

Application Type Renewal  
 Facility Type Non-Municipal  
 Major / Minor Minor

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

Application No. PA0088552  
 APS ID 1080715  
 Authorization ID 1426640

**Applicant and Facility Information**

Applicant Name	<u>Oakbrook Homeowners Association Of Elizabethtown</u>	Facility Name	<u>Oakbrook Homeowners Subdivision</u>
Applicant Address	<u>7 Oakbrook Lane Elizabethtown, PA 17022-1150</u>	Facility Address	<u>Oakbrook Lane Elizabethtown, PA 17022-1150</u>
Applicant Contact	<u>Jeff Heckman</u>	Facility Contact	<u>Jeff Heckman</u>
Applicant Phone	<u>(717) 587-5399</u>	Facility Phone	<u>(717) 587-5399</u>
Client ID	<u>279922</u>	Site ID	<u>537986</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>West Donegal Township</u>
Connection Status	<u>No Limitations</u>	County	<u>Lancaster</u>
Date Application Received	<u>November 29, 2022</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>February 14, 2023</u>	If No, Reason	<u></u>
Purpose of Application	<u>NPDES Renewal.</u>		

**Summary of Review**

Oakbrook Homeowners Association has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The existing permit was issued May 18, 2018, and became effective on June 1, 2018, authorizing discharge of treated sewage from the facility into UNT 9246 to Conewago Creek. The existing permit expiration date was May 31, 2023, and the permit has been administratively extended since that time.

Per the previous fact sheet, treated effluent from the WWTP will be pumped about 550 feet to a perennial stream. The WWTP is located next to a wet weather swale, but the effluent is pumped to the stream to avoid dry stream tertiary limits. The stream is about 2 to 3 feet wide, 2 to 12 inches deep, and has a silted/gravel substrate and a few rocks but flows over large sandstone boulders. Velocity of the stream is slow due to shallow slope and deep pools.

Changes in this renewal: Fecal coliform IMAX limits were added. E. Coli monitoring has been added. A slightly more stringent TRC limit was added.

Sludge use and disposal description and location(s): Sludge holding tank with offsite disposal.

Supplemental information for this facility is provided at the end of this fact sheet.

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-

Approve	Deny	Signatures	Date
X		Benjamin R. Lockwood Benjamin R. Lockwood / Environmental Engineering Specialist	April 2, 2024
X		Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	April 18, 2024

**Summary of Review**

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.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>.0032</u>
Latitude	<u>40° 9' 21"</u>	Longitude	<u>76° 37' 54"</u>
Quad Name	<u></u>	Quad Code	<u></u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Unnamed Tributary of Conewago Creek (TSF)</u>	Stream Code	<u>9246</u>
NHD Com ID	<u>56405401</u>	RMI	<u>0.17</u>
Drainage Area	<u>0.12 mi<sup>2</sup></u>	Yield (cfs/mi <sup>2</sup> )	<u>0.119</u>
Q <sub>7-10</sub> Flow (cfs)	<u>0.0143</u>	Q <sub>7-10</sub> Basis	<u>Stream Gage #01576500</u>
Elevation (ft)	<u>436</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>7-G</u>	Chapter 93 Class.	<u>TSF</u>
Existing Use	<u>N/A</u>	Existing Use Qualifier	<u>N/A</u>
Exceptions to Use	<u>N/A</u>	Exceptions to Criteria	<u>N/A</u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u>N/A</u>		
Source(s) of Impairment	<u>N/A</u>		
TMDL Status	<u>Final</u>	Name	<u>Conewago Creek Watershed</u>
Nearest Downstream Public Water Supply Intake	<u>Columbia Water Company</u>		
PWS Waters	<u>Susquehanna River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u>24.4</u>

Changes Since Last Permit Issuance: Stream flows were determined by establishing a correlation the yield of USGS gage station No. 01576500 on Conewago Creek. The Q<sub>7-10</sub> and drainage area at the gage are 38.6 ft<sup>3</sup>/s and 324 mi<sup>2</sup>, respectively. The Q<sub>7-10</sub> runoff rate at the gage station was calculated as follows:

$$- Q_{7-10} = (38.6 \text{ ft}^3/\text{s})/324 \text{ mi}^2 = 0.119 \text{ ft}^3/\text{s}/\text{mi}^2$$

The drainage area at the discharge point = 0.12 mi<sup>2</sup>.

The Q<sub>7-10</sub> at the discharge point = 0.12 mi<sup>2</sup> x 0.119 cfs/mi<sup>2</sup> = 0.0143 ft<sup>3</sup>/s.

Other Comments: None

<b>Treatment Facility Summary</b>				
<b>Waste Type</b>	<b>Degree of Treatment</b>	<b>Process Type</b>	<b>Disinfection</b>	<b>Avg Annual Flow (MGD)</b>
Sewage	Secondary With Ammonia Reduction	Extended Aeration	Chlorine With Dechlorination	0.0032
<b>Hydraulic Capacity (MGD)</b>	<b>Organic Capacity (lbs/day)</b>	<b>Load Status</b>	<b>Biosolids Treatment</b>	<b>Biosolids Use/Disposal</b>
0.0032	6.4	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The treatment process is as follows: Equalization Tank, Aeration Tank, Clarifier, Chlorine Contact Tank, Dechlorination Tank, Aerated Sludge Holding Tank – Outfall 001 to UNT to Conewago Creek

<b>Compliance History</b>	
<b>Summary of DMRs:</b>	A summary of past DMR effluent data is presented on the next page of this fact sheet.
<b>Summary of Inspections:</b>	5/30/2018: A routine inspection was conducted. Field sampling results were within permitted limits. There were no issues noted.

Other Comments: There are no open violations for this Applicant for the Clean Water Program.

Compliance History

DMR Data for Outfall 001 (from March 1, 2023 to February 29, 2024)

Parameter	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23
Flow (MGD) Average Monthly	0.00189 7	0.00402 6	0.00325 2	0.00208	0.00181 9	0.00181 3	0.00186 5	0.00221 9	0.0007	0.00172 9	0.0018	0.002
Flow (MGD) Daily Maximum	0.0046	0.0146	0.019	0.0066	0.003	0.0038	0.0034	0.0046	0.0018	0.0018	0.0027	0.002
pH (S.U.) Minimum	7.7	7.7	7.9	7.6	7.5	7.4	7.6	7.4	7.7	7.5	7.8	6.9
pH (S.U.) Maximum	8.1	8.3	8.2	8.1	8.1	7.8	7.8	7.8	8.2	8.0	8.1	8.3
DO (mg/L) Minimum	9.5	9.8	10.2	8.2	7.9	6.2	6.5	6.2	7.1	7.1	7.0	8.0
TRC (mg/L) Average Monthly	0.21	0.25	0.33	0.28	0.26	0.26	0.31	0.26	0.28	0.28	0.26	0.27
TRC (mg/L) Instantaneous Maximum	0.32	0.65	1.28	1.06	0.42	0.40	0.42	0.42	0.78	0.42	0.43	1.07
CBOD5 (mg/L) Average Monthly	< 2.4	< 12.1	< 5.4	< 3.1	3.5	< 2	2.5	4.6	< 2.9	4.6	< 3.3	7.8
TSS (mg/L) Average Monthly	8	< 26	10	10	8	13	12	8	6	10	11	< 12
Fecal Coliform (CFU/100 ml) Geometric Mean	90	69	< 1	6	19	45	94	97	5	43	5	27
Nitrate-Nitrite (mg/L) Average Monthly	14.9	5.79	7.2	20.1	41.4	37.2	29.2	28.7	38.3	44.1	37.2	29.7
Total Nitrogen (mg/L) Average Monthly	21.2	21	11.6	< 21.1	< 42.4	< 38.2	< 30.5	< 30.6	< 39.4	< 45.1	< 39.3	< 31.8
Ammonia (mg/L) Average Monthly	< 6.5	< 5.5	2.93	0.46	0.15	0.15	0.28	0.15	0.20	0.23	3.83	< 0.235
TKN (mg/L) Average Monthly	6.3	15.2	4.4	< 1	< 1	< 1	< 1.2	< 1.9	< 1.1	< 1	< 2.1	< 2.1
Total Phosphorus (mg/L) Average Monthly	17.3	< 3.3	1.5	5	4.5	5.1	4.7	3.8	6.6	5.6	5.8	4.2

Existing Effluent Limitations and Monitoring Requirements

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.45	XXX	1.4	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25	XXX	50	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	XXX	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	XXX	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	22.5	XXX	45	2/month	8-Hr Composite
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	Calculation
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

at Outfall 001

**Development of Effluent Limitations**

<b>Outfall No.</b> <u>001</u>	<b>Design Flow (MGD)</b> <u>.0032</u>
<b>Latitude</b> <u>40° 9' 21"</u>	<b>Longitude</b> <u>76° 37' 54"</u>
<b>Wastewater Description:</b> <u>Sewage Effluent</u>	

**Technology-Based Limitations**

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
CBOD <sub>5</sub>	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

**Water Quality-Based Limitations**

CBOD<sub>5</sub>, NH<sub>3</sub>-N

Pursuant to 40 CFR § 122.44(d)(1)(i), more stringent requirements should be considered when pollutants are discharged at the levels which have the reasonable potential to cause or contribute to excursions above water quality standards.

WQM 7.0 ver. 1.1b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand (CBOD<sub>5</sub>), ammonia (NH<sub>3</sub>-N) and dissolved oxygen (D.O.). DEP's Technical Guidance No. 391-2000-007 provides the technical methods contained in WQM 7.0 for determining wasteload allocations and for determining recommended NPDES effluent limits for point source discharges. The model was utilized for this permit renewal. The model output indicated a CBOD<sub>5</sub> average monthly limit of 25 mg/l, an NH<sub>3</sub>-N average monthly limit of 8.71 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality. The flow data used to run the model was acquired from USGS PA StreamStats and is included as an attachment. The CBOD<sub>5</sub> limit is the same as the existing permit limit, which will remain in the permit. The existing NH<sub>3</sub>-N limit of 7.5 mg/l is more stringent and will remain in the permit.

There are no industrial/commercial users contributing industrial wastewater to the system and Oakbrook Homeowners Association does not currently have an EPA-approved pretreatment program. Accordingly, evaluating reasonable potential of toxic pollutants is not necessary as effluent levels of toxic pollutants are expected to be insignificant.

**Additional Considerations**

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the *Pennsylvania Chesapeake Watershed Implementation Plan (WIP)*, dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a *Phase 2 Watershed Implementation Plan Wastewater Supplement (Phase 2 Supplement)* was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. A new update to the WIP was published as the Phase 3 WIP in August 2019. As

part of the Phase 3 WIP, a *Phase 3 Watershed Implementation Plan Wastewater Supplement* (Phase 3 Supplement) was developed, and was most recently revised on December 17, 2019, and is the basis for the development of any Chesapeake Bay related permit parameters. Sewage discharges have been prioritized based on their design flow to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual Cap Loads based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. For Phase 4 and 5 facilities, Cap Loads are not currently being implemented for renewed or amended permits for facilities that do not increase design flow.

This facility is considered a Phase 5 non-significant facility with a design flow less than 0.2 MGD but greater than 0.002 MGD. According to the Phase 3 WIP, TN and TP monitoring is recommended for this facility, which is consistent with the existing permit.

#### Conewago Creek TMDL

A TMDL for the Conewago Creek basin was completed and approved on March 2, 2001 and revised on June 27, 2006. The TMDL establishes a permitted TP concentration of 8 mg/l and a TP load of 78 lbs/yr for this facility, but it does not contain WLA reductions for any point sources within this watershed. The actual pollutant load reductions for this TMDL were all allocated to agricultural activities. No additional limits or monitoring requirements for TP will need to be incorporated into the permit.

#### Dissolved Oxygen

A minimum D.O. limit of 5.0 mg/L is a D.O. water quality criterion found in 25 Pa. Code § 93.7(a). This limit is included in the existing NPDES permit based BPJ. It is still recommended to include this limit in the draft permit to ensure that the facility continues to achieve compliance with DEP water quality standards.

#### Fecal Coliform

PA Code § 92a.47.(a)(4) requires a monthly average limit of 200/100 mL as a geometric mean and an instantaneous maximum limit not greater than 1,000/100 mL from May through September for fecal coliform. PA Code § 92a.47.(a)(5) requires a monthly average limit of 2,000/100 mL as a geometric mean and an instantaneous maximum limit not greater than 10,000/100 mL from October through April for fecal coliform. Fecal coliform IMAX limits have been added to the permit.

#### E. Coli

PA Code § 92a.61 requires IMAX reporting of E. Coli. Per DEP's SOP No. BCW-PMT-033, sewage dischargers with a design flow of 0.002 – 0.05 mgd will include E. Coli monitoring with a frequency of 1/year. This parameter has been added to the renewal permit.

#### Total Residual Chlorine

The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92, Section 92.2d (3) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached printout indicates that a water quality limit of 0.43 mg/l would be needed to prevent toxicity concerns. This is the more stringent than the existing permit, and will be included in the renewal. Based on a review of the past DMR data, the facility would be capable of meeting this limit.

#### Sampling Frequency & Sample Type

The monitoring requirements were established based on BPJ and/or Table 6-3 of DEP's Technical Guidance No. 362-0400-001.

#### Anti-Degradation

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

303(d) Listed Streams

The discharge is located on a stream segment that is listed as attaining uses.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions are addressed by DEP in this fact sheet.

**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 technology, water quality and BPJ. 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" (386-0400-001), SOPs and/or BPJ.

**Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.43	XXX	1.4	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	Grab
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Nitrate-Nitrite	XXX	XXX	XXX	Report Daily Max	XXX	XXX	2/month	8-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	2/month	Calculation
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	22.5	XXX	45	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite

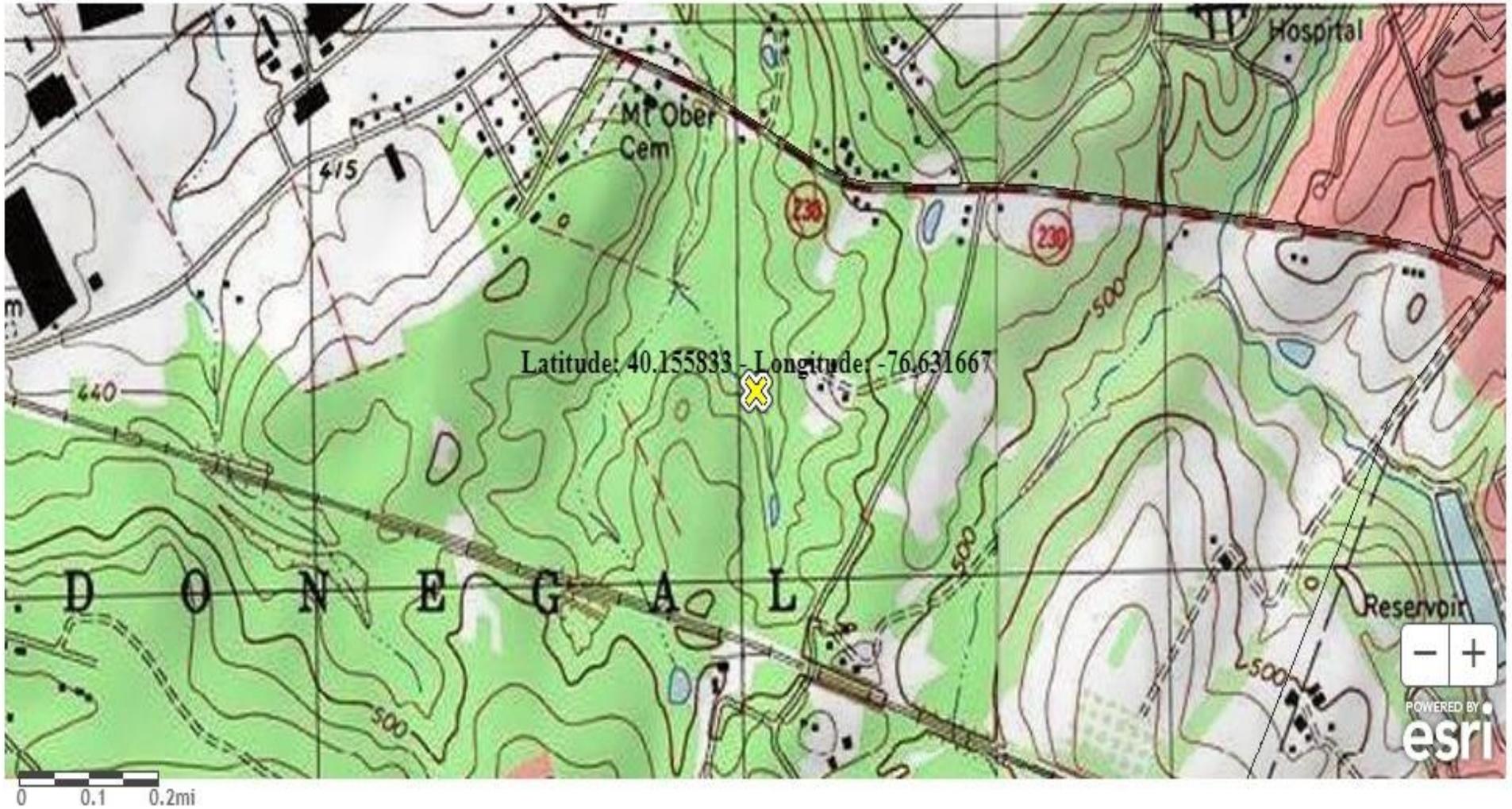
Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
TKN	XXX	XXX	XXX	Report Daily Max	XXX	XXX	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: None

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 386-2000-002, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
<input type="checkbox"/>	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
<input type="checkbox"/>	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 386-2000-003, 9/98.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP: BCW-PMT-033
<input type="checkbox"/>	Other: [redacted]



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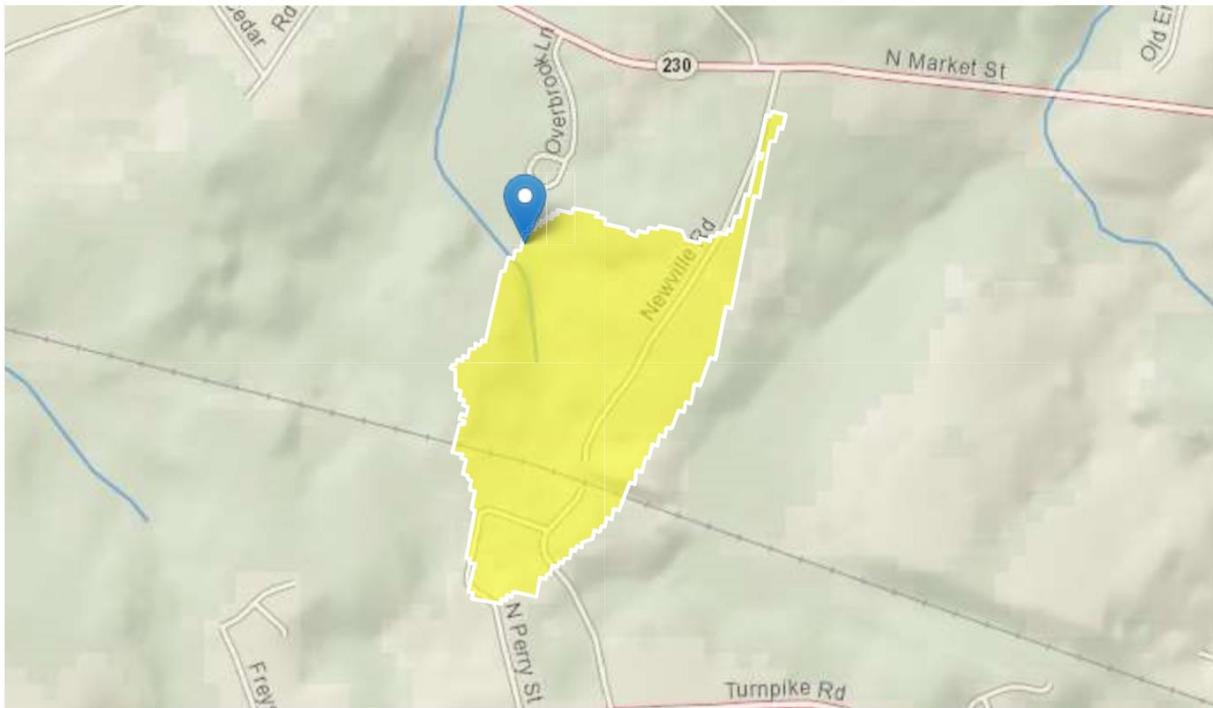
## Oakbrook Homeowners Association PA0088552 Outfall 001

Region ID: PA

Workspace ID: PA20240401224222018000

Clicked Point (Latitude, Longitude): 40.15582, -76.63163

Time: 2024-04-01 18:42:43 -0400



[+ Collapse All](#)

### ➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	3.9656	degrees
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	0.12	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.33	miles per square mile

Parameter Code	Parameter Description	Value	Unit
URBAN	Percentage of basin with urban development	0	percent

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [1.0 Percent (0.000888 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.12	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	3.9656	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4	feet	4.13	5.21
URBAN	Percent Urban	0	percent	0	89

Low-Flow Statistics Parameters [99.0 Percent (0.119 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.12	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.33	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

Low-Flow Statistics Disclaimers [1.0 Percent (0.000888 square miles) Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [1.0 Percent (0.000888 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.00904	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	0.0139	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	0.00275	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	0.00465	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	0.0095	ft <sup>3</sup> /s

Low-Flow Statistics Disclaimers [99.0 Percent (0.119 square miles) Low Flow Region 2]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [99.0 Percent (0.119 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.00678	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	0.0104	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	0.00209	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	0.00331	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	0.00676	ft <sup>3</sup> /s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0068	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	0.0104	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	0.0021	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	0.00332	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	0.00679	ft <sup>3</sup> /s

*Low-Flow Statistics Citations*

**Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)**

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Application Version: 4.19.4

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

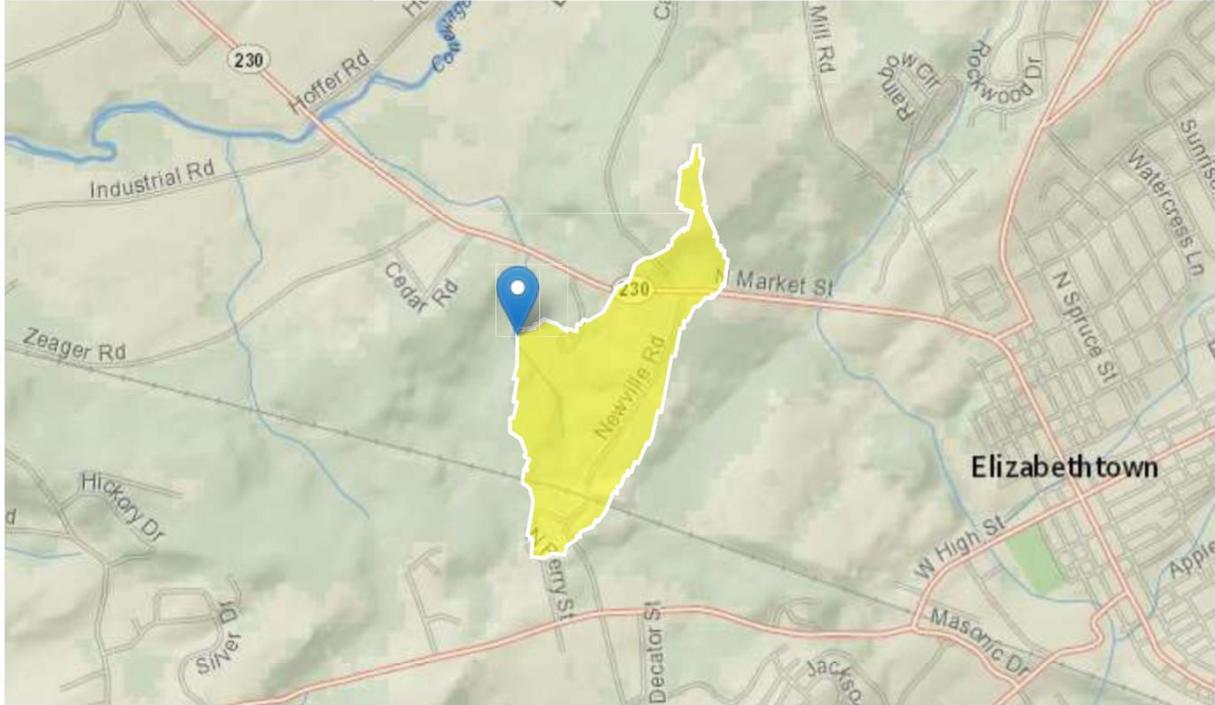
## Oakbrook Homeowners Association PA0088552 RMI = 0.0

Region ID: PA

Workspace ID: PA20240401224919028000

Clicked Point (Latitude, Longitude): 40.15744, -76.63363

Time: 2024-04-01 18:49:40 -0400



 Collapse All

### ➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	3.6724	degrees
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	0.24	square miles
PRECIP	Mean Annual Precipitation	39	inches
ROCKDEP	Depth to rock	4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.31	miles per square mile

Parameter Code	Parameter Description	Value	Unit
URBAN	Percentage of basin with urban development	0.144	percent

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [1.0 Percent (0.00138 square miles) Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.24	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	3.6724	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4	feet	4.13	5.21
URBAN	Percent Urban	0.144	percent	0	89

Low-Flow Statistics Parameters [99.0 Percent (0.24 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.24	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	39	inches	35	50.4
STRDEN	Stream Density	1.31	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	4	feet	3.32	5.65
CARBON	Percent Carbonate	0	percent	0	99

Low-Flow Statistics Disclaimers [1.0 Percent (0.00138 square miles) Low Flow Region 1]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [1.0 Percent (0.00138 square miles) Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0165	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	0.0257	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	0.00505	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	0.00859	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	0.018	ft <sup>3</sup> /s

Low-Flow Statistics Disclaimers [99.0 Percent (0.24 square miles) Low Flow Region 2]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [99.0 Percent (0.24 square miles) Low Flow Region 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0148	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	0.0224	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	0.00474	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	0.00742	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	0.0149	ft <sup>3</sup> /s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0148	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	0.0224	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	0.00474	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	0.00743	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	0.0149	ft <sup>3</sup> /s

*Low-Flow Statistics Citations*

**Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)**

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Application Version: 4.19.4

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

TRC\_CALC

1A	B	C	D	E	F	G
2	<b>TRC EVALUATION</b>					
3	Input appropriate values in B4:B8 and E4:E7					
4	0.0143	= Q stream (cfs)		0.5	= CV Daily	
5	0.0032	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)			= Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA_afc = 0.940		1.3.2.iii	WLA_cfc = 0.909
12	PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373		5.1c	LTAMULT_cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc = 0.350		5.1d	LTA_cfc = 0.529
14						
15	Source	Effluent Limit Calculations				
16	PENTOXSD TRG	5.1f	AML_MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG_MON_LIMIT (mg/l) = 0.431		AFC	
18			INST_MAX_LIMIT (mg/l) = 1.411			
	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)				

**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
07G	9246	Trib 09246 of Conewago Creek	0.170	436.00	0.12	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.01	0.000	0.000	0.0	0.00	0.00	20.00	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
Oakbrook	PA0088552	0.0032	0.0032	0.0032	0.000	25.00	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	5.00	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
07G	9246	Trib 09246 of Conewago Creek	0.000	425.00	0.24	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.100	0.00	0.03	0.000	0.000	0.0	0.00	0.00	20.00	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	25.00	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**

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
07G		9246				Trib 09246 of Conewago Creek						
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
<b>Q7-10 Flow</b>												
0.170	0.01	0.00	0.01	.005	0.01225	.282	1.73	6.13	0.04	0.263	21.29	7.00
<b>Q1-10 Flow</b>												
0.170	0.01	0.00	0.01	.005	0.01225	NA	NA	NA	0.03	0.313	21.76	7.00
<b>Q30-10 Flow</b>												
0.170	0.02	0.00	0.02	.005	0.01225	NA	NA	NA	0.05	0.230	21.01	7.00

### WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

**WQM 7.0 Wasteload Allocations**

**SWP Basin**      **Stream Code**                      **Stream Name**  
07G                      9246                      Trib 09246 of Conewago Creek

**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
0.170	Oakbrook	14.49	41.28	14.49	41.28	0	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
0.170	Oakbrook	1.77	8.71	1.77	8.71	0	0

**Dissolved Oxygen Allocations**

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.17	Oakbrook	25	25	8.71	8.71	5	5	0	0

### WQM 7.0 D.O. Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
07G	9246	Trib 09246 of Conewago Creek		
<hr/>				
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
0.170	0.003	21.286	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
1.729	0.282	6.131	0.040	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
7.91	1.166	2.24	0.773	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
7.409	26.709	Owens	5	
<u>Reach Travel Time (days)</u>				
0.263				
	<b>Subreach Results</b>			
	<u>TravTime</u>	<u>CBOD5</u>	<u>NH3-N</u>	<u>D.O.</u>
	(days)	(mg/L)	(mg/L)	(mg/L)
	0.026	7.66	2.20	7.76
	0.053	7.42	2.15	7.95
	0.079	7.18	2.11	8.05
	0.105	6.95	2.07	8.05
	0.132	6.73	2.02	8.05
	0.158	6.51	1.98	8.05
	0.184	6.30	1.94	8.05
	0.210	6.10	1.90	8.05
	0.237	5.91	1.87	8.05
	0.263	5.72	1.83	8.05

**WQM 7.0 Effluent Limits**

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
07G		9246		Trib 09246 of Conewago Creek			
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)
0.170	Oakbrook	PA0088552	0.003	CBOD5	25		
				NH3-N	8.71	17.42	
				Dissolved Oxygen			5