

**Muddy Run Pumped Storage Project and
Conowingo Hydroelectric Project
Conowingo West Eel
Collection Facility, 2025**

FERC Project Numbers 2355 and 405



Prepared for:



Constellation[®]

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Table of Contents

	Page
EXECUTIVE SUMMARY	I
LIST OF ABBREVIATIONS.....	IV
1 INTRODUCTION	1
2 BACKGROUND.....	3
3 METHODS	4
3.1 DESIGN, CONSTRUCTION, AND INSTALLATION OF THE FACILITY	4
3.2 STAFFING.....	4
3.3 MAINTENANCE	4
Pre-season Maintenance	4
Post-season Maintenance	4
3.4 OPERATION.....	4
3.5 DATA COLLECTION.....	4
3.6 JUVENILE EEL TRANSPORT	5
4 RESULTS	7
4.1 JUVENILE EEL COLLECTION AND MORTALITY	7
4.2 JUVENILE EEL BIOLOGICAL DATA	7
4.3 EEL SACRIFICE AND INTERNAL ANALYSIS	8
4.4 SEASONAL VARIABILITY OF EEL COLLECTION	8
4.5 JUVENILE EEL CATCH IN RELATION TO ENVIRONMENTAL FACTORS	9
River Flow.....	9
Lunar Fraction.....	9
Water Temperature	9
Dissolved Oxygen.....	10
4.6 JUVENILE EEL HOLDING AND MORTALITY	10
4.7 JUVENILE EEL TRANSPORT AND MORTALITY.....	10
Mortality.....	12
5 QUALITY ASSURANCE/QUALITY CONTROL ACTIVITIES.....	13
6 CONCLUSIONS AND DISCUSSION	15
7 REFERENCES	17
8 TABLES AND FIGURES	18

List of Appendices

- Appendix A: Method of Aging Eel Otolith, Conowingo West Eel Collection Facility, 2025
- Appendix B: Weekly Biological Data and Environmental Conditions for Conowingo West Eel Collection Facility, 2017-2025
- Appendix C: Fish Health Inspection Report, Conowingo West Eel Collection Facility, 2025
- Appendix D: Chain of Custody Sheets, Conowingo West Eel Collection Facility, 2025
- Appendix E: Agency Comments on Draft 2025 Conowingo West Eel Collection Report, May1-November 1

List of Tables

	Page
Table 3.6-1: Stocking Locations for Juvenile Eel in the Susquehanna River Watershed	18
Table 4.0-1: Number of Juvenile Eels Caught Daily, Conowingo West Eel Collection Facility, 2025	19
Table 4.1-1: Counted Eel Numbers in the 200 Milliliter Subsamples during Days of Volumetric Estimates, Conowingo West Eel Collection Facility, 2025	20
Table 4.2-1: Number of Juvenile Eels Captured with Length and Weight Measurements, Conowingo West Eel Collection Facility, 2025	21
Table 4.2-2: Juvenile Eel Length Frequency, Conowingo West Eel Collection Facility, 2025	22
Table 4.2-3: Juvenile Eel Weight Frequency, Conowingo West Eel Collection Facility, 2025	23
Table 4.2-4: Observed Injuries of Juvenile American Eel, Conowingo West Eel Collection Facility, 2025	24
Table 4.3-1: Sacrificed Eel Data, Conowingo West Eel Collection Facility, 2025	25
Table 4.3-2: Sacrificed Eels Length Frequency with Detailed Info, Conowingo West Eel Collection Facility, 2025	27
Table 4.4-1: Juvenile Eel Collection by Week with Associated Ranks, Conowingo West Eel Collection Facility, 2025.....	28
Table 4.5-1: Daily Average River flows (cfs), USGS 01576000 - Marietta, PA Gage Station, 2025.....	29
Table 4.5-2: Fraction of Moon Illumination, 2025 EST (<i>1.0 equals full moon</i>)	30
Table 4.5-3: Water Temperature (°C) Recorded in the Collection Tank, Conowingo West Eel Collection Facility, 2025.....	31
Table 4.5-4: Dissolved Oxygen (mg/L) Readings from the Control Room (Station 643), Conowingo West Eel Collection Facility, 2025	32
Table 4.6-1: Number of Juvenile American Eel placed in Holding, Conowingo West Eel Collection Facility, 2025	33
Table 4.6-2: Eel Transport and Stocking Data, 2025	34
Table 4.7-1: Detailed Individual Eel Transport and Associated Water Quality Data, 2025	35
Table 4.7-2: Constellation’s Eel Stocking Totals by Location and Year, 2015 - 2025	40
Table 5.0-1: Specified Operating Ranges of Conowingo West Eel Collection Facility, 2025	41
Table 5.0-2: Calibration of Flows (Gallons per Minute), Conowingo West Eel Collection Facility, 2025	42

Table 5.0-3: Quality Control Checks on Volumetric Estimates, Conowingo West Eel
Collection Facility, 2025 43

Table 6.0-1: Summary of Eel Collections and Biological Data, Conowingo West Eel
Collection Facility, 2017-2025 44

List of Figures

	Page
Figure 3.6-1: Sample Location (Stone Run) of American Eel Collected for Wild Health Screening, Conowingo West Eel Collection Facility, 2025	45
Figure 3.6-2: Stone Run, a Tributary of Octoraro Creek used for the Wild Health Screening, Conowingo Dam, 2025	46
Figure 4.1-1: Daily Eel Catch, Conowingo West Eel Collection Facility, 2025	47
Figure 4.2-1: Eel with hemorrhage left Side, Conowingo West Eel Collection Facility, 2025	48
Figure 4.2-2: Eel with a scrape, Conowingo West Eel Collection Facility, 2025	49
Figure 4.2-3: Eel with multiple scrapes, Conowingo West Eel Collection Facility, 2025	50
Figure 4.4-1: Percent of Eels Collected per Week, Conowingo West Eel Collection Facility, 2025	51
Figure 4.5-1: Daily Eel Catch and Daily Average River Flow (cfs, top graph) and Weekly Eel Catch and Weekly Average River Flow (cfs, bottom graph), Conowingo West Eel Collection Facility, 2025	52
Figure 4.5-2: Eel Catch and Lunar Fraction (Daily above, Weekly Avg. below), Conowingo West Eel Collection Facility, 2025 (<i>1.0 Equals Full Moon</i>).....	53
Figure 4.5-3: Eel Catch and Temperature, Conowingo West Eel Collection Facility, 2025	54
Figure 4.5-4: Eel Catch and Dissolved Oxygen, Conowingo West Eel Collection Facility, 2025	54
Figure 4.7-1: Eel Stocking Sites, 2015-2025	55
Figure 4.7-2: Williamsport boat ramp (Site 10) Stocking Site, 2025.....	56
Figure 4.7-3: Fort Hunter Access (Site 6) Stocking Site, 2025.....	57
Figure 4.7-4: Eppers boat ramp (Site 4) Stocking Site, 2025	58
Figure 4.7-5: City Island boat ramp (Site 12) Stocking Site, 2025	59
Figure 4.7-6: Conowingo Creek boat ramp (Site 1) Stocking Site, 2025	60
Figure 5.0-1: Transition from Riprap Shoreline to Ramp Entrance, Conowingo West Eel Collection Facility, 2025	61

Executive Summary

Constellation Energy Generation, LLC (Constellation) owns and operates the Muddy Run Pumped Storage Project (MRPSP; FERC Project Number 2355) and Conowingo Hydroelectric Project (Conowingo; FERC Project Number 405) along the Susquehanna River in Pennsylvania (both MRPSP and Conowingo) and Maryland (Conowingo only). Both projects are licensed by the Federal Energy Regulatory Commission (FERC).

The MRPSP License incorporates the Pennsylvania Department of Environmental Protection (PA DEP) 401 Water Quality Certification (WQC), which includes an American Eel Passage Plan (Eel Plan) that requires Constellation to trap, transport, and stock American Eel *Anguilla rostrata* in the Susquehanna River. The Eel Plan covers operation of the Octoraro Creek Eel Collection Facility (OCEF) and the Conowingo West Eel Collection Facility (CWECF)¹.

The CWECF is located on the Susquehanna River immediately downstream of the West Fish Lift (WFL) at Conowingo where a previous United States Fish and Wildlife Service (USFWS) eel collection facility was located from 2005 through 2016. This site was approved by PA DEP and other members of the Eel Passage Advisory Group (EPAG). Constellation designed, installed, and began operation of the CWECF in 2017 and has operated this facility each year through 2025. American Eels collected at CWECF and those transported from OCEF are held and then transported and released at designated stocking locations in the Susquehanna River watershed as approved by PA DEP, EPAG, and Maryland Department of the Environment (MDE).

This report discusses the results of the operation of the CWECF during the period May 1 to November 1, 2025². Specifically, the objectives of the 2025 collection season were to³:

- Operate, maintain, and monitor the eel collection and holding facility daily from May 1 until mean daily water temperature was 14° C or less for three consecutive days or November 1, whichever occurred first.
- Transport American Eel collected at the CWECF and OCEF to designated stocking points in the Susquehanna River watershed.
- Document any modifications made to the CWECF during the season to improve functionality.

¹ Note the Conowingo Hydroelectric Project (P-405) license issued on March 19, 2021, was vacated by a DC Circuit Court Decision on December 22, 2022. The operation of the Conowingo Eel Facility is therefore governed under the Muddy Run License (P-2355) issued December 22, 2015. During the August 17, 2023, EPAG call, the Resource Agencies requested that Constellation run the Conowingo Eel Facility longer than the May 1 to September 15 season specified in the Muddy Run License.

² The report dated November 7, 2025, and filed with FERC on January 15, 2025, contained data from May 1 to September 15, 2025. This report has been revised to include data from September 16 to November 1, 2025. This report will not be filed with FERC but will be sent to the Resource Agencies.

³ These are the objectives of the FOMP which is no longer required under the vacated Conowingo Hydroelectric Project (P-405) license issued on March 19, 2021. This report includes data collected from September 16 until November 1, 2025.

The CWECF was placed in service on April 30, 2025, and operated a total of 185 consecutive days from May 1 to November 1. A total of 363,303 juvenile American Eel was collected at the CWECF. Juvenile eel numbers greater than 10,000 individuals were recorded on seven of the 185 collection days (3.8%), and juvenile eel numbers greater than 1,000 individuals were recorded on 69 of the 185 collection days (37.3%). The greatest peak daily collection of 23,005 juvenile eels occurred on July 14, 2025, which was 6.3% of the total season catch. The peak period of daily eels collected occurred from July 10 to 17 (eight days) and yielded 34.3% (124,711 of the 363,303 individuals) of the total eels collected in 2025. The four peak periods of eel collections, totaling 21 days, accounted for 61.9% (224,763 of the 363,303 individuals) of the collection season. Volumetric estimation methodology was utilized on 73 of the 185 collection days (39.5%) this year, which can be used as a metric to understand the proportion of days when daily eel collections were high. Out of the 185 days, five days were over capacity for the collection tank. On one of those days a double transport occurred, on another day a check occurred, and it was determined a double transport did not need to occur.

Biweekly subsamples for biological data were recorded from May 1 until September 15 as a condition of the PA DEP 401 WQC for the MRPS Eel Plan. Lengths, weights, and condition factors (a metric to assess injury) were recorded from biweekly subsamples on 943 juvenile eels. Lengths ranged from 65 to 173 millimeters (mm) with an average length of 115.9 mm. The average weight of the subsampled eels was 1.6 grams (g) and ranged from 0.1 to 4.6 g. Only 14 of the 943 eels (1.5%) showed any form of external injury (condition factor) such as fungus, hemorrhage, laceration, scrape, or lesion.

Nearly 11% (99 of 943) of the eels sampled were examined internally for presence of the eel swim bladder parasite *Anguillicoloides crassus*. Parasites were found in 53 (53.5%) of the 99 examined eels. The number of parasites per eel ranged from one to four. Niney- seven of the 99 sacrificed eels were examined for age, and it was determined that the average age was 2.43 years old (range 1-6 years old).

CWECF collected a total of 363,303 eels in 2025 with 187 (0.05%) mortalities found in the collection tank. An additional 90 mortalities (0.06%) occurred in the holding tanks over the entire season. A total of 8,040 juvenile eels were removed by SRBC for an “Eels in the Classroom Program” or by PFBC for the NFWF mussel grant.

Eels were held no longer than one week prior to transport from the CWECF to designated points in the Susquehanna River watershed. A total combined eels from Octoraro Creek Eel Facility and CWECF totaling 456,723 juvenile eels were transported upstream, with a total of 456,707 juvenile eels being released at predetermined locations. Williamsport boat ramp (Site 10) was stocked with 74,955 American Eels. City Island boat ramp (Site 12) received a stocking of 126,832 juvenile eels. Etters boat ramp (Site 4) was stocked with 126,907 juvenile eels and Fort Hunter boat ramp (Site 6) received 126,740 juvenile eels. Conowingo Creek boat ramp (Site 1) was stocked with 1,273 juvenile eels. A total of 16 juvenile eels died during the 122 transport trips from the CWECF in 2025. A daily transport protocol was used from June 26 to October 11 due to elevated water temperatures.

Cleaning and calibration of the CWECF was performed weekly. Scrubbing of the collection tank and the screened drain occurred daily after eels were removed. The holding tanks and overflow drains were scrubbed every time the eels were removed for transport. Volumetric estimates of eels were

compared against actual counts twice during the season, and it was determined that the volumetric estimation method provided accurate counts.

List of Abbreviations

Agencies/Groups

Conowingo	Conowingo Hydroelectric Project
CWECF	Conowingo West Eel Collection Facility
Eel Plan	American Eel Passage Plan
EPAG	Eel Passage Advisory Group
EPRP	American Eel Passage and Restoration Plan
CONSTELLATION	Constellation Generation Company, LLC
FERC	Federal Energy Regulatory Commission
FOMP	Fishway Operation and Maintenance Plan
MDE	Maryland Department of the Environment
MRPSP	Muddy Run Pumped Storage Project
OCECF	Octoraro Creek Eel Collection Facility
PA DEP	Pennsylvania Department of Environmental Protection
SRBC	Susquehanna River Basin Commission
SUNY	The State University of New York
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
WFL	West Fish Lift
WQC	Water Quality Certification

Units of Measure

C	Celsius
cfs	cubic feet per second
DO	dissolved oxygen
g	gram
gpm	gallons per minute
L	Liter
mg/L	milligrams per liter
mL	milliliter
mm	millimeter

1 Introduction

Constellation Energy Generation, LLC (Constellation) owns and operates the Muddy Run Pumped Storage Project (MRPSP; FERC Project Number 2355) and the Conowingo Hydroelectric Project (Conowingo; FERC Project Number 405) along the Susquehanna River in Pennsylvania (both MRPSP and Conowingo) and Maryland (Conowingo only). Both projects are licensed by the Federal Energy Regulatory Commission (FERC).

The MRPSP License includes the Pennsylvania Department of Environmental Protection (PA DEP) 401 Water Quality Certification (WQC), which includes an American Eel Passage Plan (Eel Plan) that requires Constellation to trap, transport, and stock American Eel *Anguilla rostrata* in the Susquehanna River. The Eel Plan covers operation of the Octoraro Creek Eel Collection Facility (OCEF) and the Conowingo West Eel Collection Facility (CWECF⁴). The PA DEP 401 WQC and Eel Plan requires Constellation to begin operating the CWECF by May 1, 2017, and to continue to operate each year from May 1 through September 15.

The CWECF is located on the Susquehanna River immediately downstream of the West Fish Lift (WFL) where a previous United States Fish and Wildlife Service (USFWS) eel collection facility was located from 2005 through 2016. This site was approved by PA DEP and other members of the Eel Passage Advisory Group (EPAG)⁵. Constellation designed, installed, and began operation of the CWECF in 2017 and has operated this facility each year through 2025. American Eel collected at CWECF and those collected at and transported from OCEF are held and then transported and released at designated stocking locations in the Susquehanna River watershed as approved by PA DEP, EPAG, and Maryland Department of the Environment (MDE).

This report discusses the results of the operation of the CWECF during the period May 1 to November 1, 2025⁶. Specifically, the objectives of the 2025 collection season were to⁷:

- Operate, maintain, and monitor the eel collection and holding facility daily from May 1 until the mean daily water temperature was 14° C or less for three consecutive days or November 1, whichever occurs first.

⁴ Note the Conowingo Hydroelectric Project (P-405) license issued on March 19, 2021, was vacated by a DC Circuit Court Decision on December 22, 2022. The operation of the Conowingo Eel Facility is therefore governed under the Muddy Run License (P-2355) issued December 22, 2015. During the August 17, 2023, EPAG call, the Resource Agencies requested that Constellation run the Conowingo Eel Facility longer than the May 1 to September 15 season specified in the Muddy Run License.

⁵ EPAG members include PA DEP, USFWS, Pennsylvania Fish and Boat Commission (PFBC), Maryland Department of Natural Resources (MDNR), Susquehanna River Basin Commission (SRBC), and Constellation. MDE has been invited to participate in the EPAG since March 19, 2021.

⁶ The report dated November 7, 2025, and filed with FERC on January 16, 2024, contained data from May 1 to September 15, 2025. This report has been revised to include data from September 16 to November 1, 2025. This report was sent to the Resource Agencies for review and comment and is shown in Appendix E. This report will not be filed with FERC but will be sent to the Resource Agencies.

⁷ These are the objectives of the FOMP which is no longer required under the vacated Conowingo Hydroelectric Project (P-405) license issued on March 19, 2021. This revision report includes data collected from September 16 until November 1, 2025.

- Transport American Eel collected at the CWECF and OCEF to designated stocking points in the Susquehanna River watershed.
- Document any modifications made to the CWECF during the season to improve functionality.

2 Background

The American Eel is a catadromous species of eel in North America. Catadromous describes a migratory life cycle in which the eels hatched in the ocean, migrate to and mature in freshwater, and then return to the sea to spawn. This panmictic fish has a coastal range that extends as far north as Greenland and as far south as Brazil. Throughout their life cycle, the American Eel occupies a variety of habitats and goes through multiple physical changes known as metamorphoses. The American Eel begins its life in the Sargasso Sea. The larval eels, known as leptocephali, are transparent and leaf-shaped and are transported to the eastern seaboard of North America via ocean currents, which takes approximately one year. By the time the larvae reach the coast, they have developed fins and have taken on the shape of an adult eel ([Hedgepeth 1983](#)). The glass eel is clear and is usually less than 25 millimeters (mm), and when these eels start to become pigmented, they are considered juvenile eels.

USFWS trapping efforts performed on the west shore on the Susquehanna River from 2005 through 2016 below Conowingo Dam's WFL were in the same vicinity as the CWECF ([Normandeau Associates 2018, 2019, 2020, 2021, 2022, 2023, 2024, and 2025](#)). Their efforts showed that the bulk of the juvenile eel migration occurs from May to September with most eels collected in June and July ([Minkkinen and Park 2014](#) and personal communication with USFWS, Christopher Reily, October 27, 2016).

The goal of the CWECF is to achieve maximum collections of American Eel while maintaining a minimum combined annual survival rate of 95% for juvenile eels during the trapping, collection, holding, and transport processes. Constellation began to operate the CWECF in 2017, and through the 2025 season 2,280,322 American Eel have been collected, the majority of which were transported upstream to stocking locations, which has contributed to the restoration of the species throughout the watershed. Although there are three other large, FERC-regulated hydroelectric facilities located on the Susquehanna River upstream of Conowingo and MRPSP, which are collectively operated by two other private utility firms, Constellation is the sole financial contributor to this program.

3 Methods

3.1 Design, Construction, and Installation of the Facility

The 2025 CWECF was identical to the one used since 2017 ([Normandeau Associates, Inc. 2018, 2019, 2020, 2021, 2022, 2023, and 2024](#)). Complete designs descriptions can be found in Section 3 of the [Normandeau Associates, Inc. 2018 and 2019](#) reports and in the American Eel Passage and Restoration Plan (EPRP).

3.2 Staffing

Trained and qualified individuals operated the CWECF throughout the eel passage season. A supervising biologist oversaw all operations with the assistance of biologists and biological technicians. Daily CWECF monitoring was completed by a crew of at least two trained personnel. All personnel had reviewed and understood the FOMP.

3.3 Maintenance

Pre-season Maintenance

On April 25, 2025, all CWECF components, including the eel ramp, collection, overflow, and holding tanks, as well as the associated water lines, were installed and tested. All components were in working order before the CWECF was placed into service on April 30, 2025.

Post-season Maintenance

After the season ended on November 1, 2025, the CWECF components were dismantled, cleaned, and stored. The collection, overflow, and holding tanks, as well as the water lines were stored appropriately for the winter period.

3.4 Operation

Throughout the 2025 season, the CWECF operating crew notified pertinent Constellation personnel of their arrival each day, conducted a pre-job safety briefing, informed the Constellation personnel that CWECF work will commence. Additionally, Constellation personnel reported any issues that had been documented since completion of the last CWECF check. When daily eel sampling was complete, the CWECF operating crew notified pertinent Constellation personnel of any major changes to the facility and reported that the work was completed for the day.

3.5 Data Collection

Sample data, including date, time of sample, weather, eel counts, flow readings, water temperature, and dissolved oxygen (DO) were recorded daily. The data were verified, tabulated, and entered in an electronic format each week as part of a quality control and quality assurance protocol. Environmental conditions, such as river flow, lunar fraction, and weather conditions were also recorded, verified, and entered in an electronic format. Rainfall amounts are not taken or recorded at the CWECF.

The number of eels collected daily were enumerated by either actual counts or volumetric estimates. Volumetric estimates were performed using the same methods used in 2017-2024 and described in the EPRP ([Normandeau Associates, Inc. 2018, 2019, 2020, 2021 2022, and 2023](#)).

Eels being used for either biological data collection (up to 25 individuals) or for a 200 milliliter (mL) volumetric estimate sample were placed into an anesthetic solution. The anesthetic solution was created by adding two drops of clove oil into one liter (L) of ambient water in a 19 L bucket. The eels were placed in this solution until the eels reached a stage of deep sedation, and the exposure time varied due to water temperature and the time it took to process the anesthetized eels. After either the biological data were collected from the eels or the actual count of eels was tallied from the 200 mL subsample for the volumetric estimate, the eels were immediately placed into buckets of ambient river water to recover from sedation. The eels remained in the ambient water until they fully recovered and were actively swimming in the bucket.

Length and weight measurements, along with condition factors, were recorded biweekly from a maximum of 25 individuals (when available) from May 1 through September 15 to satisfy the PA DEP 401 WQC conditions for the MRPSP. Eels were measured and weighed after being anesthetized. Once per week, a portion of these eels were sacrificed to be later examined for the presence of the swim bladder parasite *Anguillicoloides crassus* and for age analysis. Age analysis methodology is described in [Appendix A](#).

Tank flow readings and water quality data (temperature and DO) were recorded daily from the control panel readouts for the collection tank and any holding tank(s) in service. The main flow to the entire CWECF was also recorded daily. The ambient DO of the river was obtained from the Conowingo Control Room upon arrival to the station prior to starting the daily work from Station 643 (0.6 miles downstream of Conowingo Dam) until November 1, 2025.

The hydroelectric generation was recorded daily as the number of turbines in operation upon arrival to the station on the daily field sheet. A turbine prioritization schedule is followed when the Conowingo East and West Fish Lifts operate in the spring (April 1 – June 10). The substrate below the ramp entrance is always wet and provides attraction for eels 24 hours per day when the CWECF is in operation.

3.6 Juvenile Eel Transport

A wild health screening was required by the PA DEP 401 WQC for the MRPSP prior to the transport of eels upstream into the Susquehanna River watershed, which ensures that eels are free of undesirable pathogens. Juvenile eels were collected by a backpack electrofishing unit on March 18, 2025 from Stone Run, which is a tributary of Octoraro Creek, and sent to the USFWS Lamar Fish Health Center (Lamar, PA) for examination ([Figures 3.6-1](#) and [3.6-2](#)). After the results of the wild health screening were received and reviewed by the EPAG and MDE, eels were approved to be stocked in the designated locations.

All juvenile eels captured from the CWECF, along with eels collected at the OCEF, were held for no longer than one week prior to transportation. All eels were transported and released at designated locations in the Susquehanna River watershed ([Table 3.6-1](#)).

When fewer than 150 eels were collected during a sampling event, transportation occurred using aerated 19-L buckets with lids which contained a maximum amount of that would maintain escapement prevention, with ≤ 50 eels in each bucket. When daily collection of juvenile eels was ≥ 150 but less than 2,500 individuals, a small enclosed transport tank (250 L) with a supplemental oxygen supply was used to transport eels to designated locations ([Normandeau Associates, Inc. 2021, 2022, 2023, and 2024](#)). When $> 2,500$ eels needed to be transported, a custom-made transport truck equipped with a 2,500-liter

tank and supplemental oxygen supply was used to deliver eels efficiently and safely to designated stocking locations ([Normandeau Associates, Inc. 2021, 2022, 2023, and 2024](#)).

4 Results

The CWECF commenced operation on April 30, 2025, and operated continuously until November 1, 2025. The end of eel collection is defined as when the water temperature is 14° C or less for three consecutive days or November 1, whichever occurs first, as described in the new MDE settlement agreement and the future Conowingo FERC License. This facility operated for 185 days and collected a total of 363,303 juvenile eels during the 2025 season ([Table 4.0-1](#)). Biweekly subsamples of biological data were collected from May 1 until September 15 as required by the PA DEP 401 WQC for the MRPSP Eel Plan.

4.1 Juvenile Eel Collection and Mortality

A total of 363,303 juvenile eels were captured at the CWECF during the 2025 season. Counts (either estimated or actual) were recorded daily. Volumetric estimates were taken from the CWECF on 73 of the 185 days of operation (39.5% of the season), which can be used as a metric to understand how frequently the daily abundance of eels at the CWECF was high ([Table 4.1-1](#)). The number of eels in the 200 mL subsample varied daily throughout the season, ranging from 87 to 217 eels ([Table 4.1-1](#)). This substantial range indicated that the average size of eels collected at the CWECF at any given time changed (i.e., smaller eels displace less water) periodically, which could be caused by environmental or other factors. The average volumetric estimate in the 200 mL subsample was 142.7 eels with a median of 144 eels.

The highest single-day collection of 23,005 juvenile eels occurred on July 14 when 6.3% of the total number of eels collected in 2025 were captured ([Table 4.0-1](#) and [Figure 4.1-1](#)). For the 2025 season, 69 of the 185 days (37.3%) of daily monitoring checks recorded juvenile eel numbers > 1,000 individuals, and seven days (3.8%) of the 185 daily monitoring checks recorded juvenile eel numbers > 10,000 individuals ([Table 4.0-1](#)). Out of the 185 days, five days were over capacity for the collection tank. On one of those days a double transport occurred, on another day a check occurred, and it was determined a double transport did not need to occur.

Of the 363,303 juvenile eels that were captured at the CWECF, 187 eels died in the collection tank (0.05% mortality). All mortalities from the collection tank were recorded over the course of the season and were not attributed to an identifiable cause, such as low DO or loss of water flow to collection tank.

4.2 Juvenile Eel Biological Data

Biological data (length, weight, and condition factors) were recorded from biweekly subsamples from May 1 to September 15. A total of 943 juvenile eels (0.26% of the season catch) were evaluated from these biweekly subsamples during 40 of the 138 sample days during this period ([Table 4.2-1](#)).

The average length of juvenile eels was 115.9 mm, with a median size of 114.0 mm ([Table 4.2-1](#)). The length of juvenile eels ranged from 65 - 175 mm. One hundred and forty-two juvenile eels measured less than 100 mm ([Table 4.2-2](#)). The average weight of the juvenile eels was 1.6 grams (g), with a median weight of 1.5 g ([Table 4.2-1](#)). The weight of juvenile eels ranged from 0.1 – 4.9 g ([Table 4.2-1](#)). Over 93.1% of the 943 juvenile eels weighed between 0.5 - 3.5 g ([Table 4.2-3](#)).

Eels from each biweekly subsample were examined for external injuries. Individual condition factors, date, and detailed biological data for these are shown on [Table 4.2-4](#). External injuries were noted on 1.5%

(14 of 943 individuals) of the examined eels. All injuries were coded as fungus, laceration, or hemorrhage. Nine eels had fungus, four eels were observed with lacerations or scrape, and one eel was observed with a hemorrhage (bruise included). Photos of injuries are shown in [Figures 4.2-1](#) through [4.2-3](#).

4.3 Eel Sacrifice and Internal Analysis

From each biweekly subsample from May 1 to September 15, a portion of juvenile eels were retained and inspected for the presence of the swim bladder parasite and examined for age determination. Nearly 11% (99 of the 943 individuals) were dissected for the parasites and later examined for age ([Tables 4.3-1 and 4.3-2](#)).

Of the 99 juvenile eels that were inspected for the parasite, 46 (46.5%) eels did not contain the swim bladder parasite ([Table 4.3-1](#) and [Normandeau Associates, Inc. 2021, 2022, 2023, and 2024](#)). The other 53 (53.5%) eels contained the swim bladder parasite. The infected eels contained one, two, three, or four parasites per individual (24, 17, 6, and 6 eels, respectively). [Table 4.3-2](#) provides detailed information by length frequency (five mm interval groups) of the 99 sacrificed eels with information including weight, age, and number that were infected by the parasite. The average length of a sacrificed eels was 120.9 mm (range 77 - 175 mm), average weight of 1.9 g (range 0.3 - 4.6 g), and average number of parasites was 1.01 (range 0 - 4, [Table 4.3-1](#)).

The age of the juvenile eels was determined from 97 eels, two additional otoliths could not be read for aging. The 97 juvenile eels analyzed for age were determined to be one to six years old (average age = 2.43 [Table 4.3-1](#)). Detailed information of the 97 aged eels is shown on [Table 4.3-1](#) and [Appendix A](#). Of the 97 to be aged eels, 27 eels (27.8%) were aged 1-years-old, 24 eels (24.7%) were aged 2-years-old, 30 eels (30.9%) were aged 3-years-old, 10 eels (10.3%) were aged 4-years-old, 2 eels (2.0%) were aged 5-years-old, and 3 eels were aged 6-years-old (3.1%). Age agreement between Normandeau biologists occurred 100% (97 of the 97 eels) of the time ([Appendix A](#)). The average length of the aged eels was 118.9 (range 62-173) mm, average weight of 1.9 (range 0.2-4.5) g, and average number of parasites 0.8 (range 0-4). Length frequency of aged eels with weight, parasites, and age data are found on [Table 4.3-2](#).

4.4 Seasonal Variability of Eel Collection

The greatest percentage of juvenile eels was collected during Week 12 (July 13- 19) when the facility collected 26.64% (96,769 individuals) of the season total ([Table 4.4-1](#) and [Figure 4.4-1](#)). The second highest percentage of juvenile eels was collected during Week 13 (July 20-26) when the CWECF collected 12.35% (44,856 individuals) of the season total. Week 2 (May 4-10) and Week 11 (July 6-12) were the only other weeks during the 2025 season when > 10% of the season total (21.31% combined) were collected. Weeks 11, 12 and 13 combined accounted for most of the juvenile eels caught in 2025 (49.90%, 181,302 individuals, [Table 4.4-1](#) and [Figure 4.4-1](#)).

Weeks 1, 5, 6, 8, and 19-27 of sampling collected no greater than 1.0% of the season total, accounting for 3.2% (11,677 individuals) combined ([Table 4.4-1](#) and [Figure 4.4-1](#)).

During the season, there was a large peak period, two medium peak periods, and a small peak period. The largest peak (July 10-17, 8 days) yielded 34.3% (124,711 of the 360,303) juvenile eels ([Table 4.0-1](#)). The two medium peak periods occurred from June 26-June 30 (5 days, 11.0% or 40,023 individuals) and from July 20-23 (4 days, 8.8% or 31,897 individuals). The small peak period occurred from May 4-7 (4

days, 7.7% or 28,132 individuals). When the four peaks are combined, 61.9% (224,763 individuals) of the juvenile eels collected at this facility occurred during these 21 days or 11.4% of the sampling days.

4.5 Juvenile Eel Catch in Relation to Environmental Factors

[Appendix B](#) includes weekly averages of juvenile eel capture, river flow, lunar fraction, water temperature, and tailrace DO, which are further described in the subsections below.

River Flow

River flow and juvenile eel catch did not appear to have a correlation during the 2025 season. Daily average river flow was taken from the United States Geological Survey (USGS) 01576000 Susquehanna River at Marietta, PA gage located one mile downstream of Marietta which is upstream of Conowingo Dam ([Table 4.5-1](#)). The highest daily average river flow value per USGS gage station occurred on May 9 and 10, 2025 (172,000 cubic feet per sec, (cfs), ([Tables 4.0-1 and 4.5-1](#)). The lowest daily average river flow value per the USGS gage station occurred on September 15, 2025 (4,640 cfs). The majority of the American Eel captured at the CWECF in 2025 occurred when average river flow values were between 19,000-53,000 cfs but low collection of eels also occurred during this period ([Figure 4.5-1](#)). The variation of eel collection abundance during the season could not be explained by river flow.

Lunar Fraction

The lunar phase was assessed by examining the fraction of the visible lunar disk illuminated by the sun each night (lunar fraction) during the 2025 operational period. Full moon is equal to a lunar fraction of 1.0, and new moon is equal to a lunar fraction of 0.0. Because anguillid eels are photophobic, it is possible that their migratory behavior can change throughout any given month based on the lunar phase. However, juvenile eel catch did not appear to be strongly correlated with lunar fraction during the 2025 season. The largest peak (July 10- 17) of 124,711 eels occurred just after a full moon period in Week 12 ([Table 4.0-1](#), [Figure 4.5-2](#), and [Appendix B](#)). The medium peak period that occurred from June 26-June 30 coincided with a new moon period, but the other medium peak period (July 20-23) occurred just prior to a new moon period. The small peak period (May 4-7) occurred just prior to a full moon period. The lowest catches of the 2025 season occurred during the new moon period in June, July, August, and September but an increase in eel catches occurred during the new moon periods in May and September ([Table 4.5-2](#) and [Figure 4.5-2](#), [Date and Time Website 2025](#)). Typically, the lower illuminance during lower lunar fraction periods, (new moon) has been associated with increases in eel catch at eel traps ([Welsh et al. 2015](#), and [Schmidt et al. 2009](#)), but peak periods of eel collection at the CWECF occurred over a wide range of lunar fraction.

Water Temperature

The water temperature consistently reached 20.0° C or greater on June 5, 2025. By this time, CWECF collected nearly 60,000 (16.5% of the season total; [Tables 4.0-1 and 4.5-3](#)). Over the course of the season, the water temperature ranged from a high of 30.8° C in late July to a low of 16.1° C on November 1 ([Tables 4.0-1 and 4.5-3](#)). Water temperature during the 2025 season was $\geq 25.0^{\circ}$ C for 105 days from June 24, 2025 to October 4 and October 7 and 8 during this time 287,097 eels (79.0% of the season total) were captured ([Table 4.5-3](#) and [Figure 4.5-4](#)).

Dissolved Oxygen

Tailrace DO and eel collection numbers did not appear to be correlated this season. The DO was obtained from the Conowingo Dam Control Room upon arrival at the station prior to starting the daily work, which is taken from Station 643. Starting November 1 to the end of season the USGS Darlington gauge was used for DO. The attraction flow from the CWECF has additional aeration and diffused compressed oxygen supplied to each of the enabled tanks for most of the season, therefore no relationship between eel collection and DO values could be derived. Daily DO values ranged between 6.28 and 10.04 milligrams per Liter (mg/L) and are presented in [Table 4.5-4](#) and displayed in [Figure 4.5-4](#).

4.6 Juvenile Eel Holding and Mortality

Of the 465,148 juvenile eels that were captured at the CWECF and OCEF, 138,896 eels were held in holding tank(s) prior to being transported upriver, which equates to nearly 30.4% of the eels captured over the season ([Table 4.6-1](#)). Eels were placed into holding tanks for 58 days from May 1 until June 19, 2025, and October 11-27, 2025. During all other days of operation, eels were not held because they were transported the same day as being removed from the collection tank ([Table 4.6-1](#)). Either one or two of the three holding tanks at the CWECF were used during the 2025 eel season.

Eels were typically held in one holding tank during the 2025 season unless the number of eels held was greater than 12,500 eels. When eel holding numbers were greater than 12,500, eels were placed into Holding Tanks 1 and 2. The capacity of a holding tank is approximately 17,000 eels, but only 12,500 eels can be placed into each side of the large transport tank. When eels are placed into a holding tank, that tank is in service, and the water quality and flow meter alarms are enabled. Holding Tank 3 was used to supplement and maintain the total attraction flow of the CWECF at approximately 70 gallons per minute (gpm). Although water was continuously running through Holding Tank 3, it was not considered to be in-service since no eels were ever held in that tank, so the alarms were disabled for the duration of the season. All water used at the CWECF is passed through a tank and is drained into the overflow tank, all of which is used as the total attraction flow at the entrance of the ramp. The spray bar and scent line are discharged onto the ramp and used to attract eels up the ramp substrate.

All holding tanks are identical size and shape with the exact screen overflow box drain, two-inch fill line, oxygen micro pore diffuser, fine pore diffuser for aeration, and supply water. One oxygen supply manifold supplied from one oxygen bottle is split between the collection tank and Holding Tank 1, while another oxygen supply manifold and a separate oxygen bottle is split between Holding Tanks 2 and 3. Slight differences (flow and DO) were noted between the holding tanks, when two tanks were in-service due to separate individual water feed pipes to each tank and separate oxygen supply systems.

Juvenile eels that were captured in the CWECF, plus any eels collected at the OCEF, that were not immediately transported were held for no longer than one week prior to transportation. A total of 90 juvenile eels (0.06% of the held eel total) died in holding ([Table 4.6-2](#)).

4.7 Juvenile Eel Transport and Mortality

[Table 4.7-1](#) includes detailed information of transport and mortality data.

On March 18, 2025, 60 juvenile eels less than 200 mm in length were collected via backpack electrofishing from Stone Run, which is a tributary of the Octoraro Creek near Richardsmere in Cecil

County, MD. All 60 of the juvenile eels were used to provide an adequate sample for health screening, which showed that no bacterial or viral pathogens of concern were detected. The results of The Fish Health Inspection Report provided authorization to transport and stock eels upstream of Conowingo Dam and is presented in [Appendix C](#).

A total of 7,400 eels were supplied to PFBC for the NFWF mussel grant from June 2 through July 1, 2025. Also, a total of 640 eels were supplied to SRBC for the “Eels in the Classroom” program from August 25 through September 9, 2025. The chain of custody sheet for these events is in [Appendix D](#), which relinquishes Constellation’s responsibility for these eels.

All transported eels were released at designated locations in the Susquehanna River watershed ([Table 3.6-1](#) and [Figure 4.7-1](#)). A total of 456,723 juvenile eels were transported upstream, including eels collected at OCEF ([Tables 4.6-2](#) and [4.7-1](#)). Daily transport occurred from June 20 to October 10, 2025, and between October 29 to November 1. Biweekly transport occurred prior to and between daily transport in June and between October 11-28. The last transport occurred on November 1, 2025.

Eels were transported to Williamsport boat launch, Etters boat ramp, Fort Hunter Access, City Island boat ramp, and Conowingo Creek boat ramp ([Table 3.6-1](#)). Total elapsed time of transport from the holding facility at Conowingo Dam to each stocking location varied between trips. Eel transport from the CWECF to Williamsport (Site 10), was completed in approximately three hours and thirty minutes (± 30 minutes). Eel transport from the CWECF to Fort Hunter Access (Site 6), was completed in approximately two hours and fifteen minutes (± 30 minutes). Eel transport from the CWECF to City Island boat launch (Site 12) and Etter boat ramp (Site 4), were completed in approximately two hours (± 30 minutes). Eel transport from the CWECF to Conowingo Creek boat launch (Site 1), was completed in approximately thirty minutes (± 10 minutes).

Of the 74,956 eels that were transported to Williamsport (Site 10), 74,955 eels were stocked ([Tables 4.6-2](#) and [4.7-2](#) and [Figure 4.7-2](#)). This location was stocked nine times from May 6 to June 24, 2025. Detailed data from each of the transport is found on [Table 4.7-1](#).

Of the 126,751 eels that were transported to Fort Hunter Access (Site 6), 126,740 eels were stocked ([Tables 4.6-2](#) and [4.7-2](#) and [Figure 4.7-3](#)). This location was stocked 30 times from June 27 to October 23. Detailed data from each of the transport are found on [Table 4.7-1](#).

Of the 126,836 eels that were transported to City Island boat ramp (Site 12), 126,832 eels were stocked ([Tables 4.6-2](#) and [4.7-2](#) and [Figure 4.7-5](#)). This location was stocked 27 times from June 26 to October 21. Detailed data from each of the transport are found on [Table 4.7-1](#).

Of the 126,907 eels that were transported to Etters boat ramp (Site 4), 126,907 eels were stocked ([Tables 4.6-2](#) and [4.7-2](#) and [Figure 4.7-4](#)). This location was stocked 27 times from June 19 to October 28. Detailed data from each of the transport are found on [Table 4.7-1](#).

Of the 1,273 eels that were transported to Conowingo Creek boat ramp (Site 1), 1,273 eels were stocked ([Tables 4.6-2](#) and [4.7-2](#) and [Figure 4.7-6](#)). This location was stocked 29 times from September 6 to November 1. Detailed data from each of the transport are found on [Table 4.7-1](#).

Mortality

Mortality during the 122 transport trips from the CWECF at Conowingo Dam totaled 16 eels (<0.001% [Table 4.6-2](#)). One eel died (<0.001%) during transports from the CWECF to Williamsport (Site 10). Zero eels died (0%) during transports from the CWECF to Etters boat launch (Site 4) and to Conowingo Creek boat launch (Site 1). Four eels died (0.003%) during transports from the CWECF to City Island boat launch (Site 12). Eleven eels died (0.009%) during transports from the CWECF to Fort Hunter boat launch (Site 6).

5 Quality Assurance/Quality Control Activities

The CWECF required oversight to ensure its reliability and effectiveness. The area below the ramp entrance was covered with a shade cloth to approximately the normal high-water tailrace elevation to protect the juvenile eels ascending the attraction flow over or through the rip-rap shoreline. The area below the normal high-water line (full generation tailrace level) was not covered with a shade cloth, as covering this area may impede eels that were free swimming in the tailrace from finding the attraction flow of the CWECF, and possibly trap other organisms such as fish. Small areas had to be filled in or secured to keep small birds from climbing under the cloth periodically during the season. The shade cloth over the riprap on the shoreline below the entrance of the ramp was a major help in deterring birds and animals from preying on juvenile eels as they ascended the wetted substrate. The entire ramp was covered with a sheet of aluminum to protect the juvenile eels while climbing.

The transition from the riprap to the ramp entrance was inspected periodically to ensure a smooth transition for eels climbing the substrate. The transition of the riprap to the ramp was photographed at the beginning and the end of the season, the photos are presented in [Figure 5.0-1](#).

The area over the collection tank, holding tanks, and hoses is partially shaded by a scaffold frame and shade cloth from May 1 until mid-July. Prior to the construction of the new eel shade structure the holding tanks 2 and 3 had to be removed for construction access. The construction of the permanent shade structure was completed in early September. For the duration of the season all tanks were covered with a sheet of Lexan with weather stripping attached to prevent large-scale insect hatches from clogging the screened drains. No indications were observed of animals attempting to enter any of the tanks during the season.

The control panel of the CWECF provides an instantaneous readout of DO and water temperature and is connected to the flow meters for all the tanks and fill lines. When a one-minute average was outside the range of specifications, an alarm would be sent to the control room, followed ten minutes later by an alarm sent to Normandeau via text or e-mail message. The alarm to the control room was a general alarm but the alarm to Normandeau was a detailed message stating the cause of the alarm. Conowingo operations handled most of the alarms with guidance from Normandeau. Supplemental aeration from the bubblers and the compressed oxygen diffusers were necessary during times of low DO levels in the water supply line from the forebay. Periodically throughout the season, low DO alarms did occur. Slight adjustments were made to the oxygen management system to increase oxygen concentration to resolve this issue, or an empty oxygen bottle was exchanged. No mechanical or physical repairs to the CWECF ramp or operation were needed during the 2025 passage season.

The total attraction flow of the CWECF varied throughout the season dependent upon which tanks were in-service, but an attraction flow was always being discharged down the ramp and shoreline. Total attraction flows were set for approximately 70 gpm prior to leaving the site daily. Periodically throughout the season, low flow alarms did occur. Slight adjustments made to the individual tank supply pipes to adjust the output to obtain a constant water flow into the tanks resolved this issue. Since the alarms were addressed within a few minutes, no mortality events were related to these alarms. The hardiness of this species and its ability to adjust to parameters outside of those developed for this facility was evidenced by the numbers captured here. Testing and adjustments to the CWECF will continue to be investigated in future years.

Continuous water temperature and DO readings were taken from each tank in use. A linear piston blower and blower box controlled the air supplied to the collection tank and Holding Tank #1 through a manifold, while the other blower and blower box-controlled air to Holding Tanks #2 and #3. An air pump was in service constantly throughout the season for all tanks that were in service. Compressed, bottled oxygen (125 cubic feet) was also supplied to each of the tanks. As with the air blower, an oxygen manifold was used for the collection tank and Holding Tank #1, while another oxygen manifold controlled Holding Tanks #2 and #3. Compressed oxygen was used for every tank in service for most of the season. Both the air blower manifold and the oxygen manifold were attached to a diffuser by a six mm hose. Each tank had one fine pore diffuser from the blower and a micro pore diffuser from the oxygen bottle. These diffusers lay flat on the tank bottom to ensure that the full length of the diffuser was expelling bubbles. The micro pore diffusers reduced the amount of oxygen required to supply the tanks with sufficient oxygen levels. A 125 cubic foot bottle of oxygen connected to a micro pore diffuser lasted nearly five days, when adjusted properly for two tanks.

Cleaning and calibration activities were conducted at least weekly during the season. Operating ranges of flow, DO, and water temperature specifications for the CWECF are located on [Table 5.0-1](#). The collection tank and screened drain were scrubbed after eels were removed daily, whereas the holding tanks and overflow drain were scrubbed every time the eels were removed for transport. Holding tanks remained empty after dewatering and removing eels for transport until the following day. DO probes were cleaned regularly. The overflow tank was cleaned periodically. With the gravity feed line from the forebay, the amount of algae was minimal, but cleaning was still performed. Quality control checks were also performed on the volumetric eel count estimates.

Calibration of the ramp flow was executed each week after cleaning, using a 19-L graduated bucket. Multiple locations of the CWECF were checked for calibration purposes - the spray bar, the collection tank fill and drain, scent line, and the drains of each of the holding tanks that were in service. Some of the water from the spray bar that was not used for attracting eels up the ramp but used to help slide eels into the collection tank was identified as the backside of ramp flow. The backside of ramp flow was calculated by adding the scent line to the collection tank drain and subtracting the collection tank fill. The attraction flow at the top of the ramp (top attraction) was calculated by subtracting the backside of ramp flow from the spray bar amount. Bottom of ramp attraction is a sum of the collection tank drain and the drains of the in-service holding tanks. Total attraction flow is equal to the collection tank fill, the spray bar, and the drains of the holding tanks. Details and calibration records are listed in [Table 5.0-2](#).

Calibration of the water temperature and DO probes were performed prior to the start of the season. Additional calibration of these probes occurred when the weekly calibration check was performed, and a large difference was noted between a recently calibrated handheld YSI DO meter and the probes.

Actual eel counts were compared to volumetric eel estimates to determine accuracy of the volumetric estimates. A quality control comparison on estimates occurred two times during the 2025 season: July 3 and August 26. The detailed estimates for the number of juvenile eels per 200 mL, displacement, total estimated, and actual counts are in [Table 5.0-3](#). With only a small difference observed between estimates and actual counts (0.2%), no further changes to this method were warranted.

6 Conclusions and Discussion

The CWECF captured 363,303 eels compared to the OCEF that captured 101,845 juvenile eels during the 2025 season. CWECF operated for 185 days (May 1 through November 1) compared to the OCEF which only operated 138 days (May 1 through September 15) with a difference of 47 days. The CWECF contains one substrate (Enkamat) over the 18-inch-wide ramp compared to the OCEF, which contained Enkamat substrate in one 12-inch-wide ramp and Milieu substrate in another 12-inch-wide ramp during the 2025 season. Another difference between the two facilities is the entrance of each ramp in relationship to the tailwater. In 2025 the entrance ramp to the CWECF and OCEF is above the tailwater, but the CWECF ramp entrance is much higher than the tailwater compared to the OCEF entrance. At both the CWECF and the OCEF, the eel ramp entrance is downstream of a dam, but the geographic location of the two facilities is vastly different. The CWECF is on the main stem Susquehanna River (an eighth order stream), and the OCEF is on the Octoraro Creek (a fourth order stream) roughly 22 miles upstream of the confluence with the Susquehanna River and enters the Susquehanna River nearly a mile below the Conowingo Dam.

The size range of eels collected at the CWECF in 2025 was consistent with the previous years that Constellation has operated the facility. During the 2025 season the size range of juvenile eels caught at the CWECF was 65-175 mm with an average length of 115.9 mm, compared to the size range of 62-173 mm (average 118.9 mm), 79-176 mm (average 117.1 mm), 65-176 mm (average 114.3 mm), 66-184 mm (average 115.7 mm), 71-186 mm (average 112.2 mm), 64-165 mm (average 114.4 mm), 84-173 mm (average 121.6 mm), and 78-192 mm (average 122.3 mm) observed in 2024, 2023, 2022, 2021, 2020, 2019, 2018 and 2017, respectively ([Table 6.0-1](#) and [Normandeau Associates, Inc. 2018, 2019, 2020, 2021, 2022, 2023, 2024, and 2025](#)).

All environmental factors including lunar fraction and river flow did not appear to have a measurable effect on the number of eels collected in 2025. The highest daily average river flow value per the USGS Marietta gage station occurred on May 9 and 10, 2025 (172,000 cfs) and the lowest daily river flow occurred on September 23, 2025 (3,840 cfs). The discharge at Conowingo Dam can change hourly, sometimes quicker, depending on energy demand, and may not be a good metric to use to compare eel collection numbers in each season. Since 2020, the DO readings were obtained from the Conowingo Control Room when the crew arrived at the site for work but did not show correlation in eel collection. The lower lunar fraction is one environmental factor typically showing the greatest relationship to the number of eels collected, but in 2025, intermittent peaks occurred during the season with some occurring just after a full moon or occurring during a low lunar fraction. Periods of low light (near new moon) typically have a significantly higher collection of juvenile eels than those periods of higher illumination. Weekly comparison between number of eels captured and environmental factors for 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, and 2025 are in [Appendix B](#).

Mortality from collection, holding, and transport was below the 5% maximum value mandated for the CWECF. Mortality at the CWECF was low this year because of the implementation of the recommendations that were made in the 2018 report, which were:

Transport eels between June 15 and September 1 at least twice a week.

When excessive air temperature is forecasted to be above 32 °C for three straight days and water temperature is approximately 29 °C, daily transports will be instituted; and

Ensure proper water flow and DO levels are maintained.

A slight modification was made in 2020 after a large mortality event:

When water temperature reaches 27° C, daily transport will be instituted regardless of the forecasted air temperature.

During the period September 16 through November 1, 2025, no biological data including length, weight, condition factors was recorded. Additionally, no sacrifices were made to determine swim bladder parasites or age. The facility operated with no changes in operation or equipment between September 16 and November 1, 2025. The Resource Agencies (USFWS, SRBC, PA DEP, and MDNR/MDE) comment on this document between December 4, and 5 ([Appendix E](#)).

7 References

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8 Tables and Figures

Table 3.6-1: Stocking Locations for Juvenile Eel in the Susquehanna River Watershed

Site Number	Location	Water Body	County
1	Conowingo Pond (Conowingo Creek)	Susquehanna River	Cecil/Lancaster
2	Between Holtwood and Safe Harbor	Susquehanna River	Lancaster/York
3	Between Safe Harbor and York Haven	Susquehanna River	Lancaster
4	Upstream of York Haven Dam	Susquehanna River	Dauphin
5	West Fairview Access (Route 11/15)	Susquehanna River	Cumberland
6	Fort Hunter Access	Susquehanna River	Dauphin
7	Shikellamy State Park	Susquehanna River	Northumberland
8	Route 48 Bloomsburg	North Branch Susquehanna River	Columbia
9	Route 29 Bridge (Wilkes Barre) Nesbitt Park (Kingston)	North Branch Susquehanna River	Luzerne
10	Upstream of Hepburn Street Dam (Williamsport)	West Branch Susquehanna River	Lycoming
11	Upstream of Grant Street Dam	West Branch Susquehanna River	Clinton
12	City Island (Harrisburg)	Susquehanna River	Dauphin

MUDDY RUN PUMPED STORAGE PROJECT - FERC PROJECT NUMBER 2355
CONOWINGO HYDROELECTRIC PROJECT - FERC PROJECT NUMBER 405

Table 4.0-1: Number of Juvenile Eels Caught Daily, Conowingo West Eel Collection Facility, 2025

Date	Number of Eels	Date	Number of Eels	Date	Number of Eels	Date	Number of Eels	Date	Number of Eels
5/1/2025	17	6/14/2025	591	7/28/2025	4677	9/10/2025	136	10/24/2025	39
5/2/2025	217	6/15/2025	399	7/29/2025	5653	9/11/2025	160	10/25/2025	24
5/3/2025	1500	6/16/2025	376	7/30/2025	3509	9/12/2025	240	10/26/2025	26
5/4/2025	5035	6/17/2025	173	7/31/2025	1560	9/13/2025	67	10/27/2025	21
5/5/2025	7556	6/18/2025	182	8/1/2025	1580	9/14/2025	18	10/28/2025	53
5/6/2025	7370	6/19/2025	87	8/2/2025	2490	9/15/2025	4	10/29/2025	21
5/7/2025	8171	6/20/2025	49	8/3/2025	1041	9/16/2025	23	10/30/2025	4
5/8/2025	4207	6/21/2025	187	8/4/2025	1112	9/17/2025	46	10/31/2025	12
5/9/2025	3137	6/22/2025	152	8/5/2025	1471	9/18/2025	22	11/1/2025	10
5/10/2025	2262	6/23/2025	394	8/6/2025	811	9/19/2025	20		
5/11/2025	1582	6/24/2025	559	8/7/2025	229	9/20/2025	15	Total	363,303
5/12/2025	1145	6/25/2025	2048	8/8/2025	152	9/21/2025	37		
5/13/2025	1243	6/26/2025	5285	8/9/2025	488	9/22/2025	16		
5/14/2025	728	6/27/2025	7941	8/10/2025	474	9/23/2025	7		
5/15/2025	826	6/28/2025	8149	8/11/2025	263	9/24/2025	74		
5/16/2025	1387	6/29/2025	11381	8/12/2025	615	9/25/2025	130		
5/17/2025	2211	6/30/2025	7267	8/13/2025	582	9/26/2025	82		
5/18/2025	1856	7/1/2025	4185	8/14/2025	501	9/27/2025	41		
5/19/2025	1564	7/2/2025	2369	8/15/2025	631	9/28/2025	9		
5/20/2025	1649	7/3/2025*	1290	8/16/2025	1229	9/29/2025	30		
5/21/2025	822	7/4/2025	389	8/17/2025	1327	9/30/2025	49		
5/22/2025	1052	7/5/2025	786	8/18/2025	1680	10/1/2025	55		
5/23/2025	577	7/6/2025	477	8/19/2025	460	10/2/2025	19		
5/24/2025	212	7/7/2025	528	8/20/2025	2149	10/3/2025	250		
5/25/2025	113	7/8/2025	501	8/21/2025	1936	10/4/2025	237		
5/26/2025	30	7/9/2025	2537	8/22/2025	1959	10/5/2025	79		
5/27/2025	45	7/10/2025	6951	8/23/2025	1684	10/6/2025	87		
5/28/2025	9	7/11/2025	11095	8/24/2025	1729	10/7/2025	51		
5/29/2025	12	7/12/2025	17588	8/25/2025	1699	10/8/2025	97		
5/30/2025	80	7/13/2025	17754	8/26/2025*	1789	10/9/2025	95		
5/31/2025	369	7/14/2025	23005	8/27/2025	751	10/10/2025	201		
6/1/2025	441	7/15/2025	21417	8/28/2025	680	10/11/2025	243		
6/2/2025	168	7/16/2025	17942	8/29/2025	483	10/12/2025	48		
6/3/2025	357	7/17/2025	8959	8/30/2025	505	10/13/2025	29		
6/4/2025	109	7/18/2025	4056	8/31/2025	152	10/14/2025	39		
6/5/2025	425	7/19/2025	3636	9/1/2025	216	10/15/2025	81		
6/6/2025	528	7/20/2025	6120	9/2/2025	37	10/16/2025	148		
6/7/2025	944	7/21/2025	9222	9/3/2025	37	10/17/2025	60		
6/8/2025	2165	7/22/2025	8328	9/4/2025	10	10/18/2025	59		
6/9/2025	2300	7/23/2025	8227	9/5/2025	28	10/19/2025	103		
6/10/2025	3472	7/24/2025	3478	9/6/2025	85	10/20/2025	67		
6/11/2025	1860	7/25/2025	6230	9/7/2025	97	10/21/2025	57		
6/12/2025	1354	7/26/2025	3251	9/8/2025	439	10/22/2025	40		
6/13/2025	796	7/27/2025	3100	9/9/2025	111	10/23/2025	67		

The peak periods are shown in boxes
 Bolded numbers are peak days

Volumetric Counts in *italics*
 * Quality control checks

Table 4.1-1: Counted Eel Numbers in the 200 Milliliter Subsamples during Days of Volumetric Estimates, Conowingo West Eel Collection Facility, 2025

Date	Number of Eels in 200 mL	Date	Number of Eels in 200 mL	Date	Number of Eels in 200 mL
5/3/2025	150	6/28/2025	168	7/28/2025	150
5/4/2025	137	6/29/2025	188	7/29/2025	157
5/5/2025	142	6/30/2025	142	7/30/2025	159
5/6/2025	134	7/1/2025	118	7/31/2025	139
5/7/2025	150	7/2/2025	128	8/1/2025	166
5/8/2025	123	7/3/2025	110	8/2/2025	142
5/9/2025	128	7/5/2025	131	8/3/2025	122
5/10/2025	116	7/9/2025	145	8/4/2025	138
5/11/2025	108	7/10/2025	171	8/5/2025	140
5/12/2025	120	7/11/2025	172	8/6/2025	147
5/13/2025	113	7/12/2025	201	8/17/2025	147
5/16/2025	94	7/13/2025	204	8/18/2025	150
5/17/2025	105	7/14/2025	200	8/20/2025	137
5/18/2025	116	7/15/2025	217	8/21/2025	144
5/19/2025	98	7/16/2025	197	8/22/2025	163
5/20/2025	108	7/17/2025	170	8/23/2025	153
5/23/2025	87	7/18/2025	158	8/24/2025	164
6/8/2025	117	7/19/2025	121	8/25/2025	174
6/9/2025	123	7/20/2025	153	8/26/2025	149
6/10/2025	124	7/21/2025	147	8/27/2025	148
6/11/2025	93	7/22/2025	146	8/28/2025	131
6/12/2025	115	7/23/2025	156		
6/14/2025	95	7/24/2025	158	Average	142.7
6/25/2025	130	7/25/2025	150	Range	87 - 217
6/26/2025	151	7/26/2025	138	Median	144
6/27/2025	184	7/27/2025	144		

Table 4.2-1: Number of Juvenile Eels Captured with Length and Weight Measurements, Conowingo West Eel Collection Facility, 2025

Length and Weight Measurements	
Number collected	363,303
Number measured	943
Days collected	40
Range of lengths (mm)	65 - 175
Average length (mm)	115.9
Median length (mm)	114.0
Range of weight (g)	0.1 – 4.9
Average weight (g)	1.6
Median weight (g)	1.5

Table 4.2-2: Juvenile Eel Length Frequency, Conowingo West Eel Collection Facility, 2025

Total Length (mm)	Amount
60-64	0
65-69	1
70-74	1
75-79	1
80-84	5
85-89	16
90-94	45
95-99	73
100-104	110
105-109	125
110-114	102
115-119	103
120-124	93
125-129	83
130-134	60
135-139	41
140-144	27
145-149	18
150-154	20
155-159	8
160-164	4
165-169	2
170-174	4
Total	943

Table 4.2-3: Juvenile Eel Weight Frequency, Conowingo West Eel Collection Facility, 2025

Weight (g)	Amount
0.0-0.4	33
0.5-0.9	151
1.0-1.4	266
1.5-1.9	205
2.0-2.4	148
2.5-2.9	69
3.0-3.4	39
3.5-3.9	16
4.0-4.4	10
4.5-4.9	6
Total	943

Table 4.2-4: Observed Injuries of Juvenile American Eel, Conowingo West Eel Collection Facility, 2025

Date	Length (mm)	Weight (g)	Condition Factor
5/5/2025	115	1.4	Lesion on body
5/12/2025	105	1.4	Scrape
6/2/2025	153	3.0	Bands Around body
6/19/2025	122	1.7	Hemorrhage On Left gill
7/7/2025	105	1.3	Cut near vent
7/7/2025	110	1.0	Fungus
7/21/2025	122	2.5	Fungus
8/25/2025	120	1.8	Fungus
8/25/2025	117	1.3	Fungus
8/25/2025	104	1.0	Fungus
8/25/2025	101	0.8	Fungus
8/25/2025	100	0.7	Fungus
8/25/2025	86	0.6	Fungus
8/25/2025	90	0.5	Fungus

Table 4.3-1: Sacrificed Eel Data, Conowingo West Eel Collection Facility, 2025

Date	Length (mm)	Weight (g)	Parasite	Age	Date	Length (mm)	Weight (g)	Parasite	Age
5/5/2025	127	2.5	0	3	7/14/2025	84	0.8	1	2
	125	2.7	0	2		89	0.6	0	1
	101	1.7	4	2		80	0.3	2	1
	95	0.8	2	1		106	1.0	1	2
	117	1.5	1	3		110	0.6	0	1
5/12/2025	126	2.2	2	2	7/21/2025	125	2.4	0	3
	104	1.1	4	2		87	0.6	3	1
	133	2.4	1	3		77	0.4	0	1
	115	1.8	2	3		122	2.5	0	2
	144	3.1	0	3		110	1.4	2	1
5/19/2025	147	4.4	1	4	7/28/2025	101	1.1	0	1
	132	3.3	0	3		120	2.0	0	2
	127	2.5	1	3		115	1.3	1	1
	92	2.0	2	1		92	0.8	1	1
	150	3.1	1	N/A		112	1.5	0	3
5/26/2025	109	1.3	1	2	8/4/2025	157	3.5	0	5
	95	0.8	1	2		123	1.8	3	3
	108	1.7	0	2		102	1.2	2	2
	144	2.9	0	4		138	2.8	0	3
	152	3.9	0	4		140	2.6	3	3
6/2/2025	153	3.0	1	3	8/11/2025	109	1.1	2	2
	130	2.1	1	3		141	2.2	1	3
	153	3.5	0	4		103	1.2	3	1
	106	1.3	2	2		114	1.0	0	1
	124	2.0	0	N/A		92	0.6	3	1
6/9/2025	125	1.6	1	2	8/18/2025	172	4.2	0	5
	159	1.2	0	4		109	0.7	0	1
	113	0.5	4	2		99	1.1	1	1
	174	2.3	0	6		109	1.5	1	2
	152	2.8	0	4		129	1.3	2	2
6/16/2025	105	1.3	2	2	8/25/2025	113	1.3	2	1
	133	2.3	1	3		126	2.6	0	3
	141	3.3	0	3		95	0.9	1	1
	94	0.8	4	1		110	1.6	1	2
	175	4.5	0	6		121	1.7	0	3
6/23/2025	132	2.4	0	3	9/1/2025	153	3.5	0	3
	98	0.8	1	1		121	1.5	0	2
	148	2.6	0	3		131	2.4	0	4
	109	1.3	0	3		106	1.2	1	1
	125	1.9	2	4		144	3.3	0	3
6/30/2025	111	1.3	4	2	9/8/2025	155	3.5	0	4
	123	1.1	2	3		110	1.1	1	2
	128	1.2	0	3		172	4.6	0	6
	103	0.9	0	1		130	2.1	0	3
	133	1.9	4	4		105	0.9	3	2
7/7/2025	143	2.5	2	3	9/15/2025	87	0.6	0	1
	98	1.0	2	1		128	1.8	0	3
	135	2.4	0	3		110	1.2	2	2
	105	1.4	0	1		100	1.2	0	1
	114	1.7	1	3					

Table 4.3-1. (Continued)

Conowingo Eel Parasites		
# Parasites Present	Number	%
0 Parasites	46	46.5
1 Parasite	24	24.2
2 Parasites	17	17.2
3 Parasites	6	6.1
4 Parasites	6	6.1
Total Sacrificed	99	
Eels without parasites	46	46.5
Eels with parasites	53	53.5
Conowingo Eel Age		
Age	Number	%
Year 1	27	27.8
Year 2	24	24.7
Year 3	31	31.9
Year 4	10	10.3
Year 5	2	2.1
Year 6	3	3.1
Not Able to be Read (NR)	2	2.1
Total Aged	97	

Table 4.3-2: Sacrificed Eels Length Frequency with Detailed Info, Conowingo West Eel Collection Facility, 2025

TL (mm)	Weight (g)	Number	Contained Parasite	Age
75-79	0.4	1	0	1
80-84	0.3-0.8	2	1,2	1,2
85-89	0.6	3	0,0,3	1,1,1
90-94	0.8-2.0	4	1,2,3,4	1,1,1,1
95-99	0.8-1.1	6	1,1,1,1,2,2	1,1,1,1,1,2
100-104	0.9-1.7	7	0,0,0,2,3,4,4	1,1,1,1,2,2,2
105-109	0.7-1.7	13	0,0,0,0,1,1,1,1,2,2,2,3	1,1,1,2,2,2,2,2,2,2,3
110-114	0.6-1.7	11	0,0,0,1,1,1,2,2,2,4,4	1,1,1,1,2,2,2,2,3,3
115-119	1.3-1.8	3	1,1,2	1,3,3
120-124	1.1-2.5	7	0,0,0,0,0,2,3	N/A, 2,2,2,3,3,3
125-129	1.2-2.6	11	0,0,0,0,0,0,1,1,2,2,2	1,2,2,2,3,3,3,3,3,3,4
130-134	1.9-3.3	8	0,0,0,0,1,1,1,4	3,3,3,3,3,3,4,4
135-139	2.8	1	0	3,3
140-144	2.2-3.3	7	0,0,0,0,1,2,3	3,3,3,3,3,3,4
145-149	2.6-4.4	2	0,1	3,4
150-154	1.9-3.8	6	0,0,0,0,1,1	N/A, 3,3,4,4,4
155-159	1.2-3.5	3	0,0,0	4,4,5
170-174	2.3-4.6	3	0,0,0	5,6,6
175-179	4.5	1	0	6
Total		99		97

NR – age could not be determined

MUDDY RUN PUMPED STORAGE PROJECT - FERC PROJECT NUMBER 2355
CONOWINGO HYDROELECTRIC PROJECT - FERC PROJECT NUMBER 405

Table 4.4-1: Juvenile Eel Collection by Week with Associated Ranks, Conowingo West Eel Collection Facility, 2025

Week	1	2	3	4	5	6	7	8	9	10	11
Total	1,734	37,738	9,122	7,732	658	2,972	12,538	1,453	24,528	27,667	39,677
Rank	16	4	10	11	20	15	8	17	6	5	3
Percent Catch	0.48	10.39	2.51	2.13	0.18	0.82	3.45	0.40	6.75	7.62	10.92

Week	12	13	14	15	16	17	18	19	20	21	22
Total	96,769	44,856	22,569	5,304	4,295	11,195	7,636	565	1,250	148	387
Rank	1	2	7	13	14	9	12	22	18	26	23
Percent Catch	26.64	12.35	6.21	1.46	1.18	3.08	2.10	0.16	0.34	0.04	0.11

Week	23	24	25	26	27
Total	649	853	464	397	147
Rank	21	19	24	25	27
Percent Catch	0.18	0.23	0.13	0.11	0.04

Top 3 ranked weeks are shown in boxes

Week	Dates	Week	Dates	Week	Dates
1	May 1 - May 3	12	July 13 - 19	23	September 28 - October 4
2	May 4 - May 10	13	July 20 - July 26	24	October 5 - October 11
3	May 11 - May 17	14	July 27 - August 2	25	October 12 - October 18
4	May 18 - May 24	15	August 3 - August 9	26	October 19 - October 25
5	May 25 - May 31	16	August 10 - August 16	27	October 26 - November 1
6	June 1 - June 7	17	August 17 - August 23		
7	June 8 - June 14	18	August 24 - August 30		
8	June 15 - June 21	19	August 31 - September 6		
9	June 22 - June 28	20	September 7 - September 13		
10	June 29 - July 5	21	September 14 - September 20		
11	July 6 - July 12	22	September 21 - September 27		

Table 4.5-1: Daily Average River flows (cfs), USGS 01576000 - Marietta, PA Gage Station, 2025

Day	May	June	July	August	September	October	November
1	36,600	83,700	48,000	12,900	6,340	7,450	11,000
2	34,000	80,900	48,000	12,400	6,330	7,750	
3	32,800	65,500	41,700	11,300	5,910	6,820	
4	40,900	56,400	33,600	10,500	5,760	7,190	
5	48,800	49,400	28,700	10,100	5,650	5,490	
6	74,000	43,300	26,000	9,650	5,540	5,630	
7	116,000	38,500	23,500	9,620	5,460	5,100	
8	159,000	37,200	21,900	9,160	5,420	5,270	
9	172,000	47,100	23,100	8,550	5,350	6,500	
10	172,000	75,600	24,200	8,000	5,010	6,150	
11	148,000	91,700	20,200	7,480	4,800	6,080	
12	118,000	88,900	19,300	7,220	4,830	5,890	
13	97,800	79,400	19,300	6,960	4,680	6,230	
14	97,700	62,700	25,200	7,170	4,650	7,150	
15	124,000	59,500	30,700	7,090	4,640	8,060	
16	124,000	61,600	52,800	6,850	4,670	10,900	
17	114,000	65,500	45,000	7,960	4,510	10,200	
18	103,000	61,700	36,800	8,190	4,540	9,380	
19	86,800	71,900	32,500	7,620	4,350	8,330	
20	71,900	78,600	27,200	7,240	4,010	7,450	
21	61,800	78,400	23,500	7,650	3,930	6,990	
22	57,100	66,000	21,400	7,040	3,870	6,700	
23	65,400	55,000	18,800	6,780	3,840	6,580	
24	91,300	46,900	15,900	6,550	3,960	6,740	
25	98,800	46,000	14,000	6,300	3,980	6,780	
26	85,300	59,500	13,300	6,210	5,420	6,660	
27	72,000	52,800	14,300	6,600	5,140	6,700	
28	63,600	47,400	16,400	7,320	5,780	6,820	
29	62,200	42,100	16,200	7,250	8,940	6,500	
30	57,500	35,400	15,000	6,910	8,470	7,070	
31	69,400		13,300	6,390		11,600	

Bolded value represents the highest average river flow
 Daily average river flows are represented in cubic feet per second (cfs)

Table 4.5-2: Fraction of Moon Illumination, 2025 EST (1.0 equals full moon)

Day	May	June	July	August	September	October	November
1	0.225	0.380	0.417	0.542	0.667	0.700	0.834
2	0.328	0.483	0.516	0.639	0.760	0.795	
3	0.437	0.583	0.613	0.731	0.845	0.878	
4	0.544	0.678	0.705	0.815	0.915	0.944	
5	0.645	0.766	0.789	0.888	0.967	0.975	
6	0.738	0.842	0.863	0.945	0.982	0.986	
7	0.820	0.906	0.924	0.965	0.996	1.000	
8	0.888	0.954	0.968	0.984	0.997	0.982	
9	0.941	0.970	0.981	0.999	0.969	0.933	
10	0.978	0.986	0.994	0.99	0.913	0.857	
11	0.987	0.998	0.997	0.954	0.832	0.76	
12	0.996	0.990	0.978	0.892	0.731	0.65	
13	0.996	0.961	0.934	0.809	0.618	0.535	
14	0.976	0.910	0.869	0.707	0.500	0.422	
15	0.937	0.841	0.784	0.593	0.383	0.315	
16	0.880	0.754	0.682	0.474	0.275	0.221	
17	0.805	0.652	0.569	0.356	0.181	0.141	
18	0.715	0.541	0.451	0.247	0.105	0.077	
19	0.614	0.424	0.334	0.154	0.048	0.033	
20	0.504	0.310	0.225	0.080	0.013	0.007	
21	0.391	0.204	0.133	0.030	0.000	0.001	
22	0.280	0.114	0.062	0.004	0.008	0.015	
23	0.178	0.048	0.016	0.003	0.036	0.047	
24	0.094	0.010	0.001	0.024	0.082	0.096	
25	0.034	0.003	0.012	0.066	0.143	0.161	
26	0.005	0.025	0.047	0.125	0.218	0.239	
27	0.007	0.074	0.102	0.198	0.304	0.329	
28	0.042	0.142	0.174	0.282	0.398	0.427	
29	0.103	0.226	0.257	0.373	0.498	0.531	
30	0.184	0.319	0.349	0.470	0.600	0.637	
31	0.278		0.445	0.569		0.740	

Table 4.5-3: Water Temperature (°C) Recorded in the Collection Tank, Conowingo West Eel Collection Facility, 2025

Day	May	June	July	August	September	October	November
1	20.4	18.4	27.5	30.7	26.8	27.3	16.1
2	20.3	19.0	26.9	30.3	25.7	26.1	
3	20.8	19.1	27.3	30.0	26.5	25.7	
4	21.9	19.8	27.7	29.9	26.7	25.2	
5	22.2	20.1	27.9	29.8	26.5	24.8	
6	22.6	20.7	27.6	29.8	26.7	24.8	
7	21.6	21.3	28.2	29.6	26.4	25.0	
8	20.5	22.8	28.6	29.4	27.0	25.0	
9	18.8	23.3	28.7	29.2	26.9	24.4	
10	17.5	24.2	28.5	29.3	26.6	23.5	
11	16.8	24.4	29.2	29.5	26.5	21.2	
12	17.3	24.4	29.1	29.6	26.6	23.0	
13	17.5	24.6	29.4	29.4	26.4	22.6	
14	17.7	23.7	29.9	29.5	26.5	22.0	
15	18.1	23.7	30.6	30.0	26.6	21.8	
16	18.4	23.5	30.3	30.0	26.3	20.8	
17	18.4	22.3	29.7	29.8	26.4	19.8	
18	19.2	22.3	29.0	30.0	26.4	12.8	
19	19.4	21.8	29.2	29.6	26.3	19.3	
20	19.7	22.3	29.3	29.1	26.3	19.1	
21	19.6	23.2	29.9	28.6	26.2	18.8	
22	18.4	23.8	29.7	28.4	26.5	18.8	
23	18.2	24.2	29.2	28.3	26.2	18.4	
24	17.6	25.2	29.2	28.3	26.3	18.3	
25	17.2	25.9	29.4	28.1	26.3	17.9	
26	17.1	27.4	29.8	27.9	26.2	17.7	
27	17.5	28.3	29.9	28.1	26.2	17.6	
28	17.5	28.0	30.4	27.6	26.2	17.2	
29	17.4	28.5	30.7	27.3	26.5	17.1	
30	18.1	28.1	30.8	27.1	27.2	17.0	
31	18.2		30.8	26.8		16.5	

Table 4.5-4: Dissolved Oxygen (mg/L) Readings from the Control Room (Station 643), Conowingo West Eel Collection Facility, 2025

Day	May	June	July	August	September	October	November
1	8.96	9.52	7.35	7.19	8.73	8.50	9.05
2	9.08	9.13	6.95	7.25	8.58	8.10	
3	8.32	9.13	7.6	7.30	8.55	7.96	
4	8.12	9.15	7.14	7.40	8.48	8.22	
5	8.31	9.19	7.56	7.45	7.92	8.47	
6	8.25	9.03	6.65	7.42	7.91	8.00	
7	8.20	8.73	7.25	7.37	7.92	8.09	
8	8.73	8.17	7.90	7.20	7.91	7.92	
9	9.53	7.91	7.63	7.27	8.87	7.12	
10	9.89	7.72	7.57	7.16	8.54	7.40	
11	10.04	7.95	7.28	7.34	8.03	7.93	
12	9.53	7.90	6.81	7.00	8.54	8.44	
13	9.44	8.37	6.28	7.37	8.10	8.79	
14	8.64	7.49	6.75	7.78	8.04	8.95	
15	8.45	8.27	7.32	8.01	8.01	9.01	
16	8.66	8.04	6.92	7.68	7.94	8.21	
17	9.26	8.02	7.48	6.95	8.17	8.74	
18	9.18	7.99	7.88	7.43	8.06	8.67	
19	8.57	8.04	7.65	8.27	8.05	8.93	
20	8.43	8.13	7.32	7.27	8.08	8.77	
21	8.71	8.25	7.07	7.90	7.74	8.48	
22	8.76	8.57	7.53	7.72	7.83	8.71	
23	8.82	8.23	8.04	7.57	7.77	8.77	
24	8.72	8.25	8.39	7.60	7.74	9.02	
25	8.98	8.20	8.09	8.07	7.81	9.58	
26	9.79	7.63	7.79	8.34	7.65	9.59	
27	9.87	7.17	7.08	8.21	7.27	9.01	
28	9.53	7.84	7.79	8.11	6.90	9.11	
29	9.42	7.84	7.63	8.15	7.00	9.17	
30	9.28	7.75	7.66	8.47	8.59	9.08	
31	9.41		7.54	8.67		9.02	

Table 4.6-1: Number of Juvenile American Eel placed in Holding, Conowingo West Eel Collection Facility, 2025

Day	May	June	July	August	September	October	November
1	-	767	-	-	-	-	-
2	17	1230	-	-	-	-	
3	234	693	-	-	-	-	
4	1734	2	-	-	-	-	
5	6769	121	-	-	-	-	
6	14320	549	-	-	-	-	
7	1	1080	-	-	-	-	
8	8172	2029	-	-	-	-	
9	-	4197	-	-	-	-	
10	3137	6492	-	-	-	-	
11	5399	8	-	-	-	243	
12	6,982	1870	-	-	-	291	
13	8122	3237	-	-	-	320	
14	-	4058	-	-	-	-	
15	749	4685	-	-	-	81	
16	1579	5105	-	-	-	-	
17	2,966	5676	-	-	-	60	
18	5,180	59	-	-	-	119	
19	7,036	246	-	-	-	222	
20	8,596	-	-	-	-	289	
21	-	-	-	-	-	-	
22	823	-	-	-	-	40	
23	1879	-	-	-	-	-	
24	2,460	-	-	-	-	39	
25	2,672	-	-	-	-	63	
26	2,787	-	-	-	-	89	
27	2813	-	-	-	-	110	
28	-	-	-	-	-	-	
29	28	-	-	-	-	-	
30	119	-	-	-	-	-	
31	252		-	-			Total = 138,896

Table 4.6-2: Eel Transport and Stocking Data, 2025

Parameter	Number of Eels	Mortality (No. dead eels by location)			Removed for Analysis	Removed for SRBC or PFBC	Number Stocked
		Collection Tank	Holding Tank	Transport Tank			
OCEF Eels Collected	101,845	9 (.009%)					
OCEF eels Transported to CWECF	101,836			0 (0%)			101,836
CWECF Eels Collected	363,303	187 (.05%)	90 (.06%)		99	8,040	354,887
Total Transported from CWECF	456,723			16			456,707
Location of stocking							
Williamsport, PA (Site 10)	74,956			1 (.001%)			74,955
Fort Hunter Access (Site 6)	126,751			11 (.009%)			126,740
Etters boat ramp (Site 4)	126,907			0			126,907
City Island boat ramp (Site 12)	126,836			4 (.003%)			126,832
Conowingo Creek boat ramp (Site 1)	1,273			0			1,273

Table 4.7-1: Detailed Individual Eel Transport and Associated Water Quality Data, 2025

Date (2025)	Number of Eels Stocked	Holding Facility			Loaded for Transport			Prior to Unloading			Stocking Site	
		Time	Temp (°C)	DO (mg/L)	Time	Temp (°C)	DO (mg/L)	Time	Temp (°C)	DO (mg/L)	Temp (°C)	DO (mg/L)
Transport to Williamsport, Upstream of Hepburn Street Dam (Site 10)												
6-May	21,690	927	22.6	9.43	1035	21.8	16.87	1417	21.8	16.87	14.5	9.82
8-May	12,379	812	20.5	8.39	908	20.0	13.83	1330	20.0	13.83	15.1	10.21
13-May	9,365	907	17.5	10.75	1000	17.1	16.34	1400	17.1	16.34	16.1	9.48
20-May	10,244	907	19.7	8.86	955	18.5	13.66	1321	18.5	13.66	15.3	10.11
27-May	2,856	901	17.5	10.84	921	16.9	9.03	1323	16.9	9.03	14.9	10.12
3-Jun	1,073	800	19.1	9.72	830	18.7	7.06	1300	18.7	7.06	17.2	9.89
10-Jun	9,257	836	24.2	6.68	928	23.7	8.63	1312	23.7	8.63	21.1	8.24
17-Jun	3,628	845	22.3	7.99	1004	21.3	7.97	1340	21.3	7.97	18.1	7.45
24-Jun	4,463	806	25.2	8.54	930	26.4	20.05	1415	26.4	20.05	24.5	7.33
Total	74,955											
Date (2025)	Number of Eels Stocked	Holding Facility			Loaded for Transport			Prior to Unloading			Stocking Site	
		Time	Temp (°C)	DO (mg/L)	Time	Temp (°C)	DO (mg/L)	Time	Temp (°C)	DO (mg/L)	Temp (°C)	DO (mg/L)
Transport to Conowingo Creek (Site 1)												
6-Sep	85	850	26.7	9.89	900	26.7	6.8	930	26.2	9.6	25.1	5.7
7-Sep	98	900	26.4	9.36	910	25.7	7.9	930	23.0	6.7	23.7	5.3
13-Sep	66	856	26.4	7.66	917	25.3	6.8	940	24.9	6.9	23.8	6.0
14-Sep	19	830	26.5	9.16	841	22.3	9.2	906	22.1	9.1	22.8	5.0
15-Sep	4	858	26.6	7.30	910	21.5	8.9	940	21.1	8.5	21.5	5.0
16-Sep	23	807	26.3	6.63	826	24.6	7.4	851	24.0	7.7	22.0	7.1
17-Sep	46	830	26.4	7.13	830	23.2	7.0	912	22.3	7.7	21.2	5.2
18-Sep	22	825	26.3	9.20	825	26.4	9.2	855	24.8	7.3	21.6	5.1
19-Sep	20	830	26.3	11.24	840	25.3	8.7	900	25.3	7.5	22.7	6.1
20-Sep	15	722	26.3	5.65	738	24.8	5.0	752	24.1	5.6	23.0	5.6
21-Sep	37	800	26.2	5.87	805	24.8	6.6	826	23.9	7.5	22.9	5.4
22-Sep	16	808	26.5	10.98	819	25.2	7.8	845	24.5	7.4	20.2	5.7
23-Sep	7	834	26.2	7.78	857	25.1	7.7	929	24.6	8.0	22.4	6.0
24-Sep	74	824	26.3	9.11	830	24.9	6.4	852	24.4	6.9	24.1	6.1

26-Sep	82	813	26.2	8.54	826	24.9	6.0	900	24.3	6.6	20.2	7.0
27-Sep	41	630	26.2	8.31	645	25.1	6.17	713	24.9	7.3	19.8	7.2
28-Sep	9	758	26.2	7.5	812	26.2	7.5	841	23.7	7.6	24.6	5.4
29-Sep	30	805	26.5	9.32	821	25.8	6.2	847	25.3	5.1	23.6	5.4
30-Sep	49	801	27.2	8.99	819	26.1	7.0	839	25.2	6.9	25.3	6.0
1-Oct	55	815	27.3	9.1	841	25.4	7.1	905	24.2	7.2	20.1	7.0
2-Oct	19	645	26.1	9.35	700	24.0	8.3	730	23.3	7.6	20.9	5.7
5-Oct	79	840	24.8	10.5	852	23.0	7.5	916	22.1	7.6	21.4	6.2
6-Oct	87	845	24.8	9.46	900	23.4	6.6	945	22.3	7.5	20.3	5.8
7-Oct	51	830	25.0	8.54	852	24.1	7.1	924	23.7	7.4	20.4	6.4
8-Oct	97	832	25.0	8.39	910	23.6	7.2	933	23.7	7.1	22.6	6.2
9-Oct	95	825	24.4	10.24	837	22.3	7.1	900	21.3	7.8	17.3	5.0
30-Oct	25	815	17.0	8.91	1035	14.3	7.75	1110	14.5	7.42	11.1	8.1
31-Oct	10	825	16.5	9.09	845	13.5	8.51	915	13.6	8.05	10.9	9.7
1-Nov	12	706	16.1	8.87	716	16.1	8.85	735	16.3	8.42	12.8	9.7
Total	1,273											
Date (2025)	Number of Eels Stocked	Holding Facility			Loaded for Transport			Prior to Unloading			Stocking site	
		Time	Temp (°C)	DO (mg/L)	Time	Temp (°C)	DO (mg/L)	Time	Temp (°C)	DO (mg/L)	Temp (°C)	DO (mg/L)
Transport to City Island Boat Ramp (Site 12)												
26-Jun	7,716	803	27.4	5.74	907	27.1	5.13	1136	27.3	14.64	27.8	8.38
29-Jun	25,729	752	28.5	9.04	1018	28.2/28.06	7.30/8.42	1142	23.3/23.1	7.37/10.21	24.9	8.7
1-Jul	5,990	800	27.5	7.83	900	27.3	6.37	1245	27.7	7.74	27.4	8.8
6-Jul	775	900	27.6	9.71	821	25.6	9.3	1009	25.7	14.0	26.3	7.4
7-Jul	1,209	930	28.2	8.33	1000	27.5	7.8	1150	28.0	7.80	27.8	9.4
8-Jul	1,233	800	28.6	7.53	1047	27.3	8.1	1242	28.4	11.1	29.4	7.9
10-Jul	7,673	805	28.5	6.96	1050	28.0	8.07	1235	27.9	10.73	28.5	7.9
12-Jul	18,697	805	29.1	6.30	900	28.7	5.6/11.9	1155	28.5/28.6	10.2/19.3	28.8	6.8
14-Jul	4,000	1726	29.9	5.92	1736	30.5	8.01	1921	30.0	12.75	28.1	5.9
16-Jul	18,029	803	30.3	1.69	930	29.5	10.05	1239	30.1	10.29	26.9	7.2
20-Jul	6,122	853	29.3	7.68	1005	29.0	5.86	1130	28.8	7.74	26.2	8.5
23-Jul	8,223	945	29.2	8.55	1034	28.9	4.31	1205	28.8	9.57	26.3	6.8
27-Jul	3,100	856	29.9	10.33	940	29.3	7.45	1124	29.1	11.98	27.9	7.6

30-Jul	3,505	850	30.8	7.47	946	30.6	7.16	1131	30.6	8.65	30.1	7.0
31-Jul	1,561	930	30.8	5.86	1030	30.6	6.92	1147	30.5	9.49	30.0	7.2
3-Aug	1,063	900	30.0	5.95	930	27.4	8.3	1141	27.2	9.4	24.7	8.2
5-Aug	1,496	937	29.8	6.27	1003	27.9	12.2	1210	27.9	10.9	26.8	8.0
11-Aug	261	943	29.5	7.17	1023	28.9	7.7	1230	28.6	13.9	26.8	7.1
12-Aug	616	852	29.6	9.16	920	28.7	7:12	1110	28.5	9.4	26.6	6.8
15-Aug	2,829	901	30.0	9.62	934	27.5	8.4	1130	27.1	10.7	28.6	8.0
19-Aug	555	800	29.6	13.53	928	25.3	12.9	1120	25.1	17.0	24.2	8.1
20-Aug	2,164	940	29.1	11.02	1015	27.6	7.3	1220	27.7	14.3	23.0	7.6
23-Aug	1,685	835	28.3	9.54	904	26.5	7.6	1038	26.7	10.0	23.8	7.7
26-Aug	1,804	900	27.9	7.19	1000	25.7	6.0	1145	25.7	6.0	25.7	9.0
3-Oct	250	820	25.7	9.35	839	24.0	8.1	1040	23.3	15.9	19.1	9.4
10-Oct	201	755	23.5	13.95	845	20.7	8.8	1015	19.2	9.5	15.5	9.0
21-Oct	346	806	18.8	10.83	839	17.3	10.2	1044	17.1	16.0	13.5	9.5
Total	126,832											

Date (2025)	Number of Eels Stocked	Holding Facility			Loaded for Transport			Prior to Unloading			Stocking site	
		Time	Temp (°C)	DO (mg/L)	Time	Temp (°C)	DO (mg/L)	Time	Temp (°C)	DO (mg/L)	Temp (°C)	DO (mg/L)
Transport to Fort Hunter Access (Site 6)												
27-Jun	10,450	900	28.3	6.16	1100	27.0	7.3	1310	26.6	10.12	24.4	7.08
30-Jun	15,207	825	28.1	8.27	1115	28.1/28.3	5.77/9.96	1245	28.1/28.3	8.46	25.7	8.0
2-Jul	2,387	811	26.9	8.99	1045	26.4	12.09	1220	26.4	12.98	22.3	9.2
3-Jul	6,727	1000	27.3	5.81	1100	27.1	5.19	1235	27.4	9.68/16.56	24.2	9.4
4-Jul	17,219	754	27.7	8.14	945	26.7	548/7.18	1130	26.7	12.35/14.42	23.7	8.2
13-Jul	18,131	850	29.4	5.30	855	29.2/29.1	6.79/13.36	1150	28.9/28.8	11.45/15.08	26.9	6.3
15-Jul	17,455	845	30.6	5.35	949	30.1/30.2	9.13/13.42	1133	29.8/29.9	8.21	24.8	7.7
18-Jul	4,085	815	29.0	8.28	930	28.6	6.47	1100	28.4	9.54	26.7	6.4
21-Jul	9,207	847	29.9	5.50	1009	29.9	5.60	1200	29.6	7.43	27.9	7.12
24-Jul	3,476	930	29.2	12.78	915	28.8	5.94	1115	28.7	11.39	26.8	7.8
26-Jul	3,249	845	29.8	12.02	923	29.4	8.85	1115	29.3	15.8	27.6	7.3
28-Jul	4,668	930	30.4	8.89	1045	31.2	15.9	1235	30.9	11.1	28.1	7.1
1-Aug	1,652	752	30.7	12.18	923	28.8	5.75	1120	28.5	12.0	24.7	9.1
4-Aug	1,116	856	29.9	8.88	940	29.9	8.83	1113	29.7	18.5	23.9	8.0

6-Aug	815	1045	29.8	7.11	1136	27.4	17.5	1335	26.9	17.8	26.4	9.6
7-Aug	234	758	29.6	8.32	930	27.7	12.6	1117	27.6	6.7	25.2	7.1
8-Aug	155	915	29.4	9.35	937	26.5	6.0	1130	26.3	28.3	25.7	8.8
10-Aug	477	903	29.3	8.35	945	27.3	14.4	1125	27.3	10.5	26.3	8.4
14-Aug	520	850	29.5	7.52	945	29.2	10.2	1140	29.1	15.3	29.4	7.9
17-Aug	1,356	915	29.8	7.35	850	29.2	8.09	1115	29.0	9.8	28.4	8.7
18-Aug	2,405	1000	30.0	9.07	1015	25.0	11.4	1245	25.0	9.2	26.4	8.9
22-Aug	1,960	838	28.4	7.85	902	27.4	4.7	1101	27.0	10.9	21.8	10.8
25-Aug	1,602	904	28.1	7.41	934	27.5	5.7	1200	27.7	8.9	24.5	7.5
27-Aug	754	930	28.1	9.22	1020	27.6	6.2	1200	22.7	10.8	26.4	16.3
30-Aug	505	745	27.1	5.55	900	24.9	9.2	1055	24.3	11.4	19.5	8.8
1-Sep	216	825	26.8	12.46	845	23.7	6.6	1022	23.5	12.8	20.0	8.13
10-Sep	136	1005	26.6	9.44	1100	24.7	7.4	1305	24.3	11.7	22.4	10.8
12-Sep	240	856	26.6	7.34	916	25.9	6.5	1100	25.4	12.08	21.4	8.4
16-Oct	229	804	20.9	12.16	841	19.9	9.2	1100	19.0	7.8	13.2	10.7
23-Oct	107	805	18.4	10.5	827	16.7	9.1	1025	15.2	9.8	11.5	10.7
Total	126,740											

Date (2025)	Number of Eels Stocked	Holding Facility			Loaded for Transport			Prior to Unloading			Stocking Site	
		Time	Temp (°C)	DO(mg/L)	Time	Temp (°C)	DO(Mg/L)	Time	Temp (°C)	DO(Mg/L)	Temp (°C)	DO(Mg/L)
Transport to Etters Boat Ramp, Goldsboro, PA (Site 4)												
19-Jun	332	850	21.8	8.71	927	22.3	8.1	1109	22.9	11.4	21.2	8.5
28-Jun	8,062	838	28	7.68	1015	28.6	7.72	1245	28.5	10.62	23.9	7.29
28-Jun	28023	1552	28	7.68	1611	27.1/26.9	17.97/3.15	1815	26.9/26.8	12.8/8.18	23.1	7.31
5-Jul	5,714	820	27.9	15.26	954	27.1	8.65	1147	27.3	16.58	25.9	7.8
9-Jul	2,951	830	28.7	6.42	1020	28.7	4.3	1150	28.7	5	26.8	8.1
11-Jul	12,294	754	29.2	8.08	1000	28.4	7.23	1138	28.5	8.24	27.8	8.7
14-Jul	23,110	820	29.9	4.92	937	29.4/29.6	9.48/11.66	1245	29.5/29.7	9.45/14.29	27.5	6.4
17-Jul	9,051	915	29.7	7.78	1000	29.4	10.3	1140	29.5	13.13	26	6.8
19-Jul	3,641	850	29.2	8.16	916	26.3	15	1047	26.1	12.6	24.7	6.5
22-Jul	8,324	800	29.7	7.1	928	28.9	3.57	1107	28.6	10.89	26.2	9.4
25-Jul	6226	900	29.4	9.17	950	29.1	6.15	1120	29.1	6.82	28.4	11.1

29-Jul	5659	850	30.7	8.59	945	30.3	6.53	1128	30.3	7.95	30.2	11.6
2-Aug	2537	849	30.3	5.97	930	28	17.7	1130	27.3	12.3	27.2	8.3
9-Aug	492	848	29.2	8.03	919	28.4	9.5	1121	27.7	11.7	26.7	8.73
13-Aug	588	842	29.4	8.64	911	28.8	6	1044	28.4	16.2	28.6	9.6
16-Aug	3751	857	30	9.29	928	26.2	7	1100	26.4	12.4	28.6	8.2
21-Aug	1936	758	28.6	11.2	930	27.1	6.6	1121	26.2	10.3	23.5	5.3
24-Aug	1738	856	28.3	8.99	930	25.5	7.9	1118	25.5	11.5	24.2	9.9
28-Aug	682	848	27.6	12.03	920	26.3	7.5	1100	25.7	12	23.7	13.2
29-Aug	486	900	27.3	10.14	915	27.6	7.6	1116	25.8	14	23.2	10.8
31-Aug	152	832	26.8	9.95	849	25.1	6.9	1021	24.8	10.5	21.9	9.6
9-Sep	111	1115	26.9	9.51	1145	26.3	6.7	1320	26.1	12.4	24.4	11.3
11-Sep	159	852	26.5	9.08	916	25.2	6.6	1105	24.5	6.8	22.8	9.8
25-Sep	130	800	26.3	9.01	813	25.8	6.4	1012	25.7	102	22.3	5.1
4-Oct	237	812	25.2	9.44	835	23.3	5.1	1015	22.1	5.2	21.1	8.3
14-Oct	358	755	22.2	12.7	825	21.2	10.2	946	21.8	9.7	16.4	9.12
28-Oct	163	845	17.2	11.11	915	14.6	12.9	1105	14.1	14.4	11.6	11.6
Total	126,907											

Table 4.7-2: Constellation’s Eel Stocking Totals by Location and Year, 2015 - 2025

Location	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	TOTAL
Conowingo Creek boat ramp	847	-	-	-	-	-	-	-	862	943	1,273	3,925
North Branch Muddy Creek	-	22,004	-	-	-	-	-	-	-	-	-	22,004
Conewago Creek	-	378	16,502	-	-	-	-	-	-	-	-	16,880
Beaver Creek	-	-	9,738	-	-	-	-	-	-	-	-	9,738
Etter’s boat ramp	-	-	103,662	-	-	-	-	-	-	130,334	126,907	360,903
West Fairview Access	-	-	-	22,586	40,950	-	233,593	28,743	71,796	-	-	397,668
Fort Hunter Access	-	-	-	22,348	41,116	-	-	28,715	71,564	130,588	126,740	421,071
City Island boat ramp	-	-	-	24,869	41,132	-	231,694	28,784	72,189	130,424	126,832	655,924
Bloomsburg boat ramp	-	-	-	-	-	109,308	-	-	-	-	-	109,308
Lock Haven boat ramp	-	-	-	-	-	109,123	-	-	62,134	-	-	171,257
Wrightsville boat ramp	-	-	-	-	-	19,319	-	-	-	-	-	19,319
Columbia boat ramp	-	-	-	-	-	17,660	-	-	-	-	-	17,660
Shikellamy State Park	-	-	-	-	-	-	183,609	55,871	-	-	-	239,480
Williamsport	-	-	-	-	-	-	-	-	-	62,712	74,955	137,667
TOTAL	847	22,382	129,902	69,803	123,198	255,410	648,896	142,113	278,545	455,001	456,707	2,582,804

Table 5.0-1: Specified Operating Ranges of Conowingo West Eel Collection Facility, 2025

Parameters of CWFECF			
	Main flow	Collection Tank	Holding tank
Flow (gpm)	5 – 150	5 – 25	5 – 40
Dissolved Oxygen (mg/L)		5 – 20	5 – 20
Temperature (°C)		10 – 32	10 – 32

Table 5.0-2: Calibration of Flows (Gallons per Minute), Conowingo West Eel Collection Facility, 2025

	May					June					July
	1-May	7-May	14-May	21-May	28-May	4-Jun	11-Jun	18-Jun	25-Jun	2-Jul	
Collection Tank Fill	16.5	15.7	15.0	13.0	19.5	16.5	14.0	15.5	10.0	12.9	
Collection Tank Drain	16.8	16.5	15.0	12.0	24.0	20.25	17.0	14.5	9.0	12.0	
Holding Tank #1 Drain	18.0			11.5		19.5		9.5			
Holding Tank #2 Drain		13.0	10.0		11.25		25.5		15.0		
Holding Tank #3 Drain	40.5	36.0	27.0	38.25	38.0	30.0	18.0	17.5	20.5	31.5	
Spray Bar	8.4	10.2	8.0	8.8	10.2	9.9	10.5	7.8	8.1	8.1	
Scent line	1.5	1.3	1.4	1.3	2.9	2.4	2.5	2.5	1.8	2.6	
Backside of Ramp	1.8	2.1	1.4	0.3	7.4	6.15	5.5	1.5	0.8	1.7	
Top Attraction	6.6	8.1	6.6	8.5	2.8	3.75	5.0	6.3	7.3	6.4	
Bottom of Ramp Attraction	75.3	65.5	52.0	61.75	73.25	69.75	60.5	41.5	44.5	43.5	
Total Attraction*	83.4	74.9	60.0	71.55	78.95	75.9	68.0	50.3	53.6	52.5	

	July				August				September	
	9-Jul	16-Jul	23-Jul	30-Jul	5-Aug	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep
Collection Tank Fill	12.5	13.0	9.75	12.0	14.0	11.5	11.0	8.5	11.1	14.0
Collection Tank Drain	13.0	13.0	10.4	13.56	19.5	12.0	10.0	10.0	10.62	12.5
Holding Tank #1 Drain		30.0	53.25	66.0	48.0	41.25	49.5	46.5	39.0	40.0
Holding Tank #2 Drain										
Holding Tank #3 Drain	52.5									
Spray Bar	8.0	7.8	7.4	8.92	10.5	7.0	6.75	7.0	7.5	7.5
Scent line	2.6	1.2	0.75	1.1	1.4	1.35	1.85	1.1	1.26	1.5
Backside of Ramp	3.1	1.2	1.4	2.66	6.9	1.85	0.85	2.6	0.78	0.2
Top Attraction	4.9	6.6	6.0	6.26	3.6	5.15	5.9	4.4	6.72	7.5
Bottom of Ramp Attraction	65.5	43.0	63.65	79.56	67.5	53.25	59.5	56.5	49.62	52.5
Total Attraction*	73.0	50.8	70.4	86.92	72.5	59.75	67.25	62.0	57.6	61.5

	September		October				
	17-Sep	24-Sep	1-Oct	8-Oct	16-Oct	22-Oct	29-Oct
Collection Tank Fill	14.25	12.0	11.1	17.0	11.5	12.5	15.0
Collection Tank Drain	15.0	11.7	14.9	16.0	12.0	12.0	16.0
Holding Tank #1 Drain	45.0	49.5	28.8	48.0			
Holding Tank #2 Drain						16.0	18.0
Holding Tank #3 Drain					52.5	36.8	33.0
Spray Bar	7.8	7.0	5.4	4.5	4.0	7.5	8.7
Scent line	1.5	1.4	1.4	1.5	1.5	0.8	1.4
Backside of Ramp	2.3	1.1	5.2	0.5	2.0	0.3	2.4
Top Attraction	5.6	5.9	0.22	4.0	2.0	7.2	6.3
Bottom of Ramp Attraction	60.0	61.2	43.7	64.0	64.5	64.8	67.0
Total Attraction*	67.1	68.5	45.3	69.5	68.0	72.8	74.7

*Tank flows were reduced to get accurate flow measurement and to calibrate. All Flow returned to normal operating condition after calibration was complete at approximately 70 gpm total flow.

Table 5.0-3: Quality Control Checks on Volumetric Estimates, Conowingo West Eel Collection Facility, 2025

Date	Number of eels in:		Displacement of Water	Volumetric Estimate	Actual Counts	Difference
	200 mL	1 L				
7/3/2025	110	550	2.1	1,290	1,279	11
8/26/2025	149	745	2.2	1,788	1,793	-5
Total				3,078	3,072	-6
						-0.2%

All estimated eel counts include eels that were anesthetized and counted in a 200-mL volumetric subsample.

Table 6.0-1: Summary of Eel Collections and Biological Data, Conowingo West Eel Collection Facility, 2017-2025

Year		2017	2018	2019	2020	2021	2022	2023	2024	2025	Average	Total
Eels Collected		122,300	67,949	126,181	254,651	623,095	139,798	217,035	366,010	363,303	253,369.11	2,280,322
Peak	Number	7,280	5,572	10,166	14,137	16,004	4,158	17,326	34,076	23,005	14,636	131,724
	Date	30-Jul	30-Jul	5-Jul	30-May	7-Jul	8-Jul	7-Jul	19-Aug	14-Jul		
Days of Operation		138	138	138	138	193	204	211	138	185	164.8	1,483
Average eels per day		886.2	492.4	914.4	1,845.30	3,228.50	685.3	1033.5	1712.7	1963.8	1418.0	12,762
Daily collections > 1,000 eels		31	22	26	60	111	46	44	68	69	53	477
Volumetric Estimation Days		40	25	31	56	112	34	28	66	73	51.7	465
Accuracy of Volumetric Estimates (±)		-1.0%	1.6%	-1.1%	-2.3%	1.4%	-0.4%	0.8%	-1.0%	-0.2%	2.2%	
Biological Data												
Sample Size		926	857	909	851	975	966	919	954	943	922.3	8301
Length (mm)	Average	122.3	121.6	114.4	112.2	115.7	114.3	117.1	118.9	115.9	116.9	1052.4
	Range	78-192	84-173	64-165	71-186	66-184	65-176	79-176	62-173	65-175		
	Median	122	120	115	112	115	114	116	117	114		
Weight (g)	Average	2.1	2	1.8	1.5	1.6	1.7	1.7	1.9	1.6	1.8	15.9
	Range	0.5-6.0	0.5-4.8	0.2-4.7	0.3-5.5	0.2-5.0	0.3-4.3	0.3-5.7	0.2-4.5	0.1-4.9		
	Median	2	2	1.7	1.4	1.5	1.6	1.6	1.7	1.5		15
Sacrificed	Number	193	93	91	96	100	101	100	100	99		963
	Contained Parasites	53.92.2%	48.4%	52.7%	62.5%	61.0%	56.5%	60.0%	48.0%	53.5%	55.5%	
	Average Age	2.2	2.3	1.65	1.97	2.3	2.4	2.1	2.2	2.4		
	Age Range	1-4	1-4	1-4	1-4	1-5	1-4	1-4	1-4	1-4	1-6	
River Flows (cfs, daily avg. flows at Conowingo)	Average	37,053	62,036	40,214	14,256	43,466	20,251	25,121	20,547	30,180	32,569	
	Min	6,000	11,100	4,560	3,970	8,560	3,750	6,820	8,340	3,840		
	Max	178,000	329,000	157,000	58,400	219,000	173,000	166,000	215,000	172,000		

Figure 3.6-1: Sample Location (Stone Run) of American Eel Collected for Wild Health Screening, Conowingo West Eel Collection Facility, 2025

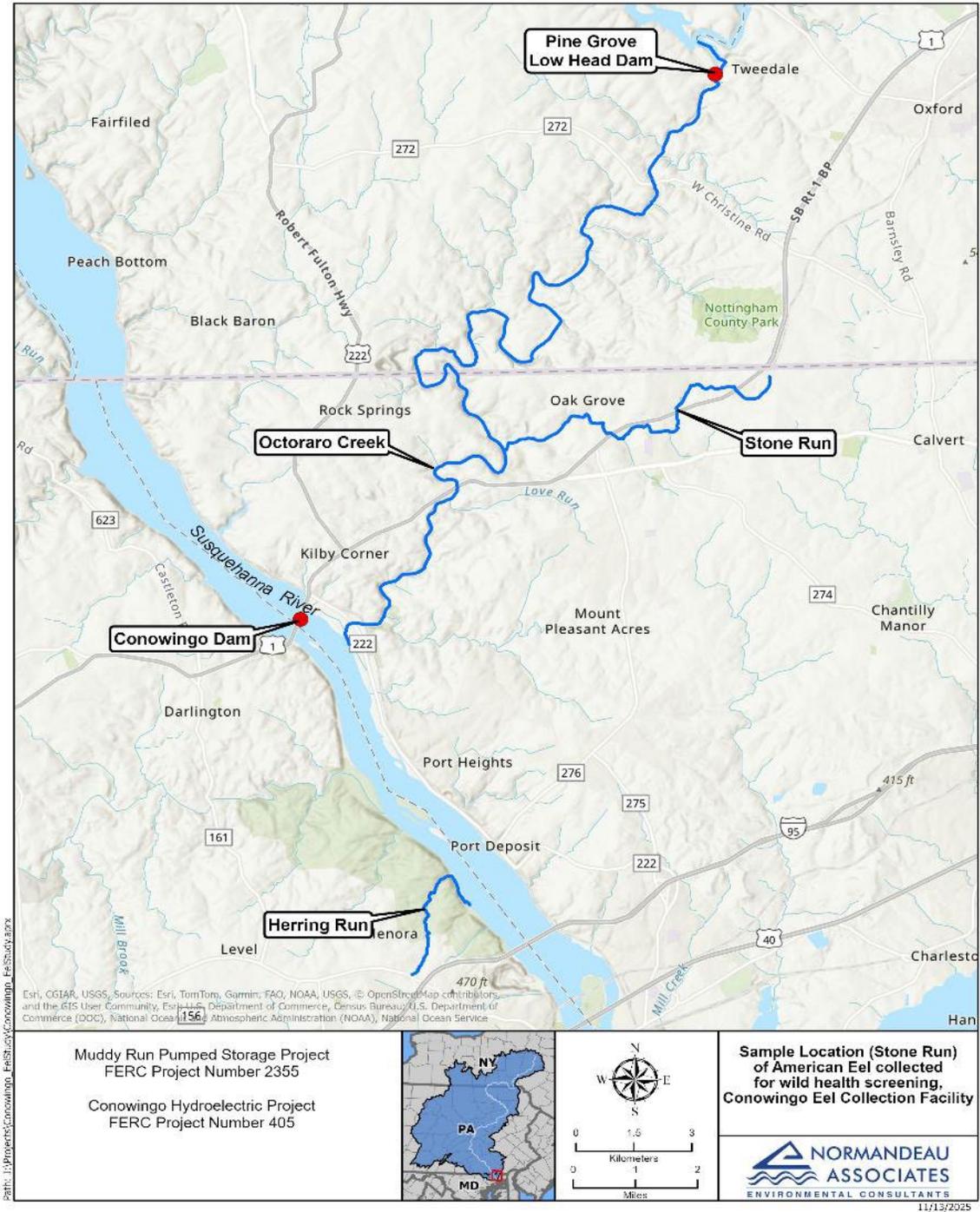


Figure 3.6-2: Stone Run, a Tributary of Octoraro Creek used for the Wild Health Screening, Conowingo Dam, 2025



Figure 4.1-1: Daily Eel Catch, Conowingo West Eel Collection Facility, 2025

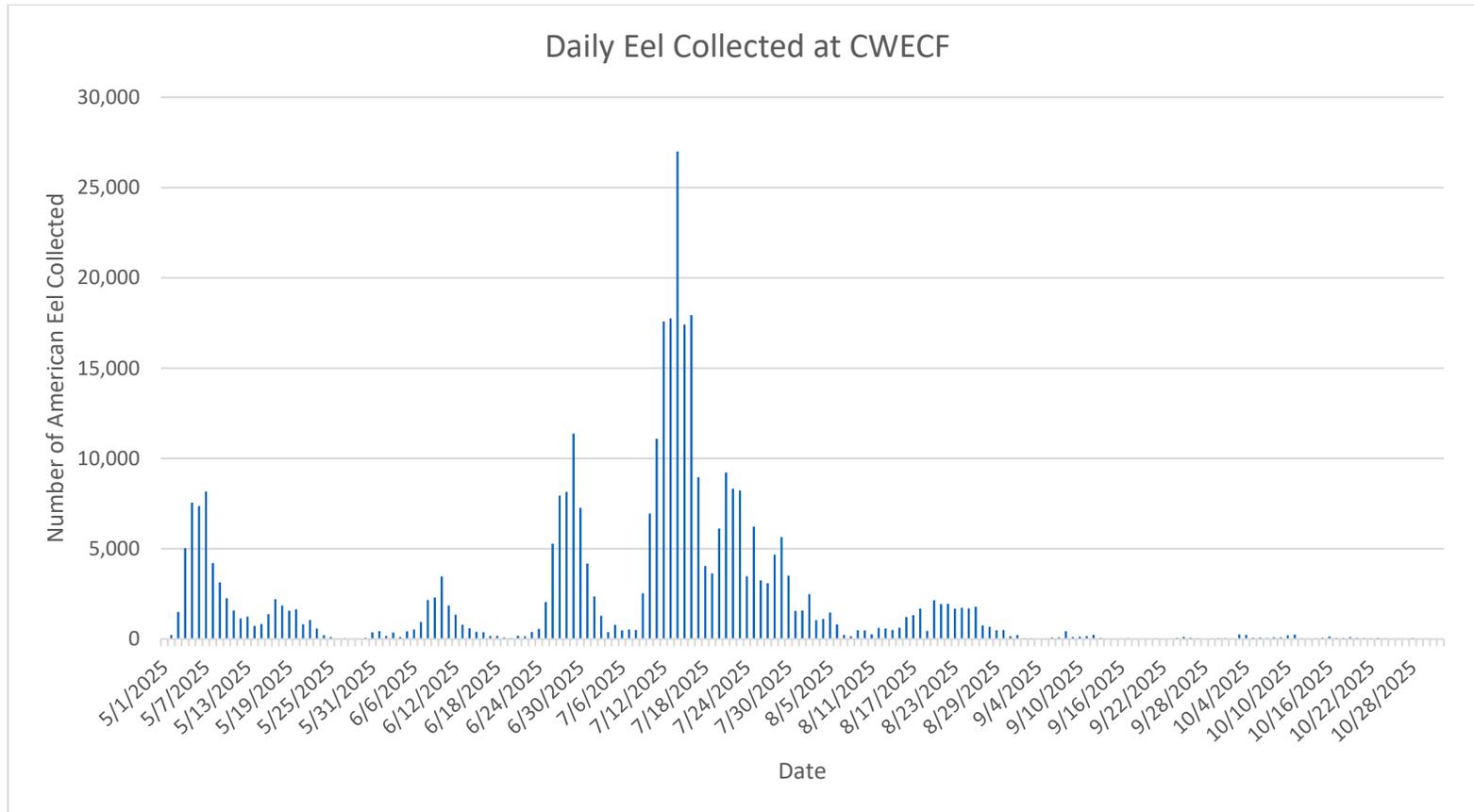


Figure 4.2-1: Eel with hemorrhage left Side, Conowingo West Eel Collection Facility, 2025

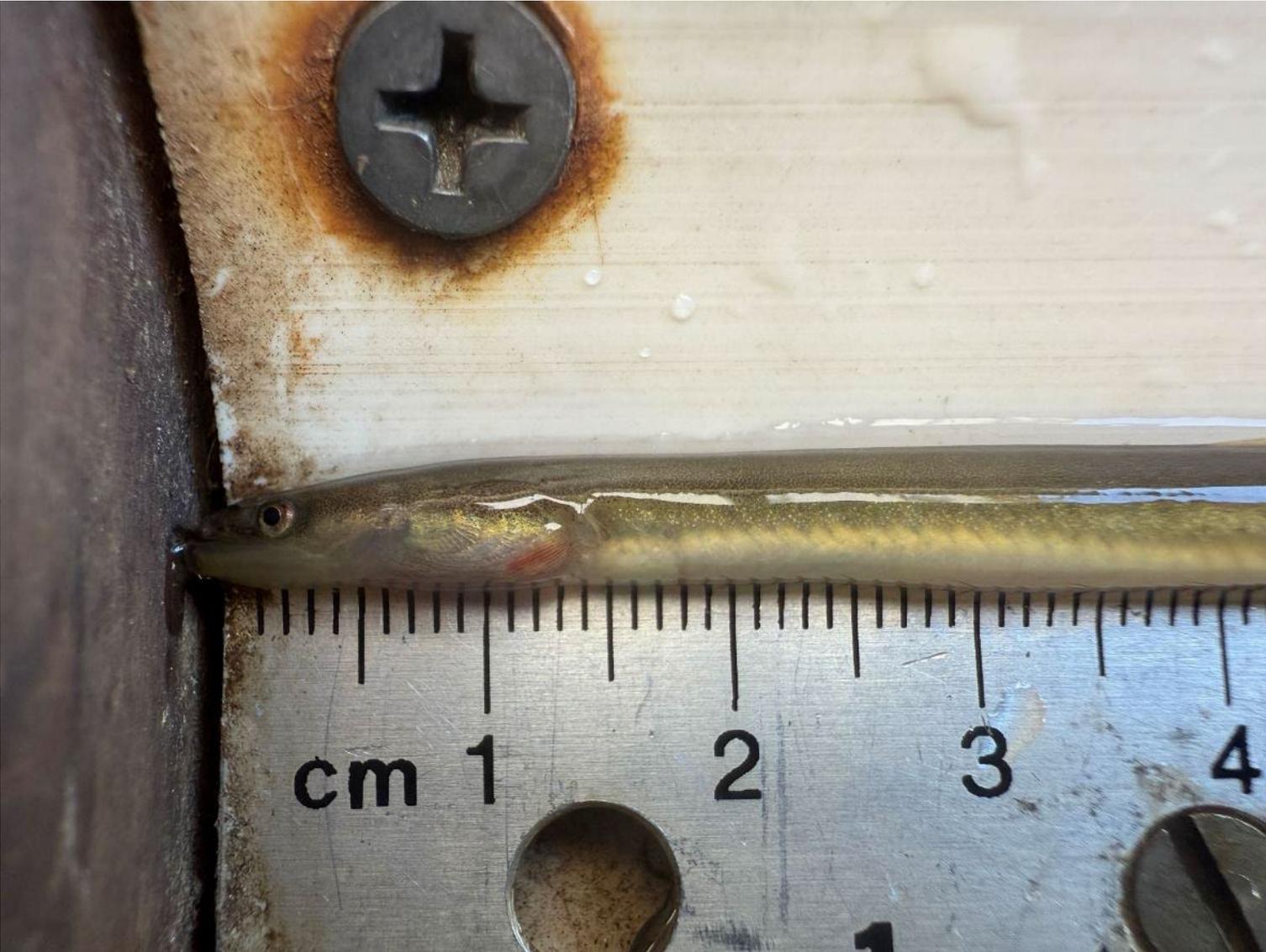


Figure 4.2-2: Eel with a scrape, Conowingo West Eel Collection Facility, 2025



Figure 4.2-3: Eel with multiple scrapes, Conowingo West Eel Collection Facility, 2025



Figure 4.4-1: Percent of Eels Collected per Week, Conowingo West Eel Collection Facility, 2025

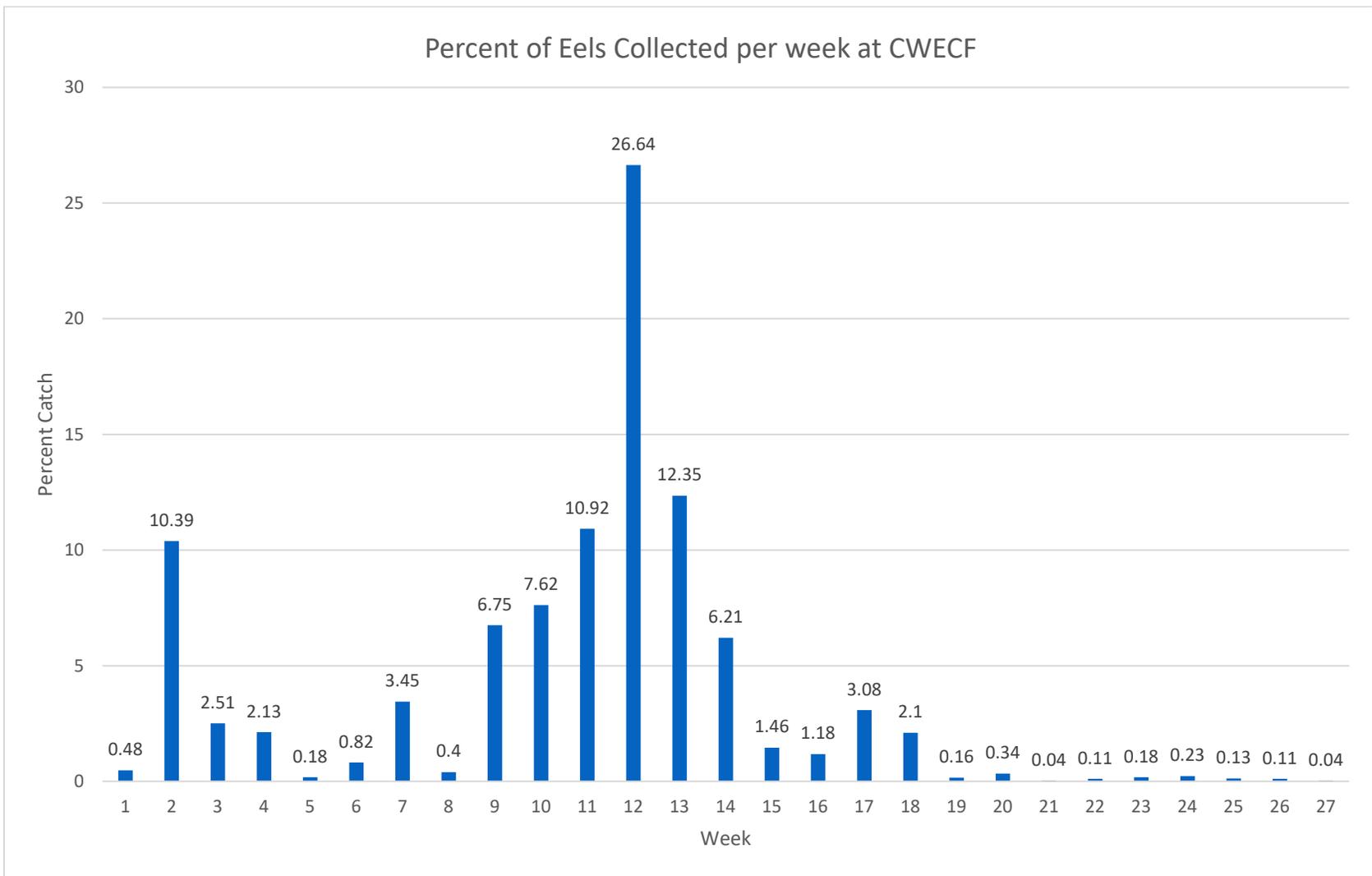
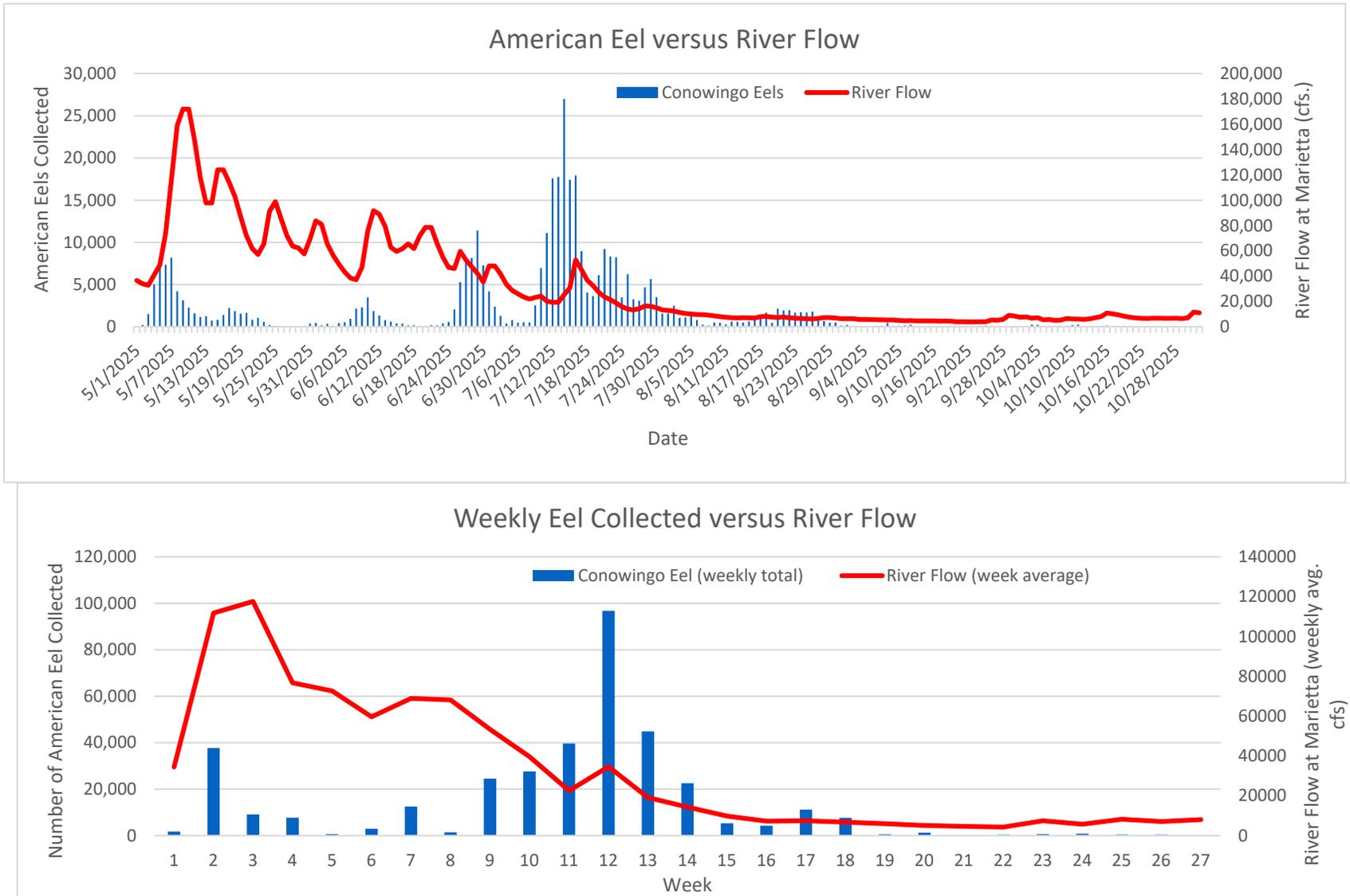


Figure 4.5-1: Daily Eel Catch and Daily Average River Flow (cfs, top graph) and Weekly Eel Catch and Weekly Average River Flow (cfs, bottom graph), Conowingo West Eel Collection Facility, 2025



**Figure 4.5-2: Eel Catch and Lunar Fraction (Daily above, Weekly Avg. below), Conowingo West Eel Collection Facility, 2025
(1.0 Equals Full Moon)**

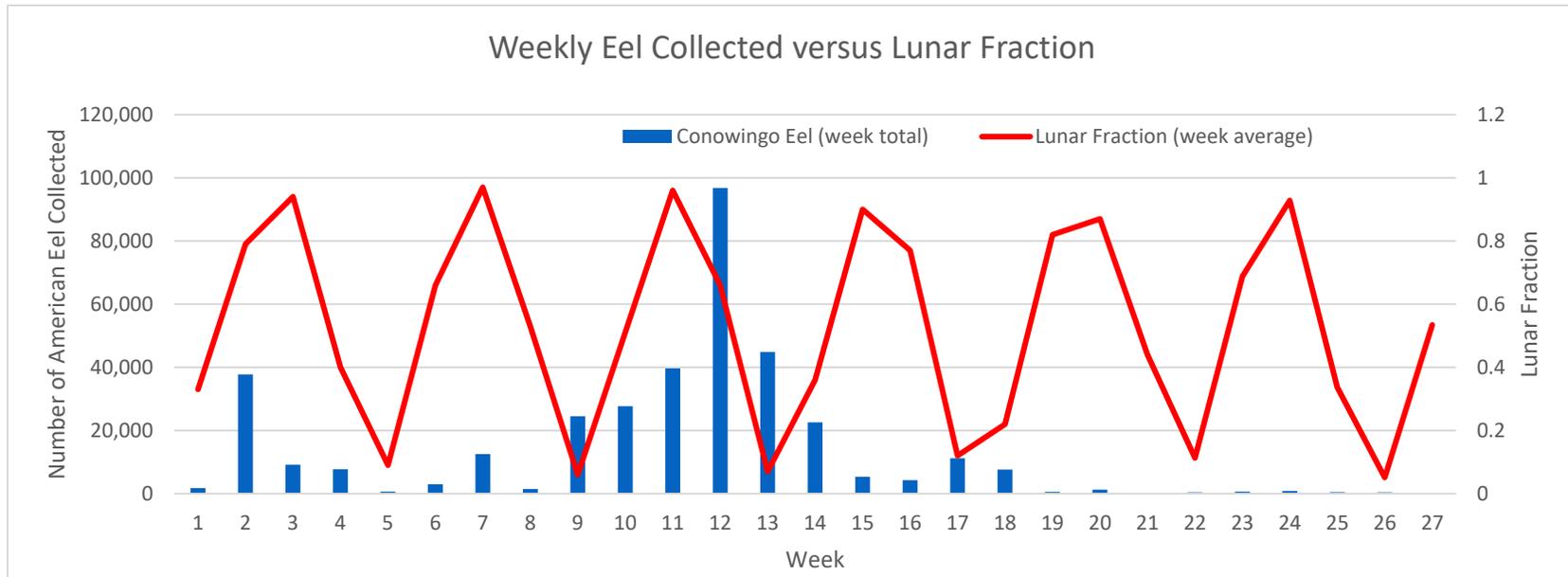
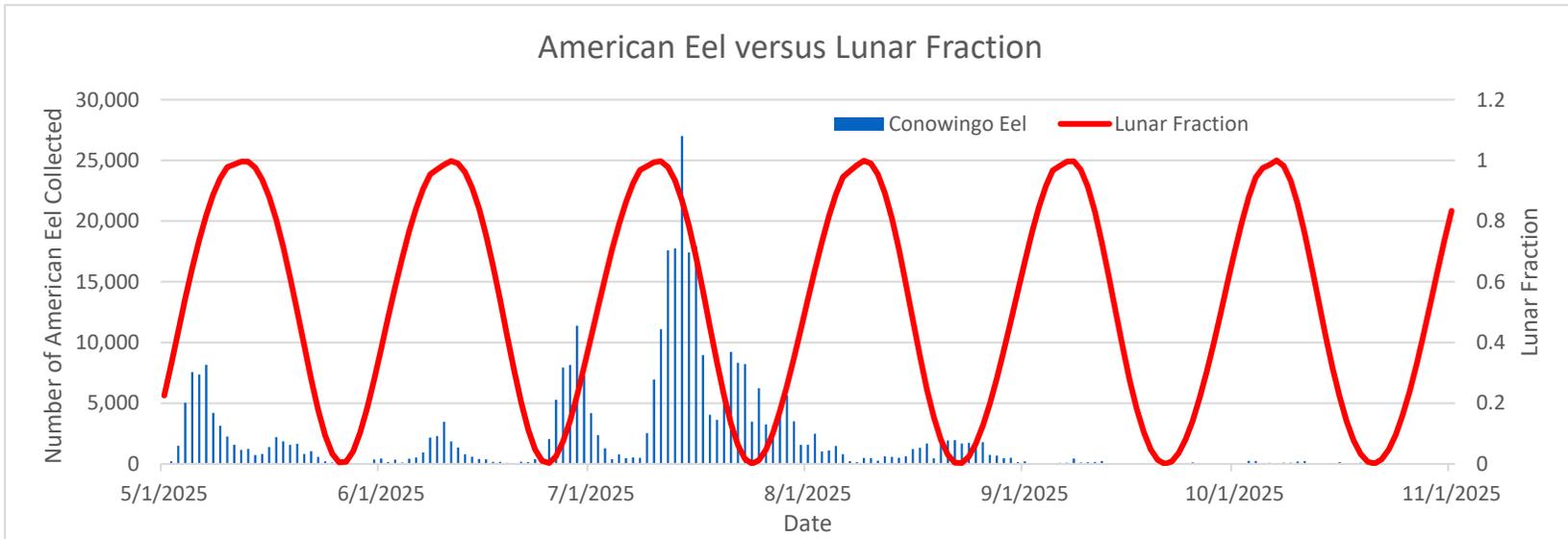


Figure 4.5-3: Eel Catch and Temperature, Conowingo West Eel Collection Facility, 2025

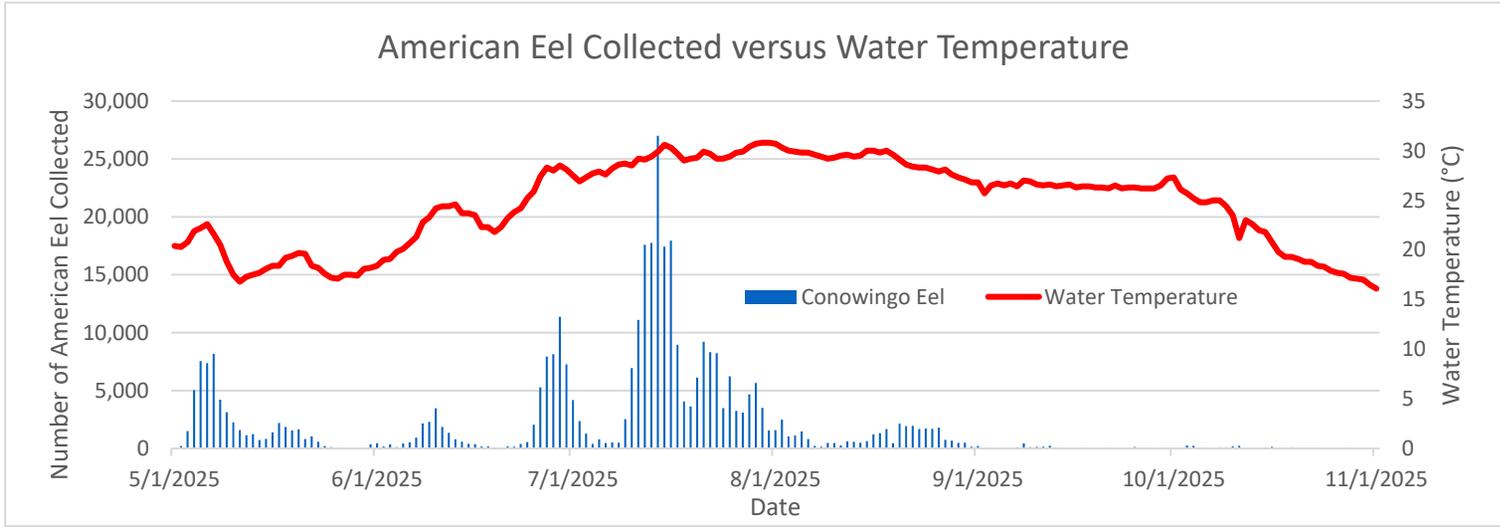


Figure 4.5-4: Eel Catch and Dissolved Oxygen, Conowingo West Eel Collection Facility, 2025

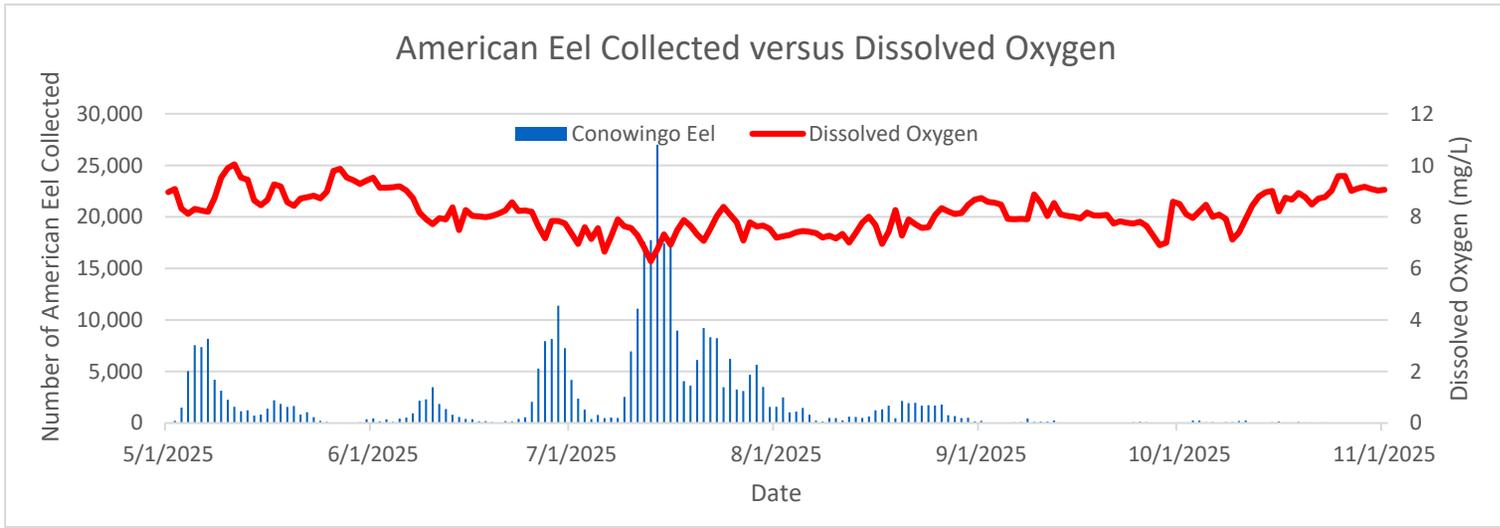


Figure 4.7-1: Eel Stocking Sites, 2015-2025

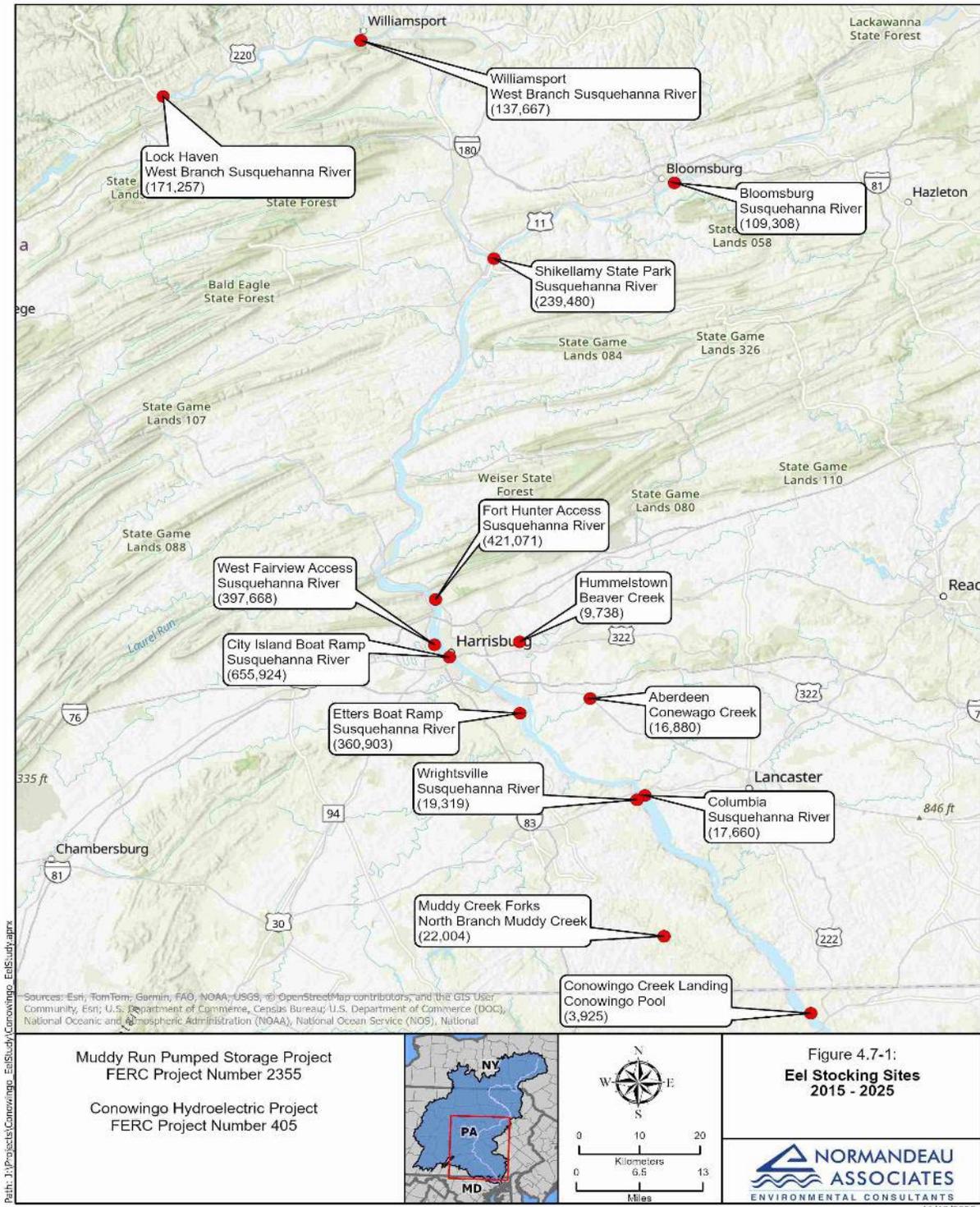


Figure 4.7-2: Williamsport boat ramp (Site 10) Stocking Site, 2025



Figure 4.7-3: Fort Hunter Access (Site 6) Stocking Site, 2025



Figure 4.7-4: Etters boat ramp (Site 4) Stocking Site, 2025



Figure 4.7-5: City Island boat ramp (Site 12) Stocking Site, 2025



Figure 4.7-6: Conowingo Creek boat ramp (Site 1) Stocking Site, 2025



Figure 5.0-1: Transition from Riprap Shoreline to Ramp Entrance, Conowingo West Eel Collection Facility, 2025



Appendix A:
**Method of Aging Eel Otolith, Conowingo West Eel
Collection Facility, 2025**

Method of Aging

A representative sample of juvenile eels were frozen for future age determination. Aging of the preserved individuals was conducted using otolith microstructure analysis and followed established techniques for the species presented in the Proceedings of the Workshop on Aging and Sexing American Eel (ASMFC 2001). To remove the sagittal otoliths from an individual eel, a transverse cut was made through the cranium. When positioned correctly, the cut exposed the posterior part of the brain, and the two cavities of the inner ear were visible on either side of the rachidian bulb. The otolith bones were then carefully removed from the inner ear cavities with a pair of tweezers, cleaned, and placed in a clean, dry, labeled glass vial. Each otolith sample was allowed to dry for a minimum of 12 hours prior to proceeding to the next step.

At the conclusion of the drying time, each otolith was embedded in a clear epoxy (e.g., 2-part West System epoxy resin) poured into a small mold and allowed adequate time to fully cure. Using a double-bladed, slow speed saw, a 0.2-mm thick transverse section was cut through the nucleus perpendicular to the sulcus. The otolith section was then bonded to a glass slide using CrystalBond. Each mounted otolith sample was polished using a series of fine grade lapping films (12, 9 and 3 micron) and the sample was periodically inspected to ensure no damage to the otolith section occurred. Following polishing, the mounted sections were etched in a 5% solution of EDTA for 3-5 minutes, rinsed, and then stained in a bath of toluidine blue for approximately 5 minutes to enhance visibility of each annulus.

After removal of the slide and otolith section from the staining bath, the sample was rinsed with distilled water and was ready for age determination. Sectioned otoliths were inspected under a dissecting microscope using both reflected and transmitted light and an external fiberoptic light source. Each otolith sample was examined by two independent readers and the number of distinct annuli was determined. Following independent age determinations for each sample by both readers, the lists of age estimates were compared. If the two readers agreed on the analysis, the age estimate was accepted. If readers of the slides weren't in agreement on an age, that slide was re-analyzed. If no consensus was met, the otolith was rejected. The age reported herein was the freshwater age (i.e., the numbers of annuli outside the transition mark - the end of larval growth in salt water).

NR- Could not be read

ASMFC (Atlantic States Marine Fisheries Commission). 2001. Proceedings of the Workshop on Aging and Sexing American Eel. ASMFC Special Report No. 72. Washington, D.C. 25 p.

MUDDY RUN PUMPED STORAGE PROJECT - FERC PROJECT NUMBER 2355
CONOWINGO HYDROELECTRIC PROJECT - FERC PROJECT NUMBER 405

Date	Eel #	Length (mm)	Weight (g)	Age 1- CNG	Age 2- CAF	Consensus
5/5/2025	1	127	2.5	3	3	3
	2	125	2.7	2	2	2
	3	101	1.7	2	2	2
	4	95	0.8	1	1	1
	5	117	1.5	3	3	3
5/12/2025	1	126	2.2	2	2	2
	3	104	1.1	2	2	2
	4	133	2.4	3	3	3
	7	115	1.8	3	3	3
	8	144	3.1	3	3	3
5/19/2025	2	147	4.4	4	4	4
	4	132	3.3	3	3	3
	6	127	2.5	3	3	3
	7	92	2.0	1	1	1
	9	150	3.1	4	3	No Consensus
5/26/2025	1	109	1.3	2	2	2
	2	95	0.8	2	2	2
	3	108	1.7	2	2	2
	4	144	2.9	4	4	4
	5	152	3.9	4	4	4
6/2/2025	1	153	3.0	3	3	3
	2	130	2.1	3	3	3
	3	153	3.5	4	4	4
	4	106	1.3	2	2	2
	5	124	2.0	3	7	No Consensus
6/9/2025	1	125	1.6	2	2	2
	3	159	1.2	4	4	4
	4	113	0.5	2	2	2
	11	174	2.3	6	6	6
	23	152	2.8	4	4	4
6/16/2025	1	105	1.3	2	2	2
	2	133	2.3	3	3	3
	3	141	3.3	3	3	3
	4	94	0.8	1	1	1
	8	175	4.5	6	6	6
6/23/2025	1	132	2.4	3	3	3
	2	98	0.8	1	1	1
	3	148	2.6	3	3	3
	4	109	1.3	3	3	3
	5	125	1.9	4	4	4

MUDDY RUN PUMPED STORAGE PROJECT - FERC PROJECT NUMBER 2355
CONOWINGO HYDROELECTRIC PROJECT - FERC PROJECT NUMBER 405

6/30/2025	1	111	1.3	2	2	2
	2	123	1.1	3	3	3
	3	128	1.2	3	3	3
	4	103	0.9	1	1	1
	5	133	1.9	4	4	4
7/7/2025	1	143	2.5	3	3	3
	2	98	1	1	1	1
	4	135	2.4	3	3	3
	5	105	1.4	1	1	1
	11	114	1.7	3	3	3
7/14/2025	15	84	0.8	2	2	2
	17	89	0.6	1	1	1
	18	80	0.3	1	1	1
	19	106	1	2	2	2
	20	110	0.6	1	1	1
7/21/2025	1	125	2.4	3	3	3
	2	87	0.6	1	1	1
	3	77	0.4	1	1	1
	4	122	2.5	2	2	2
	5	110	1.4	1	1	1
7/28/2025	1	101	1.1	1	1	1
	4	120	2	2	2	2
	6	115	1.3	1	1	1
	9	92	0.8	1	1	1
	23	112	1.5	3	3	3
8/2/2025	1	157	3.5	5	5	5
	2	123	1.8	3	3	3
	3	102	1.2	2	2	2
	4	138	2.8	3	3	3
	5	140	2.6	3	3	3
8/11/2025	1	109	1.1	2	2	2
	2	141	2.2	3	3	3
	3	103	1.2	1	1	1
	4	114	1	1	1	1
	5	92	0.6	1	1	1
8/18/2025	1	172	4.2	5	5	5
	2	109	0.7	1	1	1
	3	99	1.1	1	1	1
	4	109	1.5	2	2	2
	5	129	1.3	2	2	2

MUDDY RUN PUMPED STORAGE PROJECT - FERC PROJECT NUMBER 2355
CONOWINGO HYDROELECTRIC PROJECT - FERC PROJECT NUMBER 405

8/25/2025	1	113	1.3	1	1	1
	4	126	2.6	3	3	3
	6	95	0.9	1	1	1
	18	110	1.6	2	2	2
	19	121	1.7	3	3	3
9/2/2025	1	153	3.5	3	3	3
	2	121	1.5	2	2	2
	3	131	2.4	4	4	4
	4	106	1.2	1	1	1
	5	144	3.3	3	3	3
9/8/2025	1	155	3.5	4	4	4
	2	110	1.1	2	2	2
	3	172	4.6	6	6	6
	4	130	2.1	3	3	3
	5	105	0.9	2	2	2
9/15/2025	1	87	0.6	1	1	1
	2	128	1.8	3	3	3
	3	110	1.2	2	2	2
	4	100	1.2	1	1	1

Appendix B:
Weekly Biological Data and Environmental Conditions
for Conowingo West Eel Collection Facility, 2017-
2025

MUDDY RUN PUMPED STORAGE PROJECT - FERC PROJECT NUMBER 2355
CONOWINGO HYDROELECTRIC PROJECT - FERC PROJECT NUMBER 405

2017 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Octoraro Eels	17	9	9	39	21	7	2	61	1565	19	13	7067	419	48	16	68	1793	12	149	12
Conowingo Eels	4387	151	1224	5384	2196	1761	5199	23318	8090	799	1503	1432	15435	32524	13130	2654	2931	88	51	43
Creek flow (cfs) (wk avg)	69100	127229	53543	29800	47886	47729	33100	32257	27443	22700	21414	38157	60143	30057	26471	20886	16614	11819	13779	11922
Lunar Fraction (wk avg)	0.56	0.96	0.66	0.09	0.37	0.92	0.78	0.16	0.24	0.84	0.88	0.26	0.14	0.72	0.94	0.38	0.07	0.58	0.96	0.56
Water temp (°C) (wk avg)	17.7	12.9	15.0	19.2	19.2	20.2	22.1	25.9	26.4	27.4	28.0	28.6	27.6	25.0	26.1	25.8	27.0	26.7	25.0	23.4
Dissolved Oxygen (mg/L) (wk avg)	9.1	10.3	10.2	8.7	8.5	7.9	7.2	7.9	7.3	6.4	7.3	11.7	9.5	7.8	7.3	7.3	9.4	8.3	8.6	9.2

2018 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Octoraro Eels	5	31	2072	101	115	407	55	3	4	0	1	11	464	29	393	343	73	5	69	22
Conowingo Eels	7	6443	6879	197	398	1316	462	657	1077	6020	3175	1029	7986	20965	5262	3948	1870	165	73	20
Creek flow (cfs) (wk avg)	49220	39000	83957	99900	54800	36086	39886	25500	25314	24471	19314	13871	208320	84300	75471	127271	65486	36386	27286	139943
Lunar Fraction (wk avg)	0.89	0.40	0.06	0.60	0.96	0.55	0.06	0.47	0.95	0.69	0.10	0.34	0.91	0.80	0.18	0.22	0.82	0.89	0.29	0.12
Water temp (°C) (wk avg)	15.2	19.5	19.2	18.5	21.5	23.2	23.1	24.6	26.0	27.7	29.5	29.4	24.8	23.5	25.4	25.2	23.5	25.3	26.9	21.5
Dissolved Oxygen (mg/L) (wk avg)	11.9	9.8	9.4	9.5	8.3	8.0	8.8	9.9	8.2	9.0	8.8	7.9	10.9	11.0	10.0	11.0	10.6	11.1	8.0	9.8

2019 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Octoraro Eels	1	9	5	3	9	20	144	12	36	73	2244	8266	2874	391	42	5	19	12	4	1	0
Conowingo Eels	6	4616	2237	1774	9359	2097	1706	2187	2056	39685	3076	3141	5210	3213	1158	38115	3160	3135	192	40	18
Creek flow (cfs) (wk avg)	59425	76614	121329	70857	58300	59143	34271	61371	69800	29100	30243	21214	24643	16857	16643	14343	16214	12221	10260	12191	4560
Lunar Fraction (wk avg)	0.07	0.16	0.80	0.85	0.29	0.09	0.69	0.93	0.43	0.06	0.57	0.96	0.58	0.07	0.44	0.95	0.71	0.12	0.31	0.89	0.99
Water temp (°C) (wk avg)	15.3	17.5	15.4	18.6	22.6	21.9	23.0	23.3	22.8	26.7	28.6	28.9	30.3	29.5	30.4	29.2	29.2	28.0	27.5	26.6	26.3
Dissolved Oxygen (mg/L) (wk avg)	10.8	9.5	10.2	9.3	8.6	8.2	9.2	8.8	8.3	7.9	7.6	10.3	8.9	8.5	8.9	7.3	8.5	8.3	9.1	7.5	8.1

2020 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Octoraro Eels									0	15	64	44	40	20	71	1992	1005	306	22	5	5	2	6
Conowingo Eels				2290	20801	36993	10842	3773	1895	4008	15127	7509	36742	17693	29622	31905	24947	6993	2570	223	608	9	101
Creek flow (cfs) (wk avg)				43920	30514	31443	26043	19329	15786	12454	10883	11526	10149	7830	15471	12973	8797	7106	8830	6784	4574	5044	4139
Lunar Fraction (wk avg)				0.05	0.21	0.85	0.78	0.20	0.13	0.76	0.88	0.32	0.07	0.65	0.94	0.47	0.05	0.52	0.96	0.62	0.08	0.39	0.93
Water temp (°C) (wk avg)				17.66	19.64	23.23	24.24	25.17	26.00	28.07	29.27	29.37	29.93	30.87	29.80	28.79	28.30	28.81	28.03	27.41	26.09	23.59	23.00
Dissolved Oxygen (mg/L) (wk avg)				9.55	8.41	7.62	7.94	7.81	7.15	7.09	6.74	7.29	6.96	6.99	7.31	7.30	7.33	7.13	7.20	7.21	7.70	8.33	7.83

No collection occurred until May 18, 2020 (Week 4)

2021 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Octoraro Eels	0	5	9	13	29	77	1050	1201	21	238	519	14925	154	4836	452
Conowingo Eels	5	44640	15851	17528	42848	29424	23335	18176	2711	5659	75609	63442	59128	50982	26007
Creek flow (cfs) (wk avg)	19500	57229	78400	37500	20071	28114	26786	22114	15314	73371	67429	30057	17900	13486	51014
Lunar Fraction (wk avg)	0.76	0.35	0.05	0.52	0.96	0.49	0.04	0.39	0.94	0.64	0.09	0.26	0.89	0.77	0.18
Water temp (°C) (wk avg)	14.00	15.93	13.39	15.13	20.71	20.43	22.90	24.81	24.91	26.41	27.96	27.89	24.94	24.93	25.91
Dissolved Oxygen (mg/L) (wk avg)	9.30	10.02	9.89	10.53	9.01	8.45	8.45	7.50	7.35	7.30	9.18	8.84	8.24	7.66	7.54

2021 Week (cont.)	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Octoraro Eels	112	2920	17350	1319										
Conowingo Eels	12628	3747	19265	58774	23814	14170	29424	23335	18176	2711	5659	75609	63442	59128
Creek flow (cfs) (wk avg)	51571	16880	26843	62671	51843	23525	28114	26786	22114	15314	73371	67429	30057	17900
Lunar Fraction (wk avg)	0.16	0.81	0.88	0.31	0.09	0.57	0.49	0.04	0.39	0.94	0.64	0.09	0.26	0.89
Water temp (°C) (wk avg)	26.64	28.19	25.67	24.19	20.57	22.03	20.43	22.90	24.81	24.91	26.41	27.96	27.89	24.94
Dissolved Oxygen (mg/L) (wk avg)	7.71	7.02	7.28	7.83	8.33	8.04	8.45	8.45	7.50	7.35	7.30	9.18	8.84	8.24

2022 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Octoraro Eels															
Conowingo Eels	796	8621	13336	12834	9313	8616	959	1832	555	10074	4862	11221	17245	3441	1286
Creek flow (cfs) (wk avg)	46429	110314	45314	32014	2206	20214	21600	15100	14643	10203	7320	6839	6216	6264	6143
Lunar Fraction (wk avg)	0.17	0.77	0.88	0.25	0.08	0.64	0.94	0.38	0.04	0.49	0.096	0.52	0.05	0.36	0.93
Water temp (°C) (wk avg)	13.8	14.2	17.8	21.3	22.7	24.8	24.3	23.6	24.6	26.7	27.4	28.4	29.4	29.0	29.4
Dissolved Oxygen (mg/L) (wk avg)	10.45	10.43	9.09	7.67	8.11	7.72	7.96	7.39	6.82	6.80	7.34	6.66	6.24	6.90	6.79

2022 Week (cont.)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Octoraro Eels				4240	46	91	272	1526	175	646	78	26	49	10	0
Conowingo Eels	1768	4612	838	747	11478	7353	3631	1035	665	2514	73	69	23	1	0
Creek flow (cfs) (wk avg)	4656	6147	5596	17724	20200	11513	14329	18829	15371	12971	9641	8809	8433	59357	41200
Lunar Fraction (wk avg)	0.667	0.103	0.234	0.871	0.800	0.202	0.137	0.787	0.900	0.344	0.074	0.672	0.960	0.507	0.138
Water temp (°C) (wk avg)	28.5	28.0	28.4	27.5	24.8	24.1	21.6	17.3	15.5	15.5	15.1	14.8	16.5	11.4	7.3
Dissolved Oxygen (mg/L) (wk avg)	6.88	6.76	6.91	6.95	7.97	8.02	8.73	9.72	10.39	10.25	10.33	9.42	9.29	10.16	12.9

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2023 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Octoraro Eels	493	2812	1767	7503	844	417	447	1216	1246	9471	35387	184	82	117	61
Conowingo Eels	33	2441	24747	6310	3119	3493	879	928	4499	37844	69566	20518	5805	1110	395
Creek flow (cfs) (wk avg)	126533	53429	25271	15829	10939	8203	10354	11614	14443	21743	25400	21829	21657	18029	19757
Lunar Fraction (wk avg)	0.96	0.73	0.09	0.27	0.85	0.82	0.17	0.15	0.74	0.90	0.28	0.07	0.61	0.94	0.41
Water temp (°C) (wk avg)	12.0	14.9	19.3	20.5	22.2	24.2	24.2	23.9	24.4	26.4	28.1	28.6	28.3	27.5	27.0
Dissolved Oxygen (mg/L) (wk avg)	10.53	9.67	9.08	8.97	8.95	8.01	7.32	7.92	7.67	7.57	7.61	7.20	7.86	7.74	7.64

2023 Week (cont.)	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Octoraro Eels	35	15	0	9	7											
Conowingo Eels	142	4047	11624	2907	5658	2092	406	4069	4118	133	25	76	42	4	5	0
Creek flow (cfs) (wk avg)	37429	41557	28129	18071	30200	21900	25757	16300	20929	21614	17871	21729	20400	13914	24396	35250
Lunar Fraction (wk avg)	0.04	0.46	0.95	0.55	0.055	0.323	0.923	0.701	0.121	0.203	0.851	0.830	0.236	0.112	0.751	0.997
Water temp (°C) (wk avg)	26.6	24.0	24.5	25.3	26.1	22.7	19.8	19.2	19.6	16.2	14.1	14.2	12.5	11.6	11.0	7.9
Dissolved Oxygen (mg/L) (wk avg)	8.18	8.57	8.17	8.16	7.95	8.71	9.11	9.32	8.78	10.61	10.20	10.13	10.38	10.52	10.98	11.76

2024 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Octoraro Eels	1	2	0	4	80	34480	17609	249	54	1490	32	13	19	1972	28809	1
Conowingo Eels	1334	12965	2473	4663	19314	3161	1659	1730	12541	3399	5377	2519	1072	11459	6991	36312
Creek flow (cfs) (wk avg)	29875	31557	66785	42900	30414	23242	15685	13014	11171	13786	10914	9444	11551	13614	35643	102300
Lunar Fraction (wk avg)	0.330	0.060	0.540	0.960	0.630	0.064	0.390	0.920	0.760	0.110	0.250	0.830	0.840	0.190	0.140	0.720
Water temp (°C) (wk avg)	20.13	21.93	20.06	21.59	26.34	26.64	26.81	28.01	30.13	29.54	30.30	31.66	31.39	30.50	30.51	24.34
Dissolved Oxygen (mg/L) (wk avg)	10.70	8.41	9.06	8.91	7.29	7.26	7.88	7.87	7.29	7.62	7.00	6.52	7.32	7.75	7.37	8.72

2024 Week (cont.)	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Octoraro Eels	48	21	10	1	0											
Conowingo Eels	125604	54025	41467	16855	2962	1841	960	281	41	99	46	44	215	73	168	5
Creek flow (cfs) (wk avg)	34343	19000	17386	10303	7944	8631	10977	9569	8149	8013	6173	5553	5620	6759	14023	28367
Lunar Fraction (wk avg)	0.910	0.300	0.060	0.580	0.95	0.44	0.15	0.43	0.95	0.59	0.07	0.29	0.89	0.74	0.15	0.03
Water temp (°C) (wk avg)	24.93	26.37	27.14	26.03	26.69	25.49	24.94	23.34	20.84	19.61	18.04	17.47	15.93	15.06	13.99	8.93
Dissolved Oxygen (mg/L) (wk avg)	8.05	8.68	8.14	7.89	8.36	7.93	8.23	9.48	10.63	10.06	11.03	11.66	11.29	11.40	10.47	11.63

MUDDY RUN PUMPED STORAGE PROJECT - FERC PROJECT NUMBER 2355
CONOWINGO HYDROELECTRIC PROJECT - FERC PROJECT NUMBER 405

2025 Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Octoraro Eels	1	1	26	13	154	210	56	4044	32094	53326	5169	778	12	173
Conowingo Eels	1734	37738	9122	7732	658	2972	12538	1453	24528	27667	3677	96769	44856	22569
Creek flow (cfs) (wk avg)	34467	111814	117643	76757	72686	59671	68943	68171	53371	39643	22600	34614	19157	14357
Lunar Fraction (wk avg)	0.33	0.79	0.94	0.40	0.09	0.66	0.97	0.53	0.06	0.51	0.96	0.66	0.07	0.36
Water temp (°C) (wk avg)	20.50	20.73	17.74	18.87	17.57	19.77	23.91	22.73	26.11	27.70	28.56	29.73	29.50	30.51
Dissolved Oxygen (mg/L) (wk avg)	8.79	8.72	9.15	8.74	9.45	9.13	7.93	8.10	7.98	7.46	7.30	7.18	7.73	7.45

2025 Week(cont.)	15	16	17	18	19	20	21	22	23	24	25	26	27
Octoraro Eels	84	4756	895	45	2	1	5						
Conowingo Eels	5304	4295	11195	7636	565	1250	22	387	649	853	464	397	147
Creek flow (cfs) (wk avg)	9840	7253	7497	6757	5989	5079	4645	4306	7486	5746	8259	7081	8050
Lunar Fraction (wk avg)	0.90	0.77	0.12	0.22	0.82	0.87	0.44	0.11	0.69	0.93	0.34	0.05	0.53
Water temp (°C) (wk avg)	29.61	29.61	29.11	27.77	26.53	26.63	26.55	26.28	26.31	23.98	21.33	18.66	17.03
Dissolved Oxygen (mg/L) (wk avg)	7.34	7.48	7.59	8.14	8.41	8.27	8.03	7.69	7.89	7.85	8.69	8.89	9.15

Appendix C:
**Fish Health Inspection Report, Conowingo West Eel
Collection Facility, 2025**



DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
FISH HEALTH INSPECTION REPORT¹

This report is NOT evidence of future disease status. To determine status, contact the inspecting biologist below.

Additional Inspection Information
Laboratory Case Number:

Case 24-112 received March 19, 2025. Collection of 60 American eels occurred on 3/18/2025 by Michael Martinek.

Bacterial cultures - 58/60 fish were of adequate size to obtain appropriate samples; primary inoculum from kidney onto Brain Heart Infusion Agar (BHIA), negative for AS, YR, EI.

Virology testing of kidney/spleen homogenates on CHSE-214, EPC, BF-2, and FHM cell lines, negative for IH, IP, OM, VH, and any other replicating agent.

*Gross examination of swimbladders revealed 68% (41/60) prevalence of swimbladder nematode, the highest observed prevalence to date (previous years ~25 - 59%).

PATHOGEN ABBREVIATIONS	SPECIES ABBREVIATIONS			
AS Aeromonas salmonicida EI Edwardsiella ictaluri RS Renibacterium salmoninarum YR Yersinia ruckeri MC Myxobolus cerebralis IH Infectious Hematopoietic Necrosis Virus IP Infectious Pancreatic Necrosis Virus IS Infectious Salmon Anemia Virus LM Largemouth Bass Virus OM Oncorhynchus masou Virus SV Spring Viremia of Carp Virus VH Viral Hemorrhagic Septicemia Virus	Amur Pike AMP Apache Trout APT Arctic Grayling ARG Atlantic Salmon ATS Beautiful Shiner GBS Big Bend Gambusia BBG Bigmouth Buffalo BBF Black Bullhead BLB Black Crappie BLC Blue Catfish BCF Blue X Channel BCFCCF Bluegill BLG Blue Pike BLP Bluntnose Shiner PBS Bonytail Chub BTC Bowfin BON Brook Trout BKT Brown Bullhead BRB Brown Trout BNT Carp CAP Channel Catfish CCF Chihuahua Chub CCH Chum Salmon CHS Coho Salmon COS	Colorado Pikeminnow CPM Comanche Springs pupfish CSP Cutthroat Trout CUT Darters DAR Desert Pupfish DEP Desert Sucker DES Devils Hole Pupfish DHP Dolly Varden DOV Dolly Varden X BKT DOVBKT Fall Chinook Salmon FCS Fathead Minnow FHM Flathead Catfish FCF Freshwater Drums FRD Gars GAR Gila Topminnow GTM Gila Trout GIT Golden Shiner GOS Golden Trout GOT Goldfish GOF Grass Carp GRC Green Sunfish GSF Guadalupe Bass GUB Herrings HEG Killifishes KIH	Kokanee KUE Landlocked ATS LAS Leon Springs pupfish LSP Lake Trout LAT Lampreys LAY Largemouth Bass LMB Livebearers LIR Miscellaneous Warm Water MSC Mooneyes MOE Mudminnows MUW Muskellunge MUE Northern Pike NOP Ohrd Trout OHT Other Catfishes OCF Other Minnows OTM Other Pikes OTP Other Salmonids OSA Other Suckers OTS Other Sunfishes OSF Paddlefish PAH Pahranagat Roundtail Chub PRC Pecos Gambusia PEG Pink Salmon PKS Rainbow Trout RBT	Rainbow Trout X Steelhead RBTSTT Razorback Sucker RBS Redear Sunfish RSF Rio Grande Silvery Minnow RGSM Sanora Sucker SOS Sauger SAR Smallmouth Buffalo SAB Silver Carp SVC Smallmouth Bass SMB Sockeye Salmon SOS Spotted Bass SPB Spring Chinook Salmon SCS Steelhead Trout STT Sticklebacks STK Striped Bass STB Sturgeons STN Virgin Chub VRC Walleye WAE Walleye X Sauger WAESAR Warmouth WAM White Catfish WCF Winter Chinook Salmon WCS Woundfin WDF

**Appendix D:
Chain of Custody Sheets, Conowingo West Eel
Collection Facility, 2025**



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 6/2/25 Time: 1030

No. of eels provided from CECF Collection Tank: 700

No. of eels provided from Holding Tank # 1: N/A

No. of eels provided from Holding Tank # 2: 700

No. of eels provided from Holding Tank # 3: N/A

Total number of eels provided for Transport: 700

SIGNATURES:

Normandeau/Exelon Representative: *Marie Cingola*

Agency Representative: *[Signature]*

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 6/10/25 Time: 938

No. of eels provided from CECF Collection Tank: _____

No. of eels provided from Holding Tank # 1: 700

No. of eels provided from Holding Tank # 2: _____

No. of eels provided from Holding Tank # 3: _____

Total number of eels provided for Transport: _____

SIGNATURES:

Normandeau/Exelon Representative: [Signature] Michael Northcutt

Agency Representative: [Signature]

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 6/17/25 Time: 935

No. of eels provided from CECF Collection Tank: _____

No. of eels provided from Holding Tank # 1: _____

No. of eels provided from Holding Tank # 2: 2,000

No. of eels provided from Holding Tank # 3: _____

Total number of eels provided for Transport: 2,000

SIGNATURES:

Normandeau/Exelon Representative: [Signature] (Michael Motrek)

Agency Representative: PFBC [Signature]

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 06/24/25

Time: 9:52

No. of eels provided from CECF Collection Tank: 0

No. of eels provided from Holding Tank # 1: 0

No. of eels provided from Holding Tank # 2: 2000

No. of eels provided from Holding Tank # 3: 0

Total number of eels provided for Transport: 2000

SIGNATURES:

Normandeau/Exelon Representative: Travis E. Toczky (NAI - Travis Toczky)

Agency Representative: [Signature]

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 7/1/25

Time: 0929

No. of eels provided from CECF Collection Tank: 2,000

No. of eels provided from Holding Tank # 1: 0

No. of eels provided from Holding Tank # 2: 0

No. of eels provided from Holding Tank # 3: 0

Total number of eels provided for Transport: 2,000

SIGNATURES:

Normandeau/Exelon Representative: [Signature]

Agency Representative: [Signature]

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 8/25/25

Time: 0945

No. of eels provided from CECF Collection Tank: 100

No. of eels provided from Holding Tank # 1: 0

No. of eels provided from Holding Tank # 2: 0

No. of eels provided from Holding Tank # 3: 0

Total number of eels provided for Transport: 100

SIGNATURES:

Normandeau/Exelon Representative: [Signature]

Agency Representative: [Signature]

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 9/2

Time: 927

No. of eels provided from CECF Collection Tank: 32

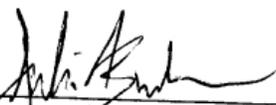
No. of eels provided from Holding Tank # 1: -

No. of eels provided from Holding Tank # 2: -

No. of eels provided from Holding Tank # 3: -

Total number of eels provided for Transport: -

SIGNATURES:

Normandeau/Exelon Representative: 

Agency Representative: 

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 9/3/25

Time: 0940

No. of eels provided from CECF Collection Tank: 36 + 1
con^e octo

No. of eels provided from Holding Tank # 1: Ø

No. of eels provided from Holding Tank # 2: Ø

No. of eels provided from Holding Tank # 3: Ø

Total number of eels provided for Transport: 37

SIGNATURES:

Normandeau/Exelon Representative: 

Agency Representative: 

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 9-4-25

Time: 1005

No. of eels provided from CECF Collection Tank: 10

No. of eels provided from Holding Tank # 1: —

No. of eels provided from Holding Tank # 2: —

No. of eels provided from Holding Tank # 3: —

Total number of eels provided for Transport: 10

SIGNATURES:

Normandeau/Exelon Representative: [Signature]

Agency Representative: [Signature]

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 9/5/25

Time: 1000

No. of eels provided from CECF Collection Tank: 28

No. of eels provided from Holding Tank # 1: —

No. of eels provided from Holding Tank # 2: —

No. of eels provided from Holding Tank # 3: —

Total number of eels provided for Transport: 28

SIGNATURES:

Normandeau/Exelon Representative: [Signature]

Agency Representative: [Signature]

Agency (circle one): USFWS PADEP PFBC SRBC MDNR



CHAIN OF CUSTODY SHEET: JUVENILE EELS PROVIDED TO RESOURCE AGENCY
PERSONNEL FROM THE CONOWINGO EEL COLLECTION FACILITY

Date: 9/8/25

Time: 1009

No. of eels provided from CECF Collection Tank: 433

No. of eels provided from Holding Tank # 1: _____

No. of eels provided from Holding Tank # 2: _____

No. of eels provided from Holding Tank # 3: _____

Total number of eels provided for Transport: _____

SIGNATURES:

Normandeau/Exelon Representative: Ashley Pickel

Agency Representative: _____

Agency (circle one): USFWS PADEP PFBC SRBC MDNR

Appendix E:
**Agency Comments on Draft 2025 Conowingo West Eel
Collection Report, May 1 - November 1**

2025 Conowingo West Eel Collection Facility Report (May 1- November 1) Comments Received by Resource Agency and Date	
Resource Agency	Date of Receipt by Constellation
Susquehanna River Basin Commission	12/5/2025
Pennsylvania Fish and Boat Commission	12/5/2025
United States Fish and Wildlife Service	12/4/2025
Maryland Department of the Environment Maryland Department of Natural Resources	No Comment Received
Pennsylvania Department of Environmental Protection	12/4/2025

Responses to Resource Agency Comments for the MDE Conowingo West Eel Collection Report, 2025

SRBC:

No Comments

PFBC:

No Comments

USFWS:

Comment: Moving forward, can Constellation provide the number of days where the collection tank capacity is exceeded, similar to what is reported in the Octoraro Report. It appears that in 2025, the Conowingo collection tank may have exceeded capacity on 5 different occasions (unless multiple removals occurred during those days).

Response: Additional language was added to Section 4.1; 2nd paragraph on Page 7. Out of the 185 days, five days were over capacity for the collection tank. On one of those days a double transport occurred, on another day a check occurred, and it was determined a double transport did not need to occur.

MDE/MDNR:

No Comment received

PADEP:

No comments

MUDDY RUN PUMPED STORAGE PROJECT - FERC PROJECT NUMBER 2355
CONOWINGO HYDROELECTRIC PROJECT - FERC PROJECT NUMBER 405

To: Mike Martinek <mmartinek@normandean.com>
Cc: Danucalov, Andrea H: (Constellation Power) <andrea.danucalov@constellation.com>
Subject: RE: Conowingo West Eel Collection 2025 (PADEP) draft report

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Andrea,

The Susquehanna River Basin Commission has reviewed the 2025 West Eel Collection report and has no comments.

Aaron

Aaron Henning
Fisheries Biologist
Susquehanna River Basin Commission
4423 North Front St.
Harrisburg, PA 17110
ahenning@srbc.gov

To: Mike Martinek <mmartinek@normandean.com>; Danucalov, Andrea H: (Constellation Power) <andrea.danucalov@constellation.com>
Subject: RE: [External] Conowingo West Eel Collection 2025 (PADEP) draft report

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Andrea,

The PFBC has no comments on the Constellation 2025 Conowingo West Eel Collection (PADEP) draft report. Thank you for the opportunity to review the draft.

Coja Yamashita | Chief
Pennsylvania Fish and Boat Commission | Division of Aquatic Species Restoration
595 East Rolling Ridge Drive | Bellefonte PA 16823
fishandboat.com

Thank you for the opportunity to review the Conowingo West Eel Collection 2025 draft report (both the report with the Sept 15 end date and the full season reports).

Moving forward, can Constellation provide the number of days where the collection tank capacity is exceeded, similar to what is reported in the Octoraro Report. It appears that in 2025, the Conowingo collection tank may have exceeded capacity on 5 different occasions (unless multiple removals occurred during those days).

Thank you for your consideration,

Sheila Eyler

U.S. Fish and Wildlife Service

Mid-Atlantic Fish & Wildlife Conservation Office

Andrea,

PADEP has reviewed the DRAFT Conowingo West Eel Collection 2025 Report received on November 7, 2025. PADEP has no comments.

Thank you for the opportunity to comment.

Ronald C. Eberts, Jr. | Environmental Protection Compliance Specialist
Department of Environmental Protection
Southcentral Regional Office
Waterways & Wetlands Program
909 Elmerton Avenue | Harrisburg, PA 17110