7	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	12	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	7.84	Monitor and Report	mg/L	Weekly Average
12/01/2021	12/31/2021	01/18/2022	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	14.73	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	23	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	35	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	22.69	Monitor and Report	mg/L	Weekly Average
01/01/2022	01/31/2022	02/22/2022	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	29.92	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	50	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	58	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	34.77	Monitor and Report	mg/L	Weekly Average

02/01/2022	02/28/2022	03/17/2022	001	Yes	Final Effluent	Ammonia-Nitrogen	00610	43	Monitor and Report	lbs/day	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	26.65	Monitor and Report	mg/L	Average Monthly
					Final Effluent	Ammonia-Nitrogen	00610	59	Monitor and Report	lbs/day	Daily Maximum
					Final Effluent	Ammonia-Nitrogen	00610	32.63	Monitor and Report	mg/L	Weekly Average

Woodward Township Sewage & Water Authority
March 2021 thru February 2022 Temps.

Date	EFF Temp. C	Date	EFF-Temp. C	Date	EFF-Temp. C
1-Mar-21	12	26-Jul-21	22.5	15-Dec-21	12
3-Mar-21	10.5	28-Jul-21	23	20-Dec-21	11
8-Mar-21	10	2-Aug-21	22	21-Dec-21	11.5
10-Mar-21	11.5	4-Aug-21	21.5	27-Dec-21	11.5
15-Mar-21	11.5	9-Aug-21	22.5	28-Dec-21	11.5
17-Mar-21	12	11-Aug-21	23.5	3-Jan-22	12
22-Mar-21	12	16-Aug-21	23	5-Jan-22	12
24-Mar-21	14.5	18-Aug-21	24	10-Jan-22	7.5
29-Mar-21	13	23-Aug-21	23.5	12-Jan-22	8.5
31-Mar-21	15.5	25-Aug-21	23.5	17-Jan-22	7
5-Apr-21	13.5	30-Aug-21	23.5	19-Jan-22	7.5
7-Apr-21	15	1-Sep-21	23	24-Jan-22	7.5
12-Apr-21	17	7-Sep-21	21	26-Jan-22	6.5
14-Apr-21	16.5	8-Sep-21	21.5	31-Jan-22	6.5
19-Apr-21	13.5	13-Sep-21	21.5	2-Feb-22	8
21-Apr-21	15	15-Sep-21	22	7-Feb-22	7
26-Apr-21	14	20-Sep-21	21	9-Feb-22	9
28-Apr-21	16.5	22-Sep-21	21.5	14-Feb-22	8
3-May-21	17	27-Sep-21	19.5	16-Feb-22	8
5-May-21	18	29-Sep-21	19	22-Feb-22	10
10-May-21	14	4-Oct-21	19.5	23-Feb-22	11.5
12-May-21	14.5	6-Oct-21	20.5	28-Feb-22	9
17-May-21	15	11-Oct-21	21		
19-May-21	17.5	13-Oct-21	20.5		
24-May-21	20	18-Oct-21	18.5		
26-May-21	21	20-Oct-21	17.5	Effluent temperatures on dates	
1-Jun-21	18	25-Oct-21	17.5	BNR was sampled.	
2-Jun-21	18.5	27-Oct-21	17		
7-Jun-21	21	1-Nov-21	16.5		
9-Jun-21	22	3-Nov-21	15		
14-Jun-21	22.5	8-Nov-21	12.5		
16-Jun-21	21.5	10-Nov-21	14		
21-Jun-21	22	15-Nov-21	13.5		
23-Jun-21	20.5	17-Nov-21	13.5		
28-Jun-21	23.5	22-Nov-21	12		
30-Jun-21	24	23-Nov-21	12.5		
6-Jul-21	23	29-Nov-21	11.5		
7-Jul-21	23.5	1-Dec-21	12		
12-Jul-21	23	6-Dec-21	12.5		
14-Jul-21	24	8-Dec-21	12		
19-Jul-21	23	13-Dec-21	11.5		
21-Jul-21	23.5	15-Dec-21	12		

APPENDIX C

WQM7.0 MODELING INPUT/OUTPUT

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
08D	25898	WHITESIDE RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
1.210	Woodward Twp.	PA0208922	0.560	CBOD5	21.22		
				NH3-N	4.51	9.02	
				Dissolved Oxygen			4

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
08D	25898	WHITESIDE RUN	1.210	1533.00	3.97	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfs/m)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.53	0.000	0.000	0.0	0.00	0.00	12.50	6.75	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Woodward Twp	PA0208922	0.5600	0.5600	0.5600	0.000	21.00	6.70

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
08D	25898	WHITESIDE RUN	0.100	1512.00	5.06	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.67	0.000	0.000	0.0	0.00	0.00	15.70	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
08D	25898	WHITESIDE RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
1.210	0.53	0.00	0.53	.8663	0.00358	.532	14.43	27.14	0.18	0.373	17.77	6.72
Q1-10 Flow												
1.210	0.34	0.00	0.34	.8663	0.00358	NA	NA	NA	0.17	0.405	18.61	6.71
Q30-10 Flow												
1.210	0.72	0.00	0.72	.8663	0.00358	NA	NA	NA	0.20	0.347	17.14	6.72

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
08D	25898	WHITESIDE RUN

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.210	Woodward Twp.	23.05	32.08	23.05	32.08	1	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.210	Woodward Twp.	2.46	4.51	2.46	4.51	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
1.21	Woodward Twp.	21.22	21.22	4.51	4.51	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
08D	25898	WHITESIDE RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.210	0.560	17.774	6.718
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
14.433	0.532	27.138	0.182
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
13.93	1.188	2.80	0.590
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.611	5.875	Tsivoglou	5
Reach Travel Time (days)			
0.373			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.037	13.38	2.74	5.40
0.075	12.86	2.68	5.27
0.112	12.35	2.62	5.20
0.149	11.87	2.56	5.17
0.186	11.40	2.51	5.18
0.224	10.96	2.45	5.21
0.261	10.53	2.40	5.27
0.298	10.11	2.35	5.34
0.336	9.72	2.30	5.43
0.373	9.34	2.25	5.52