pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0063100**
Facility Type	**Municipal**	APS ID	**477152**
Major / Minor	**Minor**	Authorization ID	**1247978**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Harford Township Susquehanna County**	Facility Name	**Harford Township WWTP**
Applicant Address	PO Box 1 (4514 State Route 547)	Facility Address	288 Burns Road (T-567)
	Harford, PA 18823-9701		Harford, PA 18823
Applicant Contact	Carolyn Jennings	Facility Contact	Travis Long
Applicant Phone	(570) 434-2401	Facility Phone	570-278-3100 Ext. 3692
Client ID	66806	Site ID	454367
Ch 94 Load Status	Not Overloaded	Municipality	Harford Township
Connection Status	No Limitations	County	Susquehanna
Date Application Received	October 9, 2018	EPA Waived?	Yes
Date Application Accepted	October 10, 2018	If No, Reason	-

Purpose of Application: RENEWAL OF EXISTING NPDES PERMIT.

Summary of Review

This is a 0.050 MGD POTW discharging to Nine Partners Creek (CWF, MF; Stream Code No. 29105). The ADF was 0.025 MGD (2017), 0.021 MGD (2016) and 0.23 (2015). Highest monthly flow in 2017 was 0.031 MGD.

Sludge use and disposal description and location(s): 99,000 gallons were hauled offsite to WVSA.

Part C Special Condition: Changes bolded.

Part C.I.A, B, and C: Existing Stormwater prohibition; Necessary property rights; Residuals management conditions
Part C.I.D: New chlorine minimization condition due to conversion to UV disinfection and chlorine toxicity.
Part C.II: Existing Solids Management
Part C.III: New WQBELs for Toxic Pollutants (copper) due to Reasonable Potential Analysis. The facility will have option to address lead and zinc monitoring requirements via this condition also. Ten monthly sample results (meeting DEP TQLs) will allow calculation of LTAMEC to update the Reasonable Potential Analysis.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
X		James D. Berger (signed) James D. Berger, P.E. / Environmental Engineer	July 24, 2023
X		Amy M. Bellanca (signed) Amy M. Bellanca, P.E. / Program Manager	8-2-23

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.050
Latitude	41º 46' 54.51"	Longitude	-75º 41' 4.99"
Quad Name	Harford	Quad Code	0440 (1.21.3)
Wastewater Description:	Sewage Effluent		
Receiving Waters	Nine Partners Creek (CWF, MF)	Stream Code	29105
NHD Com ID	66394847	RMI	-
Drainage Area	7.91 square miles	Yield (cfs/mi^2)	0.0207
Q_{7-10} Flow (cfs)	0.164	Q_{7-10} Basis	USGS PA Streamstats
Elevation (ft)	1125 Feet (at sampling point per application), but 1110.27 by USGS.	Slope (ft/ft)	-
Watershed No.	4-F	Chapter 93 Class.	CWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	-		
Source(s) of Impairment	-		
TMDL Status	-	Name	

Background/Ambient Data:		Data Source: None available.
pH (SU)	-	
Temperature (°F)	-	-
Hardness (mg/L)	-	-
Other:	-	-

Nearest Downstream Public Water Supply Intake		PA American Water Nesbitt Division	
PWS Waters	Susquehanna River	Flow at Intake (cfs)	-
PWS RMI	-	Distance from Outfall (mi)	>50 miles (last Fact Sheet)

Changes Since Last Permit Issuance: Outfall No. 001 coordinates updated per application.

Other Comments:

- No available upstream sampling data for Nine Partners Creek (other than fecal coliforms).
- Nine Partners Creek flows into Tunkhannock Creek and then eventually to the Susquehanna River.
- Phase 5 Nonsignificant Chesapeake Bay facility

Treatment Facility Summary

Treatment Facility Name: Harford Township WWTP

WQM Permit No.	Issuance Date	Scope
5820401	8/12/2020	The major elements of the improvement project include the following: a new headworks to incorporate mechanical bar screening, construction of a new 12' diameter clarifier, construction of a new wet well for sludge conveyance, refurbishment of existing air supply piping and header systems, conversion from course bubble diffusers to fine bubble diffusers in the aeration process, the addition of a new fourth blower, minor modifications of the existing influent splitter box, modification of plant instrumentation, installation of a new standby generator with automatic transfer switch, and the installation of a 10ft x 20ft workspace/storage prefabricated building.
5813401	7/30/2013	Upgrade to UV disinfection (units in retrofitted chlorine tank)
5893401	6/11/1993	POTW (STP and LPS System): LPS: ~300 grinder units and~25,000 LF piping STP: one (1) 21,000-gallon EQ basin; five (5) sequential 10,000-gallon extended aeration reaction tanks; two (2) 5,280-gallon settling tanks; two (2) 22,170-gallon aerobic digestion tanks; hypochlorite chlorine contact tank.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	UV disinfection	0.050

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.050	83*	Not Overloaded	Aerobic digesters**	Offsite disposal

*83 lbs BOD5/day per WQM permitting.
**May be operating as aerated sludge holding tanks.

Changes Since Last Permit Issuance: Facility previously upgraded to UV disinfection. 2020 WQM permitted upgrades (see above) anticipated to be completed in 2023 per 2022 Chapter 94 Report.

Other Comments:

- **General Background site concern**: Previous Site Design Engineer/Certified Operator was charged in Federal Court due to issues at another facility (see Greenfield Township Sewer Authority NPDES Permit No. PA0061671 files for details). The nature and magnitude of the issues (at other plants) raises the possibility of bad construction in (non-visible/non-accessible portions of) the STP and LPS System designed, construction-overseen and originally operated by the same Engineer/Operator. Inspectors noted most of this plant is not visible (covered or underground), i.e. visual inspections are limited value in determining condition of this STP. **NOTE**: The permittee subsequently hired a different technical consultant (JHA Companies) to operate and maintain the POTW (STP and collection system) circa mid-2016 and has proposed some WWTP upgrades (see 2020 WQM permit). The technical consultant might not be able to identify of any buried (non-visible) construction problem.
- **2022 Chapter 94 Report (On-Base No. 91578) & 2021 Chapter 94 Report (On-Base No. 50040)**:
  - **Form Items 1, 2, 3, and 9**: No existing or projected overloading per 2022 Chapter 94 Report.
    - **Incorrect Organic Design Capacity Assumed**:
      - **The Chapter 94 Report assumed an incorrect value of 116 lb BOD5/day**. The existing NPDES Permit Part A.I Additional Requirements states that 83 lb BOD5/day is to be used

for the Chapter 94 Report. The WQM Permit No. 5820401 identified an 83 lbs BOD5/day organic design capacity.

- The November 2020 load of 115 lb BOD5/day was above the actual organic design capacity (83 lb BOD5/day) but might be a result of biasing (due to 8-hour composite sampling bias and lack of influent flow meter calibration documentation). There is a pattern of one month of (different months) spiking organic loading each year.

▪ **Design Capacities**:

- **0.050 MGD Hydraulic Design Capacity Versus Loading**: In 2022, they only had 0.0211 MGD ADF, and 0.024 MGD Max 3-Mo. Period. (flows in the 0.0151 – 0.024 MGD range during year, with 0.026 MGD in December).
- **83 lb BOD5/day Organic Design Capacity versus Loading**. In 2022, they had an average 43 lb BOD5/day loading and 78 lb BOD5/day max monthly average loading in 2022. **NOTE**: Projected to be in the 72 – 78 lb BOD5/day range over the next five years.
- **2022 Chapter 94 Data**:
  - Persons/EDU: 2.4 (2022) with 2.45 indicated in 2021
  - Existing EDUs: 280 (no change in last 5-years). **NOTE:** Original WQM permit approved ~300 grinder units, i.e. community is near or at build-out. They have been assuming 4 new unit/year in the Chapter 94 Report.
  - Load/EDU: 0.154 lb BOD5/day
  - Load/Capita: 0.064 lbs BOD5/day **NOTE**: The PA Domestic Wastewater Facilities Manual Section 43.51 default values for new systems: 0.17 lb/day/cap (0.22 lb/day/cap may be used when garbage grinders are prevalent).
  - New EDUs: 4/year for next 5 years. No projected overloading.
  - Precipitation Data Table: Not completed, but limited I&I expected in any LPS sewer system.
  - Flow/Capita: 31.4 GPD **NOTE**: The PA Domestic Wastewater Facilities Manual Section 43.51 estimated for new systems: 100 GPCD (including allowance for I&I). 80 GPCD can be used for new LPS Systems. At original WQM permit design assumption (70 GPCD for this Low Pressure Sewer System), they would generate ~49,000 GPD.
- **Underloading at Near Build Out:** As noted above, the flows/organic loadings are substantially below DWFM multipliers (for new LPS flows and loadings) with 280 EDUs for a development permitted for 300 units. The renewed permit will require 24-hour composite sampling to eliminate potential biasing. The permittee noted in the NPDES permit application that the it was possible that a decreasing population (estimated at 1% per year) might have effectively reduced the EDUs to 266 EDUs, but that was not addressed in the 2022 Chapter 94 Report. The NPDES Permit application also noted that significant portions of the collection system services lake front homes (Tyler Lake and Tingley Lake) as well as campgrounds and fairgrounds that experience seasonal occupation rates.

- **Form Item 4 (Sewer Extensions; Attachment G)**: "Any extensions proposed for 2022 have been tabled and not deemed feasible. No sewer extensions were constructed in 2022". **NOTE**: The 2021 Chapter 94 Report had indicated the following: "No sewer extensions were constructed in the 2021 reporting year. However, an approximate 3.0 miles low pressure sewer force main extension is currently proposed for design and permitting to begin in 2022 with construction to commence in 2023".
- **Form Item 5 (Sewer System monitoring, maintenance, repair and rehabilitation)**: JHA provides all collection system and treatment plant operations, monitoring and repair. Other information provided elsewhere in Report.
- **Form Item 6 (Sewer System condition):** WWTP upgrades (WQM No. 5820401) expected to be constructed in 2023 (previously expected to be started in 2022). See above description.
- **Item 10 (Sewage Sludge Management Inventory); Attachment D)**: They used the DEP Operators "Solids Management (Sludge) Calculator" spreadsheet. They assumed a base population of 686. The outputs were outside of the generally acceptable range (identified on the Spreadsheet). Partially, this might be due to sampling biasing due to 8-hour composite sampling (without influent flow meter calibration documentation) and lower than DWFM per capita loadings due to residential usage patterns (apparent underloading). The future WWTP Upgrades (see above) might have some impact on future wasting rates. Historical data included below to allow for comparison
  - **2022 Results**:

- **% of Expected Volume Wasted (Based on Chapter 94 Report)**: 163% (outside the 85 – 115% generally acceptable range).
- **% of Expected Volume Wasted (Based on Population)**: 60% (outside the 85 – 115% generally acceptable range)

▪ **2021 Results:**
- **% of Expected Volume Wasted (Based on Chapter 94 Report)**: 191% (outside the 85 – 115% generally acceptable range).
- **% of Expected Volume Wasted (Based on Population)**: 54% (outside the 85 – 115% generally acceptable range).

▪ **2020 Results**:
- **% of Expected Volume Wasted (Based on Chapter 94 Report)**: 153% (outside the 85 – 115% generally acceptable range).
- **% of Expected Volume Wasted (Based on Population)**: 45% (outside the 85 – 115% generally acceptable range).

▪ **2019 Results**:
- **% of Expected Volume Wasted (Based on Chapter 94 Report)**: 106% (outside the 85 – 115% generally acceptable range).
- **% of Expected Volume Wasted (Based on Population)**: 45% (outside the 85 – 115% generally acceptable range).

o **Item 12 (Calibration)**: They calibrated the effluent flow meter only. They should also be calibrating the influent flow meter(s) to ensure flow-proportional influent sampling as required by existing NPDES Permit, given organic load spiking noted above.

- **NPDES Permit Application/STP description**:
  - Flow equalization tank then extended aeration package plant (five aeration basins in common concrete structure), then two (2) settling tanks, UV disinfection and flow meter chamber prior to discharge to stream. Sludge holding tank. Polymer used in sludge coagulation/settling. Caustic is used for pH adjustment. **NOTE**: They may be operating the aerobic digesters as aerated sludge holding tanks.
  - New headworks and clarifiers were permitted in 2020.
- **Collection System**: Low Pressure Sewer System was constructed circa 1995 per Chapter 94 Reports. No industrial sources per application and Chapter 94 Reports.
- **85% Minimum Monthly Average Reduction**: Based on annual averages, they generally met the POTW requirement during the year. Monitoring & Reporting will be required in this permit term (with 24-hour composite sampling to eliminate potential historic biasing).

Constituent	Influent Application Data	Effluent Application Data	Reduction
BOD5	223 mg/l average (19 samples)	14 mg/l CBOD5 (20 samples) which equates to 16.8 mg/l CBOD5 at 1.2 BOD5/1 CBOD5 effluent ratio.	~92% reduction
TSS	101 mg/l average (19 samples)	14 mg/l	~86% reduction average,

Compliance History

DMR Data for Outfall 001 (from June 1, 2022 to May 31, 2023)

Parameter	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22
Flow (MGD) Average Monthly	0.020289	0.019051	0.024852	0.016525	0.019196	0.025629	0.022984	0.023309	0.024223	0.019363	0.019487 72
Flow (MGD) Daily Maximum	0.098370	0.059171	0.032792	0.02481	0.055334	0.052555	0.039541	0.044842	0.083921	0.025947	0.026625 5
pH (S.U.) Minimum	6.64	6.41	6.59	7.04	6.87	6.14	6.83	6.49	7.09	7.16	7.2
pH (S.U.) Maximum	7.38	7.57	7.49	7.59	7.54	7.70	7.47	7.44	7.67	7.60	7.58
TRC (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
CBOD5 (lbs/day) Average Monthly	1.60	1.5	1.4	2.8	0.7	1.1	1.7	5.5	1.0	< 0.4	0.8
CBOD5 (mg/L) Average Monthly	7.61	10.46	9.14	19.7	3.49	5.36	14.5	14.8	5.84	< 3.0	4.52
BOD5 (mg/L) Raw Sewage Influent Average Monthly	230.0	190.0	302.0	270.0	55.9	163.0	328.0	208.0	270.0	408.0	267.0
TSS (lbs/day) Average Monthly	3.20	3.7	4.4	5.2	4.1	1.8	0.5	5.2	3.7	0.40	3.9
TSS (mg/L) Average Monthly	14.8	23.2	30.0	36.8	20.8	9.2	4.0	14.0	22.4	2.80	22.8
TSS (mg/L) Raw Sewage Influent Average Monthly	46.0	49.0	76.0	178.0	20.8	55.0	94.0	74.0	154.0	248.0	112.0
Fecal Coliform (CFU/100 ml) Geometric Mean	138.0	**2433.0**	80.0	16.0	25.0	992.4	806.0	122.0	489.20	14.8	**3972.6**
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	137.6	9678.4	79.6	16.4	25.0	992.4	806.0	122.0	489.20	14.8	3972.6
Nitrate-Nitrite (mg/L) Annual Average						< 15.30					

Total Nitrogen (mg/L) Annual Average						< 15.80					
Ammonia (lbs/day) Average Monthly	0.10	< 0.1	0.05	0.07	0.07	0.2	0.2	0.20	0.05	< 0.01	0.5
Ammonia (mg/L) Average Monthly	**0.536**	**< 1.083**	**0.36**	**0.488**	**0.358**	**1246**	**1.328**	**0.518**	**0.3020**	**< 0.10**	**2.906**
TKN (mg/L) Annual Average						< 0.50					
Total Phosphorus (mg/L) Annual Average						5.17					

DMR Data for Outfall 001 (from August 1, 2021 to July 31, 2022)

Parameter	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21
Flow (MGD) Average Monthly	0.01948772	0.018901	0.019044	0.023183	0.019924	0.018467	0.01685	0.0178	0.01879	0.0216	0.0193	0.0196
Flow (MGD) Daily Maximum	0.0266255	0.02946	0.025959	0.047956	0.027313	0.027824	0.023264	0.0247	0.03887	0.0580	0.0387	0.0270
pH (S.U.) Minimum	7.2	7.01	6.82	6.70	6.41	6.75	6.64	6.36	6.57	6.72	6.42	6.92
pH (S.U.) Maximum	7.58	7.49	7.33	7.43	7.24	7.20	7.47	7.49	7.47	7.51	7.14	7.16
TRC (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
CBOD5 (lbs/day) Average Monthly	0.8	< 0.5	< 0.40	1.0	2.50	1.10	0.7	0.5	< 0.4	0.45	< 0.48	< 0.49
CBOD5 (mg/L) Average Monthly	4.52	< 3.0	< 3.0	6.12	13.9	10.30	4.92	4.19	< 3.0	3.36	< 3.00	< 3.00
BOD5 (mg/L) Raw Sewage Influent Average Monthly	267.0	165.0	240.0	290	249.0	339.0	189.0	368.0	153.0	229	223	262
TSS (lbs/day) Average Monthly	3.9	< 0.5	0.70	1.6	4.0	2.30	2.1	2.6	2.5	1.99	0.45	1.37
TSS (mg/L) Average Monthly	22.8	< 2.8	4.80	9.6	22.8	21.60	14.8	21.6	16.80	14.8	2.80	8.40

TSS (mg/L) Raw Sewage Influent Average Monthly	112.0	294.0	168.0	90	186.0	140.0	130.0	258.0	148.0	120	120	264
Fecal Coliform (CFU/100 ml) Geometric Mean	**3972.6**	< 2.0	34.2	332.8	496.0	912	49.8	2.0	< 2.0	25.2	168	22.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	**3972.6**	< 2.0	34.2	332.8	496.0	2092.4	49.8	2.0	< 2.0	25.2	168	22.0
Nitrate-Nitrite (mg/L) Annual Average								< 15.3				
Total Nitrogen (mg/L) Annual Average								< 15.8				
Ammonia (lbs/day) Average Monthly	0.5	< 0.020	< 0.01	< 0.08	< 4	< 0.02	< 0.01	< 0.01	< 0.01	< 0.013	< 0.02	< 0.02
Ammonia (mg/L) Average Monthly	**2.906**	**< 0.10**	**< 0.10**	**< 0.50**	**< 0.2**	**< 0.20**	**< 0.1**	**< 0.1**	**< 0.10**	**< 0.1000**	**< 0.1000**	**< 0.1000**
TKN (mg/L) Annual Average								< 0.5				
Total Phosphorus (mg/L) Annual Average								5.17				

Compliance History

Effluent Violations for Outfall 001, from: March 1, 2019 To: May 31, 2023

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH[1]	04/30/21	Min	5.6	S.U.	6.0	S.U.
CBOD5[3]	09/30/20	Avg Mo	32.0	mg/L	25.0	mg/L
TSS[6]	02/28/23	Avg Mo	36.8	mg/L	30.0	mg/L
TSS[2]	01/31/21	Avg Mo	58.5	lbs/day	12.5	lbs/day
TSS[3]	09/30/20	Avg Mo	15.1	lbs/day	12.5	lbs/day
TSS[2]	01/31/21	Avg Mo	360.0	mg/L	30.0	mg/L

TSS[3]	09/30/20	Avg Mo	102.5	mg/L	30.0	mg/L
Fecal Coliform[4]	08/31/19	Geo Mean	3683.2	CFU/100 ml	200	CFU/100 ml
Fecal Coliform[4]	08/31/19	IMAX	3683.2	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform[5]	07/31/21	Geo Mean	382	CFU/100 ml	200	CFU/100 ml
Fecal Coliform[5]	07/31/21	IMAX	2419.6	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform[6]	07/31/22	Geo Mean	3972.6	CFU/100 ml	200	CFU/100 ml
Fecal Coliform[6]	07/31/22	IMAX	3972.6	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform[1]	09/30/22	Geo Mean	489.20	CFU/100 ml	200	CFU/100 ml
Fecal Coliform[1]	04/30/23	Geo Mean	2433.0	CFU/100 ml	2000	CFU/100 ml
Ammonia[5]	07/31/21	Avg Mo	7.75	lbs/day	4.2	lbs/day
Ammonia[5]	07/31/21	Avg Mo	38.79	mg/L	10.0	mg/L

[1]blamed on high rainfall event, despite LPS system.
[2]blamed on aeration system problem that turned on aeration tank into a settling tank, with consequent loadings on other aeration tanks.
[3]blamed on sampling error by new staff.
[4]They think these were outliers and say that they did not learn of results in time to conduct additional sampling for that reporting period.
[5]blamed on equipment malfunction (power outage and no standby power). Standby power is part of WQM permit upgrade.
[6]Operator was performing plant maintenance and cleaning.

Summary of Inspections:

SITE NAME	INSP PROGRAM	INSP ID	INSPECTED DATE	INSP TYPE	INSPECTION RESULT DESC	# OF VIOLATIONS
HARFORD TWP WWTP	WPCNP	2467369	10/21/2020	Routine/Partial Inspection	Violation(s) Noted	1
HARFORD TWP WWTP	WPCNP	3095592	11/26/2018	Compliance Evaluation	No Violations Noted	0
HARFORD TWP WWTP	WPCNP	2618177	08/31/2016	Routine/Partial Inspection	Violation(s) Noted	2
HARFORD TWP WWTP	WPCNP	2482997	05/12/2016	Compliance Evaluation	Violation(s) Noted	1

HARFORD TWP WWTP	WPCNP	2850625	03/23/2016	Administrative/File Review	Violation(s) Noted	3

Other Comments:

- NOVs:
  - 11/26/2018 NOV (late renewal application; late or missing DMRs; exceedances of Ammonia, Fecal Coliforms, TSS, pH)
  - 8/31/2016 NOV (exceedances of Ammonia, Fecal Coliforms, TSS, and pH, missing DMR plus not all monitoring parameters reports)
- Open Violation by Client Number: No open violations per 7/21/2023 WMS Query (Open Violations by Client Number):
  Permit: PA0063100
  Client ID: 66806
  Client: All

  Open Violations: 0

No data was found using the criteria entered. Please revise your choices and try again.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .05
Latitude 41º 46' 53.79" **Longitude** -75º 41' 5.83"
Wastewater Description: Sewage Effluent

Permit limits and/or monitoring: Changes bolded

Parameter	Limit (mg/l unless otherwise specified)	SBC	Model/Basis
CBOD5	**Report lb/d** **Report lb/d** 25.0 **50.0** 50.0	**Monthly Average** **Daily Max** Monthly Average **Daily Max** IMAX	Existing WQBEL supported by water quality modeling. **Additional reporting added. Daily max limit set to IMAX limit to ensure reporting of exceedances**. Application data: 27 mg/l max and 14 mg/l average (20 samples).
TSS	**Report lb/d** **Report lb/d** 30.0 **60.0** 60.0	**Monthly Average** **Daily Max** Monthly Average **Daily Max** IMAX	Existing Technology limit (Chapter 92a.47). **Additional reporting added. Daily max limit set to IMAX limit to ensure reporting of exceedances**. Application data: 24 mg/l max and 14 mg/l average (20 samples).
pH	6.0 – 9.0 SU	**Inst.** Min - IMAX	Existing Technology limit (Chapter 92a.47). Application data: 6.4 – 8.16 SU (190 samples).
Fecal Coliform	200/100 ml 1,000/100 ml	Geo Mean IMAX	Existing TBEL (Chapter 92a.47) Application data: **>2420/100 mil** and 337/100 ml average (22 samples)
Fecal Coliform	2000/100 ml 10,000/100 ml	Geo Mean IMAX	See above.
Total Residual Chlorine	**0.44** **1.04**	Average Monthly IMAX	**Old DEP Facility-specific Tech Limit (old limits superseded by TRC Spreadsheet and conversion to UV disinfection). Due to conversion to UV, new limits effective immediately (but only monitored when chlorine is used in a manner that it would end up in the effluent). See Part C.I.D. Chlorine Minimization condition.** Application data: None. (EDMR GG)
Ammonia-Nitrogen **May 1 – Oct 31**	**2.7 lb/d** **Report lb/d** **6.74** **13.48** **13.48**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**Revised more stringent WQBELs required by updated water quality modeling and revised Chapter 93 Water Quality Standards. January 4, 2023 Harford Letter indicated the facility can comply with the new limits. Previous limits were 10.0 mg/l monthly/20.0 mg/l IMAX Summer, and no Winter monitoring requirement.** Application data: 1.7 mg/l max and 8 mg/l average (21 samples)**.** See Compliance Section for EDMR data (one month was 9.4 mg/l).
Ammonia-Nitrogen **Nov 1 – April 30**	**8.1 lb/d** **Report lb/d** **20.22**	**Monthly Average** **Daily Max** **Monthly Average**	**See above. Standard winter multiplier used.**

	Report	Daily Max	
Total Phosphorus	Report lb/d Report lb/d Report Report	Annual Average Daily Max Annual Average Daily Max	Existing annual monitoring requirement per Chapter 92a.61. Application data: 2.85 mg/l max and 2.76 mg/l average (3 samples)
Total Nitrogen (Nitrate-Nitrite-N + TKN measured in same sample)	Report lb/d Report lb/d Report Report	Annual Average Daily Max Annual Average Daily Max	Existing annual monitoring requirement per Chapter 92a.61. Application data: TN: 37.04 mg/l max and 17.6 mg/l average (3 samples) TKN: 32 mg/l max and 17.3 mg/l average (3 samples).
Dissolved Oxygen (DO)	**4.0**	**Inst. Min**	**New WQBEL/TBEL per water quality modeling. Permit limit effective on PED because an Extended Aeration Treatment System normally meets this limit.** Application data: None
UV Intensity	**Report µw/cm²**	**Inst. Min**	**New requirement due to UV disinfection.** Application data: None
Minimum BOD5 % Reduction	**85%**	**Minimum Monthly Average**	**Existing Part A requirement with reporting now required.**
Minimum TSS % Reduction	**85%**	**Minimum Monthly Average**	**See above**
E Coli	**Report No./100 ml**	**IMAX**	**New quarterly reporting requirement due to new Chapter 93 Water Quality Standard.**
Copper	**0.012 lb/d** **0.018 lb/d** **28.0 ug/l** **43.6 ug/l** **69.9 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL required per Reasonable Potential Analysis.** Application data: 0.0113 mg/l (1 sample) 4 samples: 19.3 ug/l max (1 sample) and <12.5 ug/l (3 samples)
Lead	**Report lb/d** **Report lb/d** **Report ug/l** **Report ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**Monitoring required per Reasonable Potential Analysis.** Application data: <0.008 mg/l (1 sample). Insensitive ND concentration. DEP Target QL is 1 ug/l. 4 samples: 1.02 ug/l max (1 sample) and <0.5 ug/l (3 samples)
Zinc	**Report lb/d** **Report lb/d** **Report ug/l** **Report ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**Monitoring required per Reasonable Potential Analysis.** Application data: 0.0415 mg/l (1 sample) 4 samples: 0.0699 mg/l (69.9 ug/l) max (1 sample) and 0.0605 mg/l (60.5 ug/l) average (3 samples)

Comments:

- **General Updating**: Updated sampling for new units, standard frequencies, and additional reporting (mass and daily max values). Added daily max limits set at IMAX limits to ensure reporting of exceedances. (any exceedance of IMAX for any duration is a violation.)
- **Composite Sampling Change**: 24-hour composite sampling (from 8-hour sampling to eliminate biasing that might lead to incorrect reporting of violations such as for the 85% minimum monthly average requirements for BOD5 and TSS) and inaccurate Chapter 94 Reporting (evidence of organic load spiking). The composite samples must be flow-proportioned per existing NPDES Permit language.

- **New IMP No. 101**: Raw Sewage influent monitoring and reporting has been relocated to administratively-created Internal Monitoring Point/Outfall No. 101 (raw sewage influent sampling). The facility has been permitted to install a new headworks.
- **Reasonable Potential Analysis & Water Quality Modeling:** See TMS printout and analysis below. The Part C WQBELs for Toxic Pollutants (Copper) can also be used to determine if relief is possible for lead and zinc monitoring requirements. The interim monthly monitoring will also gather information for determination of a Long Term Average Monthly Effluent Concentration (LTAMEC) and daily Coefficient of Variability (COV) in event they allow for early relief from the future permit limit and ongoing monitoring requirements.

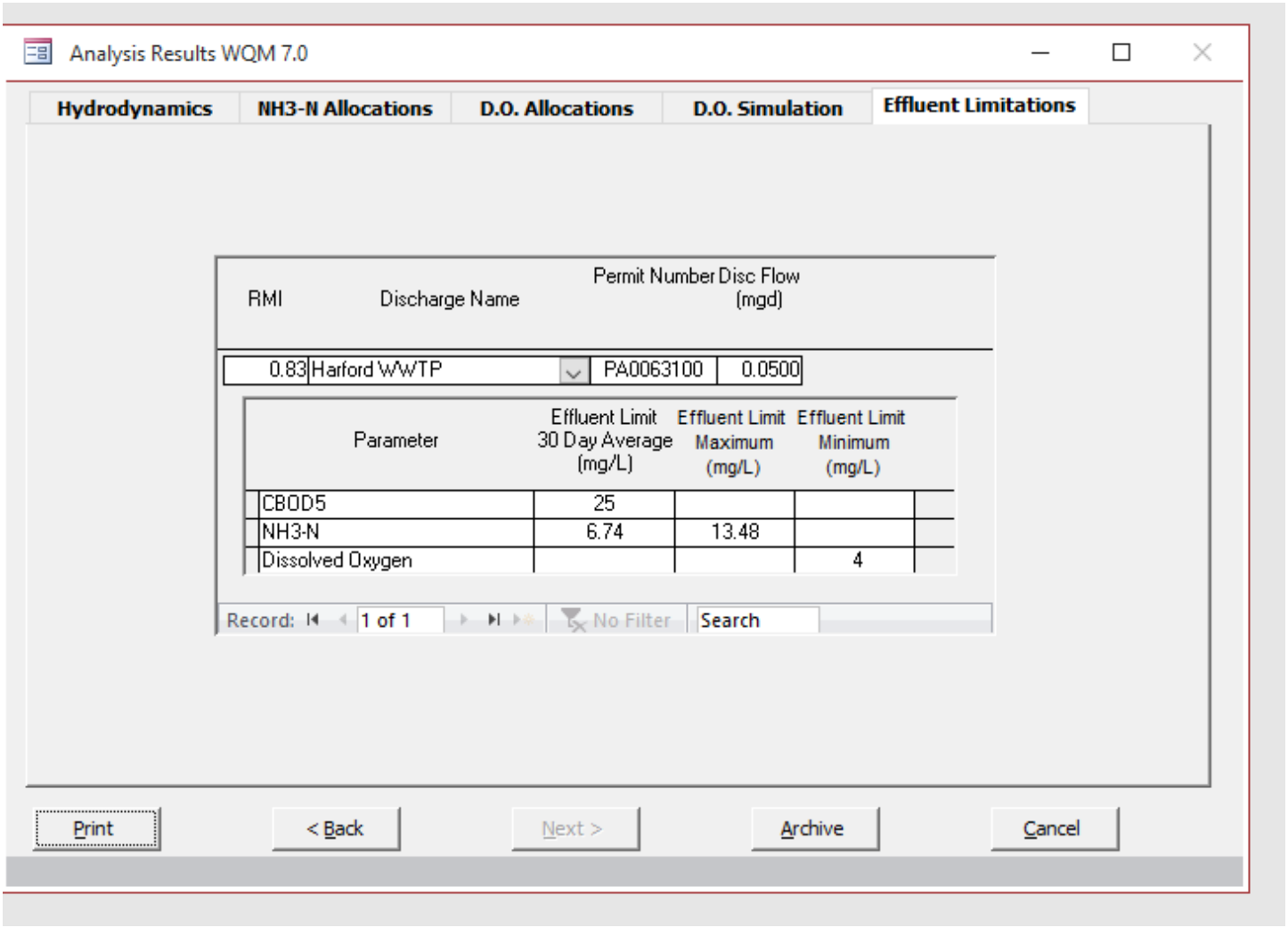
HarfordTMSPDF.pdf

HarfordWQModel.pdf

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	0.012	0.018	28.0	43.6	69.9	µg/L	28.0	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Lead	Report	Report	Report	Report	Report	µg/L	9.92	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	239	AFC	Discharge Conc > 10% WQBEL (no RP)



TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9 — Harford STP

0.164	= Q stream (cfs)	0.5	= CV Daily
0.05	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.695	1.3.2.iii	WLA cfc = 0.670
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.259	5.1d	LTA_cfc = 0.390

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.446	AFC
		INST MAX LIMIT (mg/l) = 1.043	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**