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ENTRAINMENT IMPACT ASSESSMENT
PROPOSED SEDCON® TURBO SYSTEM INSTALLATION
[redacted]
WILMINGTON, DELAWARE

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[redacted]

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EXECUTIVE SUMMARY

This report summarizes an assessment of potential entrainment impacts that may be associated with the proposed installation and operation of SedCon® Turbo System anti-sedimentation devices at [redacted] (the "berth"), located [redacted], in Wilmington, Delaware. The assessment focused on potential impacts to egg and larval stage *Alosa* spp. (river herring) and *Morone* saxatilis (striped bass) as these anadromous fish were identified by the State of Delaware, Department of Natural Resources and Environmental Control, Fish and Wildlife Section (DNREC-F&W) as being of particular interest in the [redacted] watershed. The premise of the assessment was that river herring and striped bass spawn in the [redacted] and that the egg and larval stages of those fish would be susceptible to entrainment in the proposed anti-sedimentation devices, thereby suggesting potential impacts to fisheries resources.

Collectively, eggs and larval stage fish are referenced as ichthyoplankton in this assessment. Ichthyoplankton sampling was performed weekly during an 8-week period beginning April 17, 2013 and ending June 6, 2013, within the spring spawning season to provide base data for this assessment. During each event, samples were collected at three water depths (along the river bottom, approximately 19 feet above the river bottom, and near the water surface), during each tide phase occurring within the 24-hour sampling day, yielding 90 ichthyoplankton samples for the assessment. The ichthyoplankton density data derived from the sampling counts were used in conjunction with the tidal hydrology of [redacted], and the normal operating pattern of the proposed anti-sedimentation devices, as provided by SedCon® Technologies, Inc. (SedCon®), to generate estimates of potential entrainment impacts to river herring and striped bass populations in the [redacted] berth.

Based on analysis of data, normal (unaltered) operation of the devices through the spring spawning season has potential to result in the entrainment of approximately 0.58% of striped bass larvae, 0.50% of striped bass eggs, and 0.54% of river herring larvae populations passing through [redacted]. Altering the operating schedule to avoid nighttime operations during the spawning season has potential to reduce entrainment impacts to 0.33% of the striped bass larvae, 0.17% of the striped bass eggs, and 0.16% of the river herring larvae populations. The change in operation would be linked to water column temperatures signaling the start and the end of spawning by striped bass and river herring. This proposed short-term alteration of the system operations is not expected to reduce the desirable benefits of system installation, which include less frequent dredging in [redacted]. The reduced frequency of dredging foreseeably will benefit the benthic community of [redacted] and may aid marsh accretion along the [redacted].

1. INTRODUCTION

Duffield Associates, Inc. (Duffield Associates) prepared this assessment at the request of [redacted] to evaluate potential entrainment impacts associated with the proposed installation and operation of SedCon® Turbo System anti-sedimentation devices (the "devices") at [redacted], located in the [redacted], at Wilmington, Delaware (Figure 1 – Site Location Map). The installation of the devices is being proposed as an alternative to maintenance dredging or, at a minimum, as an effort to reduce the frequency of maintenance dredging. The devices are reported to maintain a stable bottom. They are designed to impede sediment settling in the berth area by stirring the lower part of the water column. They are not designed to erode (scour) the river bottom or mobilize already settled sediment.

The purpose of the assessment was to assess the potential impact of entrainment on early life stage striped bass and river herring populations in the [redacted]. The sampling performed to support this assessment reflects the specific conditions encountered during spring 2013. To broaden the applicability of the assessment and generalize annual spring spawning of striped bass and river herring, assessments of impact were performed using cumulative sampling event densities of eggs or larvae of striped bass and river herring, rather than the specific densities associated with each sample. This approach assumed that a similar pattern of sampling in other years, under the prevailing environmental conditions of those years, would yield different sets of data for the same calendar dates, but the cumulative densities of eggs and larvae within the spawning period would be similar to those derived from the 2013 sampling data.

Initial comments provided by the State of Delaware, Department of Natural Resources and Environmental Control, Fish & Wildlife Section (DNREC-F&W) indicated concern that operation of the devices in the [redacted], during the anadromous fish spring spawning season, had potential for adverse impacts to the eggs and larval stage fish suspended in the water column and moving in response to flow in the river. Although several fish genera are known to spawn in the [redacted] watershed and nearby [redacted], DNREC-F&W expressed particular concern for *Alosa* (river herring, including alewife, blueback herring, hickory shad, and American shad) and *Morone saxatilis* (striped bass). DNREC-F&W is working to restore *Alosa* populations in the [redacted] watershed and consider *Morone saxatilis* an important economic resource.[1] Accordingly, these species are of particular concern in the [redacted] drainage system, of which the [redacted] and tributaries are part, and the focus of this entrainment impact assessment. Collectively, striped bass and river herring are referenced as "fish of concern" or "species of concern" in this assessment.

As an initial step, an eight-week ichthyoplankton (eggs and newly hatched fish larvae) sampling program was performed by Duffield Associates' Subconsultant, [redacted], proximally to the berth in order to generate site-specific information regarding the species of concern noted above. The [redacted] report in its entirety has been included in Appendix A. The ichthyoplankton collection data and water column physiochemical data provided by [redacted] was used in conjunction with the proposed water

intake location within the water column, the proposed operating schedule, and the flow rate for the SedCon® units to estimate potential entrainment impacts to early life stage river herring and striped bass, and assess potential options for minimizing entrainment impacts.

2. SAMPLING METHODOLOGY

The following section provides a description of the materials and the methods utilized to collect and analyze ichthyoplankton samples during the assessment. In general, samples were obtained during each of the eight weekly collection events as follows:

- At three depths – along the river bottom, approximately 19 feet above the river bottom at the probable inlet depth of the SedCon® Turbo System units, and near the water surface;
- During the daytime flood and ebb tides; and
- During nighttime flood and ebb tides.

A total of 96 samples were planned for collection. However, the actual number collected (and analyzed) was 90 samples. On May 30, 2013, engine trouble on the research vessel forced a cessation of sampling during the nighttime portion of Sampling Event 7, resulting in the collection of six fewer samples than planned.

2.1 Field Collections

Ichthyoplankton samples were collected on a weekly basis in the [redacted] as close as possible, and nautically prudent, to [redacted] berth, located in the [redacted]. The collection period extended for eight weeks from April 17 through June 6, 2013 (Figure 2 – Sample Tow Locations). During each weekly event, a single plankton tow was conducted during the midpoint of the ebb tides (outgoing tide) and first half of the flood tides (incoming tide), during both daylight and darkness, yielding four tows per event day. Darkness was defined as the period one hour after sunset to one hour before sunrise. Tows were conducted against the prevailing tidal current at a "through the water" boat speed of 2.2 to 3.2 feet per second, as measured by a Marsh/McBirney flow meter. The collection gear was a one-meter conical plankton net with 500 micron (µ) mesh, fitted with a General Oceanics flow meter to facilitate calculation of each sample volume filtered.

During each tow, three plankton nets, as described previously, were simultaneously deployed to sample the surface, mid-water, and bottom strata of the [redacted]. The surface collection net was deployed from the starboard-aft corner of the research vessel on a 75-foot towline. The mid-water and bottom nets were deployed from a davit located mid-ships port-side of the vessel. The length of towline required to achieve a near-bottom collection was determined based on the trigonometric relation of towline angle and location depth. Given the

singular sampling location and repetitive nature of the survey, a standard towline length was established, and the mid-water collection net was attached via a splice at the towline's mid-point. Tow duration was approximately five minutes. After each plankton tow, the collections were washed and the contents were concentrated into labeled containers and preserved with a 10% rose bengal-formalin solution.

Readings of water temperature in degrees Celsius (ºC), dissolved oxygen in milligrams per liter (mg/L) and salinity in parts per thousand (ppt) were measured with a YSI Model 85 water quality meter at all three vertical strata before each tow, and recorded with other relevant data, such as: date, time, tidal stage, weather, and light condition.

2.2 Laboratory Processing

In the laboratory, as part of the Phase 1 processing, fish specimens were washed in freshwater, removed from the sample detritus, and transferred to labeled vials filled with isopropanol. Collections containing large numbers of specimen, greater than 400 individuals, were sub-sampled using a sum quota protocol requiring that at least 200 specimens be processed from the resulting split fraction. This sub-sampling was performed on approximately one-third of the collections, and the resulting fraction was no smaller than one-sixteenth of the original sample size. During Phase 2 processing, specimens were identified to the lowest practicable taxonomic level, usually to species. The following taxonomic references were used to aid in the identification process:

- Lam, C.N.H. and J.C. Roff. 1977. A method for separating alewife *Alosa pseudoharengus* from gizzard shad *Dorosoma cepedianum* larvae. J of Great Lakes Research. 3(3-4):313-316.
- Waldman, et al. 1999. A Comparison of Alternative Approaches to Discriminate Larvae of Striped Bass and White Perch. North American Journal of Fisheries Management 19:470-481.
- Drewry, Geo. 1979. Externally visible features useful for separating the young of striped bass (*Morone saxatilis*) from those of white perch (*Morone americana*) on the Chesapeake Bay region. memo. CEES Chesapeake Biological Laboratory.
- Jones, P. et al. 1978. Development of Fishes of the Mid-Atlantic Bight.
- Lippson, A.J. and L. Moran. 1974. Manual for Identification of Early Developmental Stages of Fishes of the Potomac River Estuary.
- Wang, J. and R. Kernehan. 1979. Fishes of the Delaware Estuaries - a guide to the early life histories.

Some specimens could not be identified to species due to a lack of identifying characteristics. Specimens that were in good condition, but possessed insufficient distinguishing characteristics, were listed at the genus or family level, while

specimens in such poor physical condition that no genus or family level identification could be made were designated as 'unidentifiable fish' or 'other'.

The specimens were also segregated into four life stages including egg, larva, juvenile, and adult. Each specimen's life stage was determined from the identification literature descriptions and the total number of each was recorded. The following life stage abbreviations were used in the dataset:

- EE = Eggs;
- LL = Larvae;
- JJ = Juvenile; and
- AA = Adult.

During both Phases 1 and 2 processing, a Continuous Plan Type-1 Quality Assurance/Quality Control (QA/QC) protocol was used, where at least 14% of all samples were re-examined, yielding an Allowable Outgoing Quality Limit of 5% on each Phase, and 10% for the total sample.

3. SAMPLING RESULTS

The following section describes the raw ichthyoplankton data generated from the survey and the calculated densities for each species and associated life stage (e.g., egg, larvae) relative to the water sample volume. This section also presents the physiochemical parameters that were measured during the sampling events. A summary of sample collection results including count collected and density has been included as Table 1. The complete, original raw data set has been included with this report as Appendix A.

3.1 Ichthyoplankton- Raw Data

Ichthyoplankton, defined previously as eggs and newly hatched fish larvae, were the focus of the assessment, due to the inability of ichthyoplankton to avoid entrainment. The sampling effort resulted in the collection of 90 samples. Ichthyoplankton gathered in those samples included 9,202 individual fish eggs and 55,135 individual fish larvae. The ichthyoplankton were identified into 11 classifications. These classifications were alewife, *Alosa* spp. (genera), American shad, Atlantic menhaden, Clupeidae (family), gizzard shad, *Morone* spp. (genera), striped bass, white perch, 'other,' and 'unidentifiable'.

All but six of the fish eggs collected during the survey were classified as striped bass (*Morone saxatilis*). No river herring eggs were observed in the samples. Six eggs in the samples were classified as "other" or "unidentifiable."

To facilitate detailed data analysis, the collected ichthyoplankton were further classified into three groups by Duffield Associates, based on economic or environmental significance, as expressed by DNREC-F&W. DNREC-F&W had indicated that adverse impacts to striped bass were of interest due to the economic value of those fish. River herring (Alosa genus) were identified as a group of concern due to efforts being made to re-establish populations of these fish in the [redacted] watershed, and recent trends indicating diminishing stocks along the Atlantic seaboard. To develop these classifications, Duffield Associates considered all specimens identified as striped bass or *Morone spp*. as striped bass, and considered all specimens identified as alewife, American shad, hickory shad, blueback herring, or *Alosa spp*. as river herring. Of note, no hickory shad or blueback herring ichthyoplankton were identified in the collected samples. The resulting counts per grouping are summarized in Tables 3.A through 3.C. Grouping the raw data in this manner resulted in the collection of 40,894 striped bass larvae, 9,196 striped bass eggs, and 859 river herring larvae.

3.2 Non-Ichthyoplankton – Raw Data

During the eight sampling events, a total of 1,522 juvenile stage fish were collected, including 1,516 Atlantic menhaden, two hickory shad, two white perch, and two specimens identified as "other" species. One adult white perch was collected during the sampling events. Viable fish (juveniles and adults) were not the subject of this assessment and have been excluded from consideration, due to the developed ability to swim, and presumably, the ability to avoid entrainment by the devices.

3.3 Density

Using the raw ichthyoplankton data collected during the 8-week survey, [redacted] calculated the density for each species, relative to the life stage, for each sampling event by dividing the specie counts by the water volume of the sample. These densities are presented in the raw data set included in Appendix A.

3.4 Physiochemical Parameters

Physiochemical data recorded during the sampling period are summarized in Table 2. Recorded water temperature varied from a minimum of 13.1ºC to a maximum of 22.8ºC during the sampling period, and exhibited a general warming trend from Sampling Event 1 through Sampling Event 8. Generally, less than 1ºC variation between bottom temperatures and surface temperatures was observed during each sampling event.

Dissolved oxygen concentrations trended inversely to water temperature during the sampling period. Dissolved oxygen concentrations of approximately 9 to 10 milligrams per liter (mg/L) were observed during early April, when average water column temperatures were below 15ºC. Dissolved oxygen concentrations were approximately 6.5 mg/L during early June, when average water column

temperatures were above 21°C. Little variation was observed between the oxygen content of water at the bottom of the water column and the top of the water column.

Salinity remained relatively stable through the sampling period, ranging from 0.2 to 0.3 parts per thousand (ppt). There were no significant differences observed between the salinity at the bottom of the water column and the surface.

4. TREND ANALYSIS

Trend analyses were performed on the collected data in an attempt to correlate ichthyoplankton densities to environmental influences such as tide, time of day, water temperature, and depth. These trend analyses were completed by first organizing the data set received from the ichthyoplankton sampling into groups of concern, which included striped bass eggs, striped bass larvae, and river herring larvae.

After reorganizing the data into groups of concern, as described above, Duffield Associates calculated densities for each group per sample. These calculations are presented in Appendix B. To suppress the inherent variability and randomness of the sample specific densities during trend analyses, Duffield Associates calculated cumulative densities by depth for each event and by depth for specific environmental conditions present during each event. These density values are presented in Tables 3.A through 3.C by event, 4.A through 4.C by tide, and 5.A through 5.C by day or night.

4.1 General Trends

Ichthyoplankton densities by event for striped bass and river herring are presented in Tables 3.A through 3.C. As grouped for analysis, ichthyoplankton densities followed a “bell-shaped” curve over the eight event sample collection period. Densities for each group of concern progressively increased during the first few sampling events, “peaked,” and then progressively receded. These population trends are illustrated in Figure 3. These population trends indicate that the sample collection period was adequate for the purpose of the assessment, generating data of satisfactory quality to assess potential entrainment impacts to the fish of concern during the spawning season.

Peak ichthyoplankton densities for the fish of concern occurred between Sampling Events 4 (May 9, 2013), and 6 (May 20, 2013). Cumulative striped bass egg density peaked during Sampling Event 4 at 1.87 eggs/m^3 of water. The minimum egg density obtained occurred during Sampling Event 8 (June 6, 2013) at 0.001 eggs/m^3 of water. Striped bass larvae density also peaked during Sampling Event 4 (May 9, 2013) at 6.84 larvae per cubic meter of water (larvae/m^3 of water). The lowest calculated striped bass larvae density was obtained during Sampling Event 1 (April 17 and 18, 2013) at 0.018 larvae/m^3 of water. River herring larvae density peaked during Sampling Event 6 (May 20, 2013) at 0.165 larvae/m^3 of

water. Minimum river herring larvae density was obtained during Sampling Event 8 at 0.0044 larvae/m^3 of water.

4.2 Specific Trends

For specific trend analyses, the densities for each grouping were calculated based on tide stage (ebb tide or flood tide) and time of day (daytime or nighttime). These data are summarized in Tables 4.A through 4.B and Tables 5.A through 5.C, respectively. Organization of the data by tide indicated that river herring larvae, striped bass larvae, and striped bass eggs were denser in ebb tide samples than flood tide samples. The differing densities between ebb and flood tides indicated that striped bass and river herring spawning were occurring in both the [redacted]. Organization of the data by day and night indicated that river striped bass eggs, striped bass larvae, and herring larvae were denser in night samples than in day samples. This trend generally was stronger in mid-depth and surface samples than in bottom samples.

As anticipated ichthyoplankton density in the [redacted] water column appears to be linked to water temperature. Figure 3 illustrates this linkage. The correlation can also be discerned from published information regarding spawning behavior of the fish of striped bass and river herring.[2, 3, 4]

4.2.1 Striped Bass Eggs

The densities of striped bass eggs in the water column rose from 0.130 eggs/m^3 of water during Sampling Event 1 to a peak of 1.87 eggs/m^3 of water during Sampling Event 4, before falling to 0.001 eggs/m^3 during Sampling Event 8 (see Table 3.A). The density of striped bass eggs in the [redacted] water column during the period of assessment was 0.461 eggs/m^3. Per Table 4.A, the generally higher densities of eggs in flood tide samples during the first two sampling events suggested that early striped bass spawning was focused in the [redacted] rather than the [redacted]. With the exception of the surface samples collected during Sampling Events 3 and 4, the preceding trend reversed and striped bass eggs were denser in the water column during ebb tides than during flood tides, which signaled that spawning during that time period (April 30 through May 9) was occurring locally in the [redacted]. Overall during the sampling period, the density of striped bass eggs in mid-depth and bottom samples were higher during ebb tides than during flood tides.

The collected egg data indicated that some spawning by striped bass was occurring at the time of Sampling Event 1 (April 17, 2013), when the average water column temperature was slightly below 14ºC. The intensity of striped bass spawning increased by one order of magnitude (i.e., 10 fold) by Sampling Event 3 and continued at similar intensity through Sampling Event 4, based on the density of eggs found in the samples collected during

those events. Average water column temperatures ranged between 15ºC and 18ºC through this time period. From the egg data, the intensity of spawning fell dramatically (two orders of magnitude) by the time of Sampling Event 5, and continued to diminish through the last three sampling events. Generally, water temperatures after Sampling Event 4 were above 18ºC, averaging 19.5ºC.

Per Table 3.A, striped bass egg density was greatest at the bottom sampling depth. During the sampling period, densities of striped bass eggs were 0.894 eggs/m^3 of water at the bottom depth compared to densities of 0.407 eggs/m^3 of water for the mid-depth samples and 0.149 eggs/m^3 of water for the surface depth samples. During the peak event (Sampling Event 4), the bottom depth striped bass egg density was 3.38 eggs/m^3 of water. That density was approximately double the mid-depth density and an order of magnitude greater than the surface density during Sampling Event 4.

Cumulatively, the density of eggs in samples collected at night was higher than in samples collected during day light (see Table 5.A). This difference in egg densities was more apparent in surface samples and mid-depth samples than in bottom samples.

4.2.2 Striped Bass Larvae

Referring to Table 3.B, the density of striped bass larvae in the [redacted] water column rose from 0.018 larvae/m^3 of water during Sampling Event 1 to a peak of 6.839 larvae/m^3 of water during Sampling Event 4 and a similar 5.306 larvae/m^3 of water density during Sampling Event 5. This period of peak water column larvae density occurred approximately one week after the peak period of egg density observed in the water column. Larvae densities were an order of magnitude lower than the peak period during the last three sampling events. For the entire eight week sampling period, the cumulative striped bass larvae density was 2.05 larvae/m^3 of water. The densities of larvae generally were greater during ebb tides (2.4143 larvae/m^3 of water) than during flood tides (1.6348 larvae/m^3 of water), which pointed to more spawning activity being attributable to the [redacted] than the [redacted] (see Table 4.B).

With respect to water temperature, the density of striped bass larvae was significantly greater during Sampling Events 4 and 5 when the average water column temperature ranged between 17.8º C and 16.2º C, respectively. In comparison, the average water temperatures during Sampling Events 1 through 3 ranged between 13.7ºC and 15.2ºC. Average water column temperatures ranged between 18.8ºC and 21.9ºC during Sampling Events 6 through 8.

With respect to the time of day during the sampling period, densities of striped bass larvae generally were greater in the samples collected at night than in samples collected during daytime (see Table 5.B). This trend was strongest between surface samples, where the nighttime surface density for the entire sampling period was 2.86 larvae/m^3 of water and the daytime average surface density was 0.81 larvae/m^3 of water.

4.2.3 River Herring Larvae

Table 3.C illustrates water column densities of river herring larvae rose from 0.0056 larvae/m^3 of water during Sampling Event 1 to a peak of 0.165 larvae/m^3 of water during Sampling Event 6, before decreasing to a density of 0.0044 larvae/m^3 of water during Sampling Event 8. The cumulative density of river herring larvae in the [redacted] water column during the period of assessment was 0.043 larvae/m^3 of water. The presence of larvae in the samples collected during Sampling Event 1 indicates that spawning was in progress prior to that event. Over the duration of the sampling events, generally higher densities of river herring larvae were present in ebb tide samples (0.051 larvae/m^3 of water) than in flood tide samples (0.034 larvae/m^3 of water), as summarized in Table 4.C. This trend was strongest in mid-depth and bottom-depth samples. As summarized in Table 5.C, river herring densities were higher in samples collected at night (0.051 larvae/m^3 per water) than in samples collected during daytime (0.037 larvae/m^3 of water). This trend was strongest in mid-depth samples.

With respect to temperature, the density of river herring larvae was greatest during Sampling Event 6 when the average water column temperature was 18.8^o C. Comparably, during Sampling Event 1, when the average water column temperature was 13.7^{o}C, the density of river herring was two orders of magnitude below the peak density. With average water column temperatures remaining below 18°C, but above 14°C during Sampling Events 2 through 5, river herring densities were one order of magnitude less than the peak density. A rapid decrease (one and two orders of magnitude) in river herring density occurred during Sampling Events 7 and 8, as average water column temperatures rose above 21°C.

5. DEVICE SPECIFICATIONS

5.1 General Description

The installation of SedCon® Turbo Systems is being proposed at [redacted] located at the [redacted] as an alternative to maintenance dredging or, at a minimum, as an effort to reduce the frequency of maintenance dredging. The SedCon® Turbo System is designed to interrupt the sedimentation

process by increasing the speed of near-bottom water currents and keep sediment from settling in a protected berth. As proposed, the designed SedCon® Turbo System would be composed of seven turbo units mounted along the face of the 1,000-foot dock, with the outlets installed just above the river bottom, and organized to operate in two groups (one group of 4 units and one group of 3 units).

Each turbo unit will consist of a "J"-shaped, 48-inch diameter, circular pipe with a larger 72-inch diameter inlet structure at the top. The inlet structure will be approximately 3.25-feet high and have an intake area of approximately 61.3 square feet. Each opening in the intake screen will be approximately 4 inches by 19.5 inches in size. Overall, each unit will be approximately 19 feet in height, which places the water intake approximately 19 feet above the river bottom, approximately the mid-depth of [redacted].

Each unit will have an impeller that draws water through the inlet structure and drives the water through the outlet as a jet parallel to the river bottom. The impeller will have four blades. The inside diameter of the impeller will be approximately 2 feet and an outside diameter will be approximately 4 feet. Spacing between the impeller blades is 1.53 feet at mid-diameter. The hub of the impeller is approximately 2 feet in diameter. The impeller will rotate at approximately 275 revolutions per minute (rpm). The impeller will be driven by a shore-mounted hydraulic pump. The hydraulic fluid is vegetable oil.

The devices are not intended to add turbidity or sediment to the water column and should not scour the river bottom. These features should yield a more stable environment for bottom dwelling organisms living in the river sediment.

5.2 Operation/Flow Rate

Each of the turbo units starts an operating cycle with the jet aimed perpendicular to the current and then turns 90° in the direction of the current over a period of 45 minutes. A computer operates the turbo units within a group sequentially, in coordination with the tides. Total run time for a group of 4 turbo units would be 3 hours (4 x 45 minutes per unit). The group of 3 units would operate within the time period of the group of 4 units, but for 45 minutes less overall time (i.e., 2.25 hours).

Flow rate and water velocity information was provided to Duffield Associates for use in this assessment. However, flow rate information is proprietary and cannot be disclosed without a confidentiality agreement. Flow rate information was used in entrainment population calculations.

6. ICHTHYOPLANKTON POPULATION CALCULATION

Ichthyoplankton population estimates were made using the following general equation:

Population (P) = Density (D) x Water Volume (Vol.)

Where: Density represents the number (count) of ichthyoplankton in a cubic meter of water ($n/m^{3)}$, and water volume is the amount of water passing through a specific zone or device in a specific amount of time in cubic meters (m^3).

This general equation was used to estimate populations of egg stage and larvae stage striped bass, and river herring in the [redacted] adjacent to the berth. Sampling event, event by tide, and event by daytime or nighttime density values were used in this equation to estimate the populations of eggs and larvae passing through this portion of the [redacted] (see Tables 6.A and 7.A). Cumulative populations for the sampling period, as presented in Tables 6.B and 7.B, were derived by multiplying the estimates of population per sampling event by the number of days in the interval between events to weight the population estimates, and then summing those values for the sampling period. For instance, the population estimates for Sampling Event 1 were multiplied by 7 days to reflect the number of days between Sampling Event 1 and Sampling Event 2. The population estimates for Sampling Event 8, which had no following sampling event, were multiplied by 7 days, which reflects the average number of days between sampling events.

The volume of river water passing [redacted] was calculated based on the cross-sectional area of the river at the approximate mid-point of [redacted]. The volumes of water were estimated for each of the three depth ranges of the river considered in this assessment (surface, mid-depth, and bottom) and average ebb and flood tide current velocities, using the following equation:

Volume (Vol.) = Area x Velocity (V) x Time (t).

Where: Volume = Volume of [redacted] water moving past [redacted] berth during a tide (m3)
Area = Cross-sectional area of [redacted] at [redacted] berth (m^2)
Velocity = Tidal current velocity (m/s)
Time = 6.22 hours x 3,600 seconds per hour = 24,600 seconds (s)

Tide range and current information was obtained from a National Oceanic and Atmospheric Administration (NOAA) website (http://tidesandcurrents.noaa.gov)**.** Data obtained from NOAA is presented in Appendix C, Table C.1. Based on the NOAA webpage predictions of maximum currents for each day of the sampling period, the average currents for [redacted] were 0.22 meters per second (m/s) during the ebb tides and 0.21 m/s during the flood tides between April 16, 2013 and June 6, 2013 (see Appendix C, Table C.2). These average current values were used in volume calculation.

Working from the NOAA the tide ranges predicted for the [redacted] on their webpage, the average range of tide between low tide and high tide was 1.65 m, during the period of sampling. This tidal range causes the cross-sectional area assigned to the surface portion of the river to vary. To accommodate this fluctuation, Duffield Associates derived an average mid-tide height (Appendix C, Table C.3) that was used to estimate the cross-sectional area of the surface portion of [redacted]. The cross-sectional area of the mid and bottom portions of the river were unaffected by tidal fluctuation.

Cross-sectional information was developed from a NOAA nautical chart (November, 2013) and a NOAA bathometry survey (October, 1982) for the [redacted] and is summarized in Appendix C, Table C.4**.** Figure 4 illustrates the location selected for estimating the river cross-section. The estimated cross-sectional areas for the surface, mid, and bottom portions of the river were 1,900 m^2, 1,000 $m^{2,}$ and 1,000 m^2, respectively.

7. POTENTIAL ENTRAINMENT

Potential ichthyoplankton entrainment was estimated by calculating the number of ichthyoplankton passing through (entrained by) the SedCon® turbo units. The population equation presented in Section 6 was used for this calculation. According to information provided by SedCon® Technologies, Inc., the inlet of the SedCon® turbo units will be located approximately 19 feet above the river bottom, which approximates the mid-depth of the [redacted]. Therefore, the mid-depth densities, as presented in Tables 3.A through 3.C, Tables 4.A through 4.C, and Tables 5.A through 5.C were used for estimating the number of ichthyoplankton that potentially would be entrained.

The volume of water passing through the turbo system devices was calculated by multiplying the flow rate of the devices by the cumulative time the units would be scheduled to operate [i.e., flow rate (Q) x summed operating time (t)]. The flow rate of the units and operating time information was provided by SedCon®.

Estimates of entrained populations for striped bass eggs, striped bass larvae, and river herring larvae per sampling event, with potentially entrained populations estimated on the basis of ebb tide and flood tide during each sampling event are provided in Table 6.A. Table 7.A provides similar information per sampling event, but potentially entrained populations are estimated on the basis of daytime and nighttime. In both tables, the potentially entrained populations were divided by the estimated river populations during the sampling events to quantify the magnitude of potential impact to the river populations on a sampling event by sampling event basis. The resulting values per sampling event are presented as percentages of the total river populations in Tables 6.A and 7.A. The estimates of cumulative populations potentially entrained provided in Tables 6.B and 7.B were calculated in the same manner as the cumulative river populations, as described in Section 6 (i.e., the sampling event entrainment values were multiplied by the number of

days pertaining to that event value and then summed for the entire sampling period). As a conservative measure, Duffield Associates assumed 100% mortality rates for eggs and larvae entrained by the devices.

8. IMPACT ANALYSIS RESULTS

The potential impact of system operations on the fish of concern was calculated using the population and entrainment estimates presented above, which assume that the SedCon® Turbo System units are operated during each tide cycle throughout the spawning season and that no entrained ichthyoplankton would survive passage through the units. Other studies of entrainment impacts performed in support of using the SedCon® Turbo System have indicated that the survival assumption used in this assessment is conservative.[5]

Per Tables 6.B and 7.B the resultant calculations indicated that between 34 and 36 million of the approximately 6 billion striped bass larvae, approximately 6.4 million of the approximately 1.3 billion striped bass eggs, and approximately 1.1 million of the approximately 200 million river herring larvae might be entrained by the SedCon® Turbo System, if operated during each tide cycle through the spawning season. The entrained populations represent approximately 0.50% to 0.58% of the estimated populations of striped bass larvae, striped bass eggs, and river herring larvae passing [redacted] during the sampling period. Conversely, approximately 99.5% of the striped bass eggs, striped bass larvae, and river herring larvae passing [redacted] would not be entrained.

Absent the presence of entraining devices, U.S. Fish & Wildlife Services (USF&WS) indicates that "the probability of survival for striped bass egg and yolk-sac larvae is estimated to be 0.06%. Post yolk-sac probability of survival is estimated to be 0.04%.[6] The 0.06% survival rate would apply to the entrained egg populations cited in Tables 6.B and 7.B. The 0.04% survival rate would apply to the entrained larvae populations cited in those tables. Similarly, USF&WS estimates the natural mortality for alewife and blueback herring as "fewer than 1% of eggs survive early life stages to migrate to sea as juveniles."[7] These survival rates for egg and larval stage striped bass and river herring indicate that the numerical "take" due to entrainment would be considerably less than the numbers cited in Tables 6.B and 7.B. "Take" is defined as the number of ichthyoplankton potentially killed by the equipment that would otherwise be expected to survive to the juvenile stage of development. Applying these survival rates to the estimates of cumulative populations entrained suggests that the estimated "take" of the SedCon® Turbo System would be 3,840 more striped bass eggs, 14,400 more striped bass larvae, and 11,000 more river herring larvae per spawning season than would occur through other sources of mortality. However, if survival rates are applied to the entrained population, the rates should also be applied to the estimated river populations. As such, application of expected survival rates to both the entrained populations and river populations would not change the percent of the population impacted by the SedCon® Turbo System.

9. POTENTIAL FOR IMPACT MINIMIZATION

The trend analyses suggest that three environmental variables may be predictive of peak ichthyoplankton densities in the water column, and may offer opportunities to reduce potential entrainment impacts by altering the proposed operating schedule for the SedCon® Turbo System during a portion of the spawning season. These variables are water temperature, day/night conditions, and ebb tides. Potential impact reductions keyed to these variables are explored in this section.

9.1 Correlation of Water Temperature

Trend analysis of the sampling data indicates a clear correlation between ichthyoplankton densities and water temperature. This correlation has been documented by other research that links striped bass and river herring spawning to water column temperature. Based on discussions with DNREC-F&W personnel, striped bass reportedly spawn when water temperatures range between 14ºC to 19ºC. Hickory shad and alewives reportedly spawn while water temperatures range from 9ºC to 20ºC. American shad and blueback herring reportedly prefer water temperatures between 13ºC to 20ºC for spawning. The sampling results indicate that striped bass and river herring ichthyoplankton densities peaked in the [redacted] when water temperatures were between 15ºC to 19ºC, which occurred between May 9, 2013 (Sampling Event 4) and May 20, 2013 (Sampling Event 6).

Water column temperature can be monitored. Altering the operating schedule for the SedCon® Turbo Unit System based on temperature has potential to reduce entrainment impact.

9.2 Correlation of Ichthyoplankton Densities to Tidal Flow Direction

Tidal flow direction also appears to influence ichthyoplankton density in the vicinity of the berth. Based on trend analysis of the sampling data, there is an increase in ichthyoplankton density, yielding an increase in the potential for entrainment, during ebb tides as compared to flood tides. The cumulative densities of striped bass eggs, striped bass larvae, and river herring larvae during the ebb tidal stage were 0.62 eggs/m^3 of water, 2.41 larvae/m^3 of water and 0.051 larvae/m^3 of water, respectively, as compared to flood tidal stage densities which were calculated to be 0.28 eggs/m^3 of water, 1.63 larvae/m^3 of water and 0.034 larvae/m^3 of water, respectively. Altering operation of the SedCon® Turbo Units to reduce ebb tide operating cycles would have potential to reduce entrainment impact.

9.3 Correlation of Ichthyoplankton Densities to Time of Day

Trend analysis of the sampling data indicates that densities of striped bass and river herring ichthyoplankton are higher during nighttime than daytime (Table 5.A through 5.C). This trend was consistent for all three groupings of fish of concern

and was apparent in the mid-depth samples, the depth range where entrainment would occur. Altering operation of the SedCon® Turbo Units to avoid running after dark during the spawning season would have potential to reduce entrainment impact.

10. ALTERNATIVES ASSESSMENT

The impact analysis results presented in Section 9 assumes operation of all seven individual devices as proposed, without interruption, during the spring spawning period. This operating scenario would maximize the benefits of installing the system, which are intended to support reliable marine operations at [redacted] without annual dredging. Additional benefits anticipated to result from the uninterrupted operation of the devices include:

- Reduced frequency of dredging within [redacted];
- Reduced demand for dredged material storage;
- Increased sediment in the river systems being available for tidal marsh accretion; and
- No appreciable increase in water column turbidity associated with system operation.

These benefits should improve navigation and cargo delivery planning, which in turn improve the economic viability of [redacted], the [redacted] operations and the [redacted] operations. Recognizing these benefits, [redacted].

Until recently, dredged materials from [redacted] have been stored locally in facilities located along the north side of [redacted] and along the [redacted], in alternating cycles. The alternating cycles are necessitated by the fine-grained nature of the dredged materials, which are difficult to settle and dewater. [redacted] is now filled to capacity and is no longer available. The [redacted] now plans to pipe materials dredged in [redacted] across the [redacted] to a storage facility in [redacted] during the years that they cannot use [redacted]. Obviously, this necessity greatly complicates the logistics of dredging and increases dredging costs. It also points to the value of minimizing dredging frequency and the volume of material that gets placed into storage.

A potential additional benefit of operating the system as intended is a more stable benthic environment, which should lead to an improved benthic community. Operation of the SedCon® Turbo System will prevent or minimize accumulation of sediment and reduce or eliminate cyclical dredging. Currently, rapid accumulation of sediments (approximately 1 foot per month) followed by the removal of the accumulated sediments every 8 to 12 months by dredging likely limits the ability of organisms to colonize and establish a healthy benthic community in [redacted]. This disrupted benthic environment

likely has been adverse to the health and diversity of the benthic community and may have impacts on the food chain, diminishing the value of the deep habitat available in the [redacted].

Alterations of the operating pattern of the system during the spawning season to reduce entrainment impacts to striped bass and river herring could adversely impact the intended benefits of system operation. As such, assessment of each altered operating pattern considered both the magnitude of entrainment impact reduction and the impacts to the intended benefits of the system.

Several alternative operating schedules for the SedCon® system during the spawning season aimed at reducing entrainment impacts have been identified and assessed, based on the data trend concepts developed in Section 9. These alternatives are based on predicting striped bass and river herring spawning based on water column temperature. These alternatives include:

1. Ceasing operation during all or a portion of the spawning season;
2. Limiting operation of the system to flood tides; and
3. Limiting operation of the system to daytime tides.

10.1 Ceasing Operations

This alternative is based on shutting down the SedCon® system for all or a portion of the spawning season. Obviously, the maximum reduction of entrainment impact would result from not operating the system during the entire spawning season each spring. Other activities in [redacted], such as dredging, currently are curtailed between March 15 and June 15 to avoid impacting anadromous fish spawning. However, shutting the system down for a similar time period likely would result in the accumulation of approximately 3 feet of sediment in [redacted] berth. The SedCon® system would not be capable of operating due to burial, and could not re-suspend the accumulated sediments. Annual dredging of the berth, and possibly nearby areas in the navigation channel and [redacted] berths, would be required before the SedCon® system could be restarted. This dredging would negate the benefits associated with installation and operation of the SedCon® system. As such, this alternative would be unacceptable.

Less radically, system operations could be suspended for a portion of the spawning season coincident with peak ichthyoplankton densities in the water column. The collected data suggests that the duration of this shutdown would be approximately 4 weeks. Based on the information generated for this assessment, the shutdown would be started in response to the average water column temperature reaching 15°C and the system would be restarted when the average water column temperature reaches 20°C, to avoid peak ichthyoplankton densities. The estimated effect of this option is summarized in Table 6.B. This option is estimated to reduce entrainment impacts to 0.04% of the striped bass eggs, 0.08% of the striped bass

larvae, and 0.06% of the river herring larvae populations passing through the [redacted].

The beneficial reduction of impact to fish of concern that would result from this alternative operating scenario should be weighed against the accumulation of sediment that would occur in the berth and the effects that re-suspension of those sediments would have. During a 4-week shutdown period, approximately 0.9 feet of sediment accumulation within the berth area is anticipated to occur, given the average sedimentation rate of 1 foot per month. That depth of sediment over the area of the berth protected by the SedCon® system (approximately 1,000 feet by 165 feet), represents 5,500 cubic yards of material.

The ability of the SedCon® system to mobilize the partially settled sediments that accumulate in the berth over a 4 week period is uncertain, but unlikely without dredging. If the SedCon® system could re-suspend those sediments, the sediments would add to the turbidity in the water column for a period of time after the system restart. The duration of increased turbidity is unknown and the impacts of the re-suspended sediments on shoaling within [redacted] beyond the reach of the SedCon® system are unknown.

10.2 Cease Operations during Ebb Tides

This alternative works with the apparent ichthyoplankton density trends linked to water temperature and ebb tides during the spawning season. When water temperatures reach 13ºC signaling the onset of spawning in the portion of the [redacted], operation of the SedCon® system would be limited to flood tide periods. Normal operation during both ebb and flood tides would resume after water temperatures warm to 22ºC. The duration of this altered operating pattern would be approximately 8 weeks, based on 2013 environmental conditions. The estimated effect of this alternative on ichthyoplankton entrainment is summarized in Table 6.B. This alternative is forecast to reduce entrainment impacts to 0.15%, of the river herring larvae, 0.17% of the striped bass eggs, and 0.18% of the striped bass larvae populations passing [redacted].

The beneficial reduction of entrainment impacts that would result from this alternative should be weighed against the accumulation of sediments that would occur during ebb tides and in areas of the berth not covered by the direction of flood tide jetting. Sedimentation studies performed for the [redacted] have suggested that most of the sediment that settles in [redacted] is brought into the harbor from the [redacted] during flood tides, in the form of fluidized mud (water with densely suspended sediments). Operation of the SedCon® system during flood tides should prevent fluidized mud from accumulating within [redacted] during flood tides by moving them deeper into [redacted]. A substantial portion of the fluidized mud would be anticipated to move back toward the [redacted] with the successive ebb tide.

However, a portion of the fluidized mud will accumulate in [redacted] (as currently happens) and begin to settle. Within the flood tide sweep of the SedCon® system, the fluidized mud would be mobilized during the successive flood tide and not lead to an accumulation of settled sediment. Whether or not this cycling of sediments within [redacted] would lead to adverse shoaling within the harbor is unknown. However, the portion of the berth not swept by the flood tide jets would be subject to sediment settling and accumulation as currently occurs.

The predictable outcome of this operating pattern would be a sediment accumulation of approximately 1.8-feet thickness in the eastern (toward the [redacted]) portion of the berth. Removal of that shoal by the SedCon® turbo system after flood and ebb tide operation resumes is unlikely. More likely, that shoal would need to be removed by dredging before flood and ebb tide operations resume. Much of the costs associated with dredging pertain to mobilization of the dredging equipment. As such, this alternative likely would negate one of the principle reasons for installing the system. This alternative would be unacceptable.

10.3 Cease Nighttime Operation

This alternative is based on changing the operating pattern of the system to only operate during daytime tides (both ebb and flood) while water temperatures indicate that spawning likely is occurring. The temperature at which the altered operation would begin appears to be 13ºC for the portion of [redacted]. This daytime only operation would extend for approximately 8 weeks, aiming to avoid the bulk of the spawning season. Resumption of "normal" day and night operation would start after water temperatures stay above 22ºC. The estimated effect of this option on ichthyoplankton entrainment is summarized in Table 7.B. If the operating schedule was limited to daytime tides for an 8-week period during the spawning season, the predicted entrainment impacts of the system drop to 0.17% for striped bass egg, 0.33% for striped bass larvae, and 0.16% for river herring larvae populations.

This alternative would support operation of the SedCon® system during one flood and one ebb tide each day thereby avoiding the sediment accumulation issues associated with complete cessation of operations or the flood tide only operating alternatives. Operation of the system during the first daytime tide likely would be able to mobilize fluidized mud that accumulates overnight in the berth during the 3-hour system operating period within that tide. No significant negative effects of operating the system on this schedule for an 8 week period are anticipated.

11. SUMMARY AND CONCLUSIONS

Duffield Associates has completed an assessment of the potential entrainment impact that may be associated with the proposed installation and operation of SedCon® Turbo System anti-sedimentation devices at [redacted], located in the [redacted],

in Wilmington, Delaware. Per DNREC-F&W comments at the inception of the project, the assessment focused on potential entrainment impact to egg and larval stage *Alosa* (river herring) and *Morone saxatilis* (striped bass) as these anadromous fish were identified as being of particular concern in the [redacted] watershed.

Ichthyoplankton (egg and larval stage fish) sampling was performed during the 2013 spring spawning season. Striped bass eggs, striped bass larvae, and river herring larvae were documented in the 90 samples collected over an 8-week period. Within the river herring grouping, alewife was the most abundant species. American shad larvae were identified. No hickory shad larvae were identified, but a few hickory shad juveniles were found. No blueback herring larvae were identified and no river herring eggs were identified in the samples.

Assessment of the data indicated a strong correlation of spawning activities with water temperature. While striped bass eggs, striped bass larvae and alewife larvae were found in the samples collected during the first sampling event (April 17, 2013), when the water column temperatures ranged between 13ºC and 14ºC, the densities of these ichthyoplankton in the water column were low compared to samples collected after the water column temperature reached approximately 15ºC. Striped bass eggs and larvae densities peaked first. These peaks occurred during Sampling Event 4, when water column temperatures varied between 17 and 18ºC. River herring larvae density peaked during Sampling Event 6, when the average water column temperature was 18.8ºC. Striped bass and river herring ichthyoplankton densities dropped precipitately (one to two orders of magnitude) from peak densities after water column temperatures ranged above 21ºC. Other trends in the sampling data indicate that the densities of ichthyoplankton were higher in ebb tide samples than in flood tide samples and densities were higher in nighttime samples than in daytime samples.

Operationally, each of the seven units of the proposed SedCon® Turbo System planned for [redacted] is intended to operate for 45 minutes during each and every ebb and flood tide to keep suspended sediment from settling and accumulating within the berth area. Total runtime for the entire system is 3 hours per tide cycle and there typically would be 4 cycles per day. At [redacted], the units would draw water from the mid-depth of [redacted] and discharge the water as a jet parallel to the river bottom. Operated in this manner, SedCon's® systems have reduced or eliminated the need for dredging in support of berth operations in other similar high sedimentation locations in the United States, such as in Arthur Kill between New Jersey and New York, and in Charleston Harbor, South Carolina.

The findings of this assessment indicate that operation of system in the unaltered 4-cycle per day mode during the spawning season for striped bass and river herring would lead to the entrainment of approximately 0.50% of the striped bass eggs, 0.58% of the striped bass larvae, and 0.54% of the river herring larvae that pass [redacted]. As part of the assessment, means of reducing those entrainment impacts during the spawning season were evaluated, including shut-down of the system for a period of time, altering the operating schedule to only run the system during flood tides, and altering the operating

schedule to only run the system during daytime tides. As summarized in the following table, each alternative would lead to a reduction in entrainment. Of the three alternatives, the daytime only operating scenario during the spawning season offers a significant entrainment reduction while supporting the intent of the project, which is to reduce dredging at [redacted] and realize environmental benefits stemming from reduced dredging. The other two alternatives likely would require some dredging at the end of the altered operating cycle.

Summary of Estimated Cumulative Entrainment Impacts as a Percentage of Estimated Population Passing [redacted]

Classification	Unaltered System Operation	4-week Cessation of System Operation	8-week Flood Tide Only System Operation	8-week Day Time Only System Operation
Striped Bass Larvae	0.58%	0.08%	0.18%	0.33%
Striped Bass Eggs	0.50%	0.04%	0.17%	0.17%
River Herring Larvae	0.54%	0.06%	0.15%	0.16%
Dredging Required?	No	Probably	Yes	Probably Not

Based on the findings of this assessment, Duffield Associates recommends that design and operation of the proposed SedCon® Turbo System for [redacted] in Wilmington, Delaware, account for the spawning season of striped bass and river herring. Mid-depth (approximately 19 feet below the water surface) water temperatures should be measured and monitored beginning in mid-March. When sustained water column temperatures reach 13ºC, the operating schedule for the system should be altered to run during daytime tides (flood and ebb) only. This altered operating schedule should continue until sustained water column temperatures reach 22ºC. After that temperature, the "normal" day and night operating schedule should resume. This alteration of the operating schedule is anticipated to reduce the impact of entrainment to approximately 0.17% of striped bass eggs, 0.33% of striped bass larvae, and 0.16% of river herring larvae passing [redacted] during the spawning season.

12. REFERENCES

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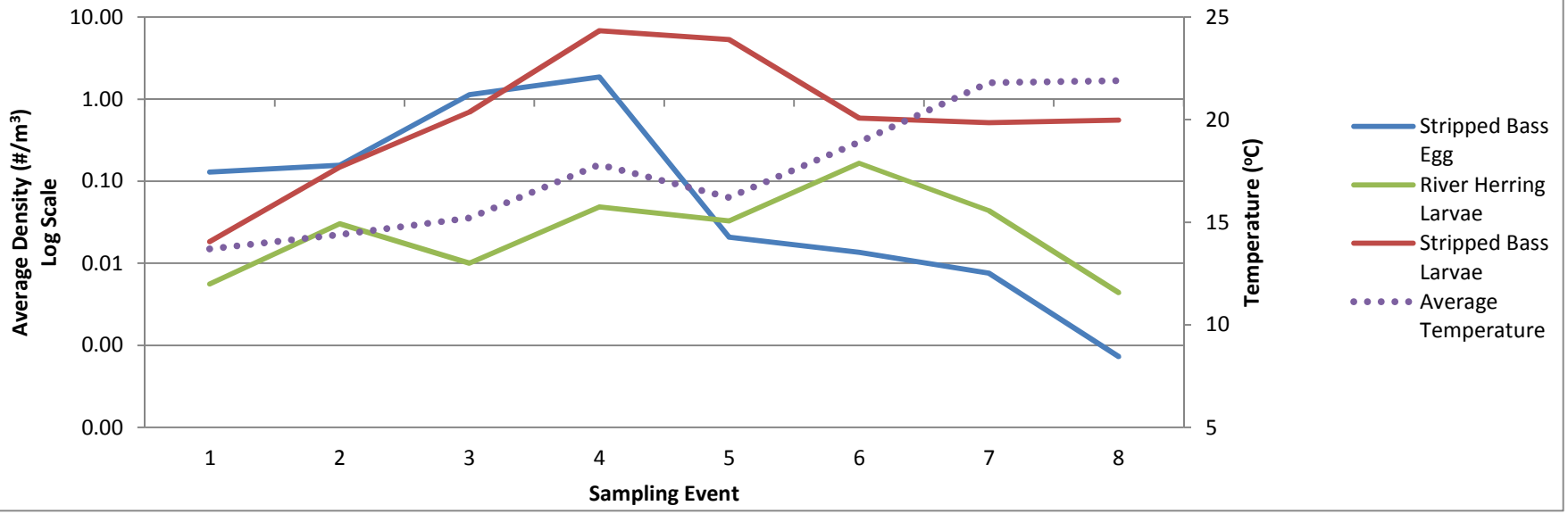
FIGURES

Figure 3
Ichthyoplankton Densities and Temperature Comparison
[redacted]
Wilmington, Delaware



Duffield Associates, Inc.
P.N. 8090.LI
July 2014

TABLES

TABLE 1

SUMMARY OF ICHTHYOPLANKTON SAMPLING RESULTS

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

Classification	Event		1		2		3		4		5		6		7		8		2013 Total Counts	2013 Average Density
	Date		4/17/2013		4/24-4/25		4/30-5/1		5/9/2013		5/13/2013		5/20/2013		5/30/2013		6/6/2013			
	Water Temp (°C)		13.7		14.4		15.2		17.8		16.2		18.9		21.8		21.9			
	Parameters		Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density		
Striped Bass Larvae	Event Total		38	0.02	323	0.14	1688	0.69	20101	7.03	14099	5.19	1554	0.61	710	0.55	1273	0.53	39786	2.07
	Tide	Flood	10	0.02	84	0.07	415	0.40	7509	5.88	5091	3.76	515	0.42	395	0.63	710	0.68	14729	1.69
		Ebb	28	0.02	239	0.21	1273	0.99	12592	8.18	9008	6.62	1039	0.79	315	0.47	563	0.37	25057	2.43
	Time	Day	30	0.05	178	0.16	1169	0.91	5585	4.80	7999	5.81	662	0.50	710	0.55	526	0.43	16859	1.80
		Night	8	0.01	145	0.12	519	0.48	14516	9.27	6100	4.57	892	0.71			747	0.62	22927	2.37
	Depth	Surface	16	0.02	79	0.09	120	0.13	6622	6.87	5643	5.03	224	0.24	41	0.07	404	0.56	13149	1.79
		Mid	4	0.02	78	0.11	392	0.56	5339	5.20	5424	6.70	545	0.69	441	1.02	434	0.52	12657	2.12
		Bottom	18	0.04	166	0.22	1176	1.39	8140	9.03	3032	3.84	785	0.88	228	0.54	435	0.50	13980	2.31
Striped Bass Eggs	Event Total		325	0.15	372	0.16	2824	1.18	5569	1.77	57	0.07	36	0.02	11	0.01	2	0.01	9196	0.62
	Tide	Flood	218	0.23	130	0.11	1210	1.08	918	0.68	45	0.07	16	0.02	11	0.01	2	0.01	2550	0.36
		Ebb	107	0.07	242	0.21	1614	1.28	4651	2.87	12	0.06	20	0.03					6646	0.95
	Time	Day	128	0.09	202	0.18	1891	1.48	2017	1.65	57	0.07	14	0.02	11	0.01	2	0.01	4322	0.58
		Night	197	0.21	170	0.14	933	0.88	3552	1.90			22	0.02					4874	0.67
	Depth	Surface	83	0.09	95	0.10	303	0.29	641	0.57	5	0.02	15	0.03	8	0.03	2	0.01	1152	0.20
		Mid	83	0.13	41	0.06	713	1.05	1550	1.26	8	0.04	5	0.01	2	0.01			2402	0.50
		Bottom	159	0.24	236	0.32	1808	2.19	3378	3.49	44	0.10	16	0.02	1	0.01			5642	1.10
Morone spp.	Event Total		8	0.01	31	0.07	36	0.04	312	0.39	459	0.20	3	0.01	45	0.05	241	0.14	1135	0.14
	Tide	Flood	4	0.01	27	0.12	6	0.03	168	0.40	55	0.04	3	0.01	33	0.08	127	0.14	423	0.10
		Ebb	4	0.02	4	0.03	30	0.04	144	0.38	404	0.32			12	0.03	114	0.14	712	0.17
	Time	Day	7	0.01	31	0.07	32	0.05			257	0.19	3	0.01	45	0.05	21	0.06	396	0.09
		Night	1	0.01			4	0.02	312	0.39	202	0.20					220	0.17	739	0.20
	Depth	Surface	1	0.00			6	0.01	288	0.53	153	0.13					13	0.03	461	0.15
		Mid	5	0.01	4	0.03			24	0.12	132	0.22			6	0.01	112	0.19	283	0.12
		Bottom	2	0.01	27	0.12	30	0.07			174	0.24	3	0.01	39	0.10	116	0.17	391	0.14

TABLE 1

SUMMARY OF ICHTHYOPLANKTON SAMPLING RESULTS

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

Classification	Event		1		2		3		4		5		6		7		8		2013 Total Counts	2013 Average Density
	Date		4/17/2013		4/24-4/25		4/30-5/1		5/9/2013		5/13/2013		5/20/2013		5/30/2013		6/6/2013			
	Water Temp (°C)		13.7		14.4		15.2		17.8		16.2		18.9		21.8		21.9			
	Parameters		Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density		
Alewife	Event Total		14	0.01	45	0.02	24	0.01	145	0.07	90	0.05	373	0.19	64	0.06	12	0.01	767	0.06
	Tide	Flood			15	0.02	7	0.01	31	0.03	58	0.06	87	0.10	58	0.11	2	0.01	258	0.05
		Ebb	14	0.01	30	0.03	17	0.02	114	0.10	32	0.04	286	0.26	6	0.01	10	0.01	509	0.07
	Time	Day	8	0.02	34	0.03	17	0.02	89	0.07	66	0.06	83	0.08	64	0.06	12	0.01	373	0.05
		Night	6	0.01	11	0.01	7	0.01	56	0.06	24	0.04	290	0.28					394	0.09
	Depth	Surface	9	0.02	19	0.02	3	0.00	18	0.04	48	0.04	151	0.16	52	0.09	9	0.02	309	0.05
		Mid	2	0.01	10	0.02	17	0.02	53	0.05	22	0.11	148	0.25	12	0.03	2	0.01	266	0.07
		Bottom	3	0.01	16	0.04	4	0.01	74	0.11	20	0.05	74	0.18			1	0.00	192	0.07
American shad	Event Total												60	0.04					60	
	Tide	Flood											47	0.04					47	
		Ebb											13	0.03					13	
	Time	Day											6	0.01					6	
		Night											54	0.06					54	
	Depth	Surface											33	0.07					33	
		Mid											19	0.02					19	
		Bottom											8	0.04					8	
Alosa spp.	Event Total				27	0.02	1	0.01					4	0.02					4	
	Tide	Flood			11	0.01	1	0.01											0	
		Ebb			16	0.02							4	0.02					4	
	Time	Day			12	0.01													0	
		Night			15	0.02	1	0.01					4	0.02					4	
	Depth	Surface			14	0.02													0	
		Mid			4	0.01	1	0.01											0	
		Bottom			9	0.02							4	0.02					4	

TABLE 1

SUMMARY OF ICHTHYOPLANKTON SAMPLING RESULTS

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

Classification	Event		1		2		3		4		5		6		7		8		2013 Total Counts	2013 Average Density
	Date		4/17/2013		4/24-4/25		4/30-5/1		5/9/2013		5/13/2013		5/20/2013		5/30/2013		6/6/2013			
	Water Temp (°C)		13.7		14.4		15.2		17.8		16.2		18.9		21.8		21.9			
	Parameters		Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density		
Atlantic menhaden	Event Total		141	0.07	101	0.07	172	0.08	1783	0.49	237	0.15	261	0.14	3	0.01	12	0.01	2710	0.16
	Tide	Flood	65	0.07	87	0.11	107	0.07	207	0.16	49	0.06	152	0.15			8	0.02	675	0.10
		Ebb	76	0.06	14	0.02	65	0.08	1576	0.83	188	0.24	109	0.13	3	0.01	4	0.01	2035	0.24
	Time	Day	14	0.01	4	0.01	29	0.03	175	0.18	9	0.02	4	0.01	3	0.01			238	0.05
		Night	127	0.11	97	0.10	143	0.10	1608	0.72	228	0.19	257	0.21			12	0.01	2472	0.22
	Depth	Surface	20	0.03			33	0.04	292	0.39	41	0.05			3	0.01	1	0.01	390	0.08
		Mid	33	0.05	58	0.11	49	0.07	465	0.39	96	0.25	128	0.11			3	0.01	832	0.14
		Bottom	88	0.11	43	0.04	90	0.12	1026	0.60	100	0.19	133	0.21			8	0.02	1488	0.21
Clupeidae	Event Total		30	0.02	82	0.04	104	0.05	267	0.10	796	0.29	4484	1.66	1091	0.66	243	0.12	7097	0.39
	Tide	Flood	10	0.01	53	0.06	27	0.03	88	0.07	322	0.22	1616	1.24	661	0.82	100	0.12	2877	0.33
		Ebb	20	0.02	29	0.03	77	0.06	179	0.14	474	0.36	2868	2.07	430	0.49	143	0.11	4220	0.44
	Time	Day	13	0.01	57	0.05	79	0.06	129	0.10	624	0.44	1687	1.15	1091	0.66	235	0.20	3915	0.35
		Night	17	0.02	25	0.04	25	0.03	138	0.09	172	0.13	2797	2.16			8	0.01	3182	0.43
	Depth	Surface	12	0.01	28	0.03	17	0.02	75	0.07	346	0.29	2664	2.76	882	1.48	211	0.22	4235	0.55
		Mid	6	0.02	38	0.07	33	0.06	24	0.04	248	0.31	931	1.16	200	0.47	27	0.03	1507	0.30
		Bottom	12	0.02	16	0.04	54	0.06	168	0.17	202	0.26	889	1.05	9	0.02	5	0.02	1355	0.27
Gizzard shad	Event Total				30	0.02	20	0.03	202	0.14	98	0.05	22	0.02	1	0.00	1	0.00	374	0.06
	Tide	Flood			19	0.03			6	0.01	54	0.06	6	0.02					85	0.03
		Ebb			11	0.01	20	0.03	196	0.24	44	0.04	16	0.02	1	0.00	1	0.00	289	0.07
	Time	Day			20	0.02	20	0.03	170	0.18	86	0.07	14	0.02	1	0.00	1	0.00	312	0.07
		Night			10	0.02			32	0.05	12	0.02	8	0.02					62	0.02
	Depth	Surface			6	0.01	2	0.01	1	0.00	40	0.05	2	0.01					51	0.02
		Mid			10	0.03	2	0.01	85	0.15	30	0.15	8	0.02	1	0.00	1	0.00	137	0.06
		Bottom			14	0.02	16	0.07	116	0.18	28	0.03	12	0.03					186	0.07

TABLE 1

SUMMARY OF ICHTHYOPLANKTON SAMPLING RESULTS

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

Classification	Event		1		2		3		4		5		6		7		8		2013 Total Counts	2013 Average Density
	Date		4/17/2013		4/24-4/25		4/30-5/1		5/9/2013		5/13/2013		5/20/2013		5/30/2013		6/6/2013			
	Water Temp (°C)		13.7		14.4		15.2		17.8		16.2		18.9		21.8		21.9			
	Parameters		Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density	Count	Density		
White perch	Event Total				57	0.04	93	0.04	484	0.18	223	0.09	212	0.08	37	0.03	63	0.03	1169	0.08
	Tide	Flood			42	0.05	10	0.01	334	0.26	109	0.08	44	0.04	18	0.03	38	0.04	595	0.08
		Ebb			15	0.03	83	0.07	150	0.10	114	0.10	168	0.12	19	0.04	25	0.02	574	0.08
	Time	Day			54	0.05	73	0.06	100	0.08	123	0.11	112	0.08	37	0.03	34	0.02	533	0.06
		Night			3	0.01	20	0.02	384	0.28	100	0.07	100	0.08			29	0.04	636	0.10
	Depth	Surface			7	0.01	8	0.01	252	0.28	107	0.09	66	0.07	8	0.03	12	0.01	460	0.08
		Mid			18	0.05	25	0.05	90	0.11	42	0.07	100	0.12	26	0.06	22	0.03	323	0.08
		Bottom			32	0.05	60	0.07	142	0.15	74	0.09	46	0.05	3	0.01	29	0.04	386	0.07
Other	Event Total		7	0.01	77	0.03	122	0.05	460	0.12	1318	0.55	1395	0.54	88	0.06	40	0.02	3507	0.20
	Tide	Flood	6	0.01	62	0.05	10	0.01	127	0.07	1072	0.74	776	0.61	65	0.09	30	0.04	2148	0.23
		Ebb	1	0.00	15	0.02	112	0.09	333	0.18	246	0.27	619	0.47	23	0.03	10	0.01	1359	0.16
	Time	Day			63	0.06	96	0.09	88	0.05	350	0.25	243	0.19	88	0.06	30	0.04	958	0.11
		Night	7	0.01	14	0.01	26	0.02	372	0.21	968	1.01	1152	0.89			10	0.01	2549	0.30
	Depth	Surface	1	0.00	12	0.02	18	0.02	131	0.10	760	0.91	610	0.65	41	0.07	23	0.04	1596	0.25
		Mid	4	0.03	26	0.04	54	0.07	99	0.07	336	0.42	454	0.58	42	0.06	9	0.02	1024	0.18
		Bottom	2	0.01	39	0.05	50	0.08	230	0.20	222	0.36	331	0.39	5	0.03	8	0.02	887	0.17
Unidentifiable	Event Total						19	0.05	6	0.01									25	
	Tide	Flood							5	0.01									5	
		Ebb					19	0.05	1	0.00									20	
	Time	Day					19	0.05	6	0.01									25	
		Night																		
	Depth	Surface					1	0.004	1	0.004									2	
		Mid					18	0.10	1	0.005									19	
		Bottom							4	0.02									4	

Notes:

1. = No specimens in this category were identified in the sample.
2. Count = Number of specimens identified in the sample
3. Density = Number (count) of identified specimens in the sample per sample water volume

This table is part of Duffield Associates' report titled, [redacted]

TABLE 1

SUMMARY OF ICHTHYOPLANKTON SAMPLING RESULTS

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

[redacted]

TABLE 2
SUMMARY OF PHYSIOCHEMICAL DATA
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event			1	2	3	4	5	6	7	8
Average Water Temperature (^{o}C)	Depth	Surface	13.79	14.60	15.40	17.62	16.00	18.91	22.13	22.09
		Mid	13.68	14.39	15.19	17.91	16.30	18.69	21.68	21.87
		Bottom	13.63	14.34	15.09	17.76	16.20	18.74	21.64	21.75
		Average	13.70	14.44	15.22	17.76	16.17	18.78	21.82	21.90
Average Water Salinity (ppt)	Depth	Surface	0.20	0.20	0.20	0.25	0.20	0.20	0.25	0.25
		Mid	0.22	0.20	0.20	0.25	0.20	0.20	0.25	0.28
		Bottom	0.22	0.20	0.20	0.30	0.20	0.20	0.25	0.28
		Average	0.22	0.20	0.20	0.27	0.20	0.20	0.25	0.27
Average Water Dissolved Oxygen (mg/L)	Depth	Surface	9.45	9.33	8.62	7.75	7.99	7.52	7.74	6.40
		Mid	9.55	9.45	8.72	7.95	8.24	7.67	7.84	6.50
		Bottom	9.51	9.38	8.74	7.85	8.10	7.63	7.75	6.47
		Average	9.50	9.39	8.69	7.85	8.11	7.61	7.78	6.46

[redacted]

TABLE 3.A
STRIPED BASS EGG DENSITIES BY SAMPLING EVENT
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs By Depth (#/m^3)	Water Column Density of Striped Bass Eggs (Sampling Event) (#/m^3)	Water Column Density of Striped Bass Eggs (Sampling Period) (#/m^3)
1	Surface	83	939	0.088	0.130	0.4611
1	Mid-Depth	83	751	0.11		
1	Bottom	159	818	0.194		
2	Surface	95	967	0.098	0.156	
2	Mid-Depth	41	663	0.062		
2	Bottom	236	754	0.313		
3	Surface	303	1,018	0.298	1.137	
3	Mid-Depth	713	673	1.06		
3	Bottom	1,808	794	2.28		
4	Surface	641	1,072	0.598	1.866	
4	Mid-Depth	1,550	914	1.70		
4	Bottom	3,378	999	3.38		
5	Surface	5	1,165	0.004	0.021	
5	Mid-Depth	8	788	0.01		
5	Bottom	44	791	0.056		
6	Surface	15	954	0.016	0.014	
6	Mid-Depth	5	809	0.01		
6	Bottom	16	880	0.018		
7	Surface	8	602	0.01	0.0075	
7	Mid-Depth	2	434	0.005		
7	Bottom	1	422	0.002		
8	Surface	2	1,004	0.002	0.001	
8	Mid-Depth	0	876	0		
8	Bottom	0	856	0		

Entire Sampling Period	Sampling Depth	Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs (#/m^3)
	Surface	1,152	7,721	0.1492
	Mid-Depth	2,402	5,908	0.4066
	Bottom	5,642	6,312	0.8938
	Combined Depths	9,196	19,942	0.4611

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
#/m^3 = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 3.B
STRIPED BASS LARVAE DENSITIES BY SAMPLING EVENT
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Larvae By Depth (#/m^3)	Water Column Density of Striped Bass Larvae (Sampling Event) (#/m^3)	Water Column Density of Striped Bass Larvae (Sampling Period) (#/m^3)
1	Surface	17	939	0.0181	0.018	2.052
1	Mid-Depth	9	751	0.0120		
1	Bottom	20	818	0.0245		
2	Surface	79	967	0.082	0.148	
2	Mid-Depth	82	663	0.124		
2	Bottom	193	754	0.256		
3	Surface	126	1,018	0.124	0.694	
3	Mid-Depth	392	673	0.583		
3	Bottom	1,206	794	1.52		
4	Surface	6,910	1,072	6.445	6.839	
4	Mid-Depth	5,363	914	5.87		
4	Bottom	8,140	999	8.15		
5	Surface	5,796	1,165	4.975	5.306	
5	Mid-Depth	5,556	788	7.05		
5	Bottom	3,206	791	4.05		
6	Surface	224	954	0.235	0.5891	
6	Mid-Depth	545	809	0.673		
6	Bottom	788	880	0.896		
7	Surface	41	602	0.068	0.518	
7	Mid-Depth	447	434	1.03		
7	Bottom	267	422	0.633		
8	Surface	417	1,004	0.415	0.5534	
8	Mid-Depth	546	876	0.623		
8	Bottom	551	856	0.644		

Entire Sampling Period	Sampling Depth	Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Larvae (#/m^3)
	Surface	13,610	7,721	1.763
	Mid-Depth	12,940	5,908	2.190
	Bottom	14,371	6,312	2.272
	Combined Depths	40,921	19,942	2.0520

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
#/m^3 = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 3.B
STRIPED BASS LARVAE DENSITIES BY SAMPLING EVENT
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

[redacted]

TABLE 3.C
RIVER HERRING LARVAE DENSITIES BY SAMPLING EVENT
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of River Herring by Depth (#/m^3)	Water Column Density of River Herring Larvae (Sampling Event) (#/m^3)	Water Column Density of River Herring Larvae (Sampling Period) (#/m^3)
1	Surface	9	939	0.01	0.0056	0.0431
1	Mid-Depth	2	751	0.003		
1	Bottom	3	818	0.004		
2	Surface	33	967	0.034	0.030	
2	Mid-Depth	14	663	0.021		
2	Bottom	25	754	0.033		
3	Surface	3	1018	0.0029	0.010	
3	Mid-Depth	18	673	0.027		
3	Bottom	4	794	0.0050		
4	Surface	18	1072	0.017	0.0486	
4	Mid-Depth	53	914	0.058		
4	Bottom	74	999	0.074		
5	Surface	48	1165	0.041	0.033	
5	Mid-Depth	22	788	0.028		
5	Bottom	20	791	0.025		
6	Surface	184	954	0.193	0.165	
6	Mid-Depth	167	809	0.206		
6	Bottom	86	880	0.098		
7	Surface	52	602	0.086	0.044	
7	Mid-Depth	12	434	0.028		
7	Bottom	0	422	0		
8	Surface	9	1004	0.0090	0.0044	
8	Mid-Depth	2	876	0.0023		
8	Bottom	1	856	0.0012		

Entire Sampling Period	Sampling Depth	Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of River Herring Larvae (#/m^3)
	Surface	356	7,721	0.046
	Mid-Depth	290	5,908	0.049
	Bottom	213	6,312	0.034
	Combined Depths	859	19,942	0.0431

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
#/m^3 = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 4.A
STRIPED BASS EGG DENSITIES BY TIDE PHASE
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Ebb Tide			Flood Tide			Water Column Density of Striped Bass Eggs (Sampling Event) (#/m^3)	Water Column Density of Striped Bass Eggs (Sampling Period) (#/m^3)
		Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs (#/m^3)	Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs (#/m^3)		
1	Surface	21	498	0.042	62	441	0.14	0.130	0.4611
1	Mid-Depth	18	424	0.042	65	326	0.20		
1	Bottom	68	486	0.14	91	332	0.27		
2	Surface	40	454	0.088	55	513	0.11	0.156	
2	Mid-Depth	12	338	0.035	29	325	0.09		
2	Bottom	190	383	0.496	46	371	0.12		
3	Surface	83	527	0.16	220	490	0.449	1.137	
3	Mid-Depth	421	365	1.15	292	308	0.949		
3	Bottom	1,110	426	2.61	698	368	1.90		
4	Surface	351	615	0.570	290	457	0.635	1.866	
4	Mid-Depth	1,468	497	2.96	82	418	0.20		
4	Bottom	2,832	535	5.29	546	463	1.18		
5	Surface	0	573	0	5	592	0.01	0.021	
5	Mid-Depth	0	390	0	8	398	0.02		
5	Bottom	12	364	0.03	32	427	0.07		
6	Surface	12	513	0.023	3	441	0.007	0.014	
6	Mid-Depth	0	424	0	5	386	0.01		
6	Bottom	8	455	0.02	8	425	0.02		
7	Surface	0	312	0	8	290	0.03	0.0075	
7	Mid-Depth	0	227	0	2	207	0.01		
7	Bottom	0	223	0	1	199	0.005		
8	Surface	0	627	0	2	377	0.005	0.001	
8	Mid-Depth	0	520	0	0	356	0		
8	Bottom	0	498	0	0	358	0		

Entire Sampling Period	Sampling Depth	Ebb Tide			Flood Tide			Water Column Density of Striped Bass Eggs (#/m^3)
		Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs (#/m^3)	Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs (#/m^3)	
	Surface	507	4,120	0.123	645	3,602	0.179	0.4611
	Mid-Depth	1,919	3,184	0.6027	483	2,724	0.177	
	Bottom	4,220	3,369	1.252	1,422	2,943	0.4832	
	Combined Depths	6,646	10,673	0.6227	2,550	9,268	0.2751	

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
#/m^3 = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 4.B
STRIPED BASS LARVAE DENSITIES BY TIDE PHASE
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Ebb Tide			Flood Tide			Water Column Density of Striped Bass Larvae (Sampling Event)	Water Column Density of Striped Bass Larvae (Sampling Period)
		Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Larvae (#/m^3)	Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	CumulativeDensity of Striped Bass Larvae (#/m^3)	(#/m^3)	(#/m^3)
1	Surface	6	498	0.01	11	441	0.025	0.018	2.052
1	Mid-Depth	8	424	0.02	1	326	0.003		
1	Bottom	18	486	0.037	2	332	0.006		
2	Surface	61	454	0.13	18	513	0.035	0.148	
2	Mid-Depth	61	338	0.18	21	325	0.065		
2	Bottom	121	383	0.316	72	371	0.19		
3	Surface	51	527	0.097	75	490	0.15	0.6939	
3	Mid-Depth	284	365	0.778	108	308	0.351		
3	Bottom	968	426	2.27	238	368	0.646		
4	Surface	1,948	615	3.17	4,962	457	10.9	6.839	
4	Mid-Depth	4,356	497	8.77	1,007	418	2.41		
4	Bottom	6,432	535	12.02	1,708	463	3.69		
5	Surface	4,012	573	7.00	1,784	592	3.01	5.306	
5	Mid-Depth	4,174	390	10.7	1,382	398	3.47		
5	Bottom	1,226	364	3.37	1,980	427	4.64		
6	Surface	88	513	0.17	136	441	0.308	0.589	
6	Mid-Depth	315	424	0.744	230	386	0.596		
6	Bottom	636	455	1.399	152	425	0.358		
7	Surface	1	312	0.003	40	290	0.14	0.518	
7	Mid-Depth	207	227	0.91	240	207	1.16		
7	Bottom	119	223	0.533	148	199	0.745		
8	Surface	74	627	0.12	343	377	0.910	0.553	
8	Mid-Depth	208	520	0.400	338	356	0.948		
8	Bottom	395	498	0.794	156	358	0.436		

Entire Sampling Period	Sampling Depth	Ebb Tide			Flood Tide			Water Column Density of Striped Bass Larvae (#/m^3)
		Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Larvae (#/m^3)	Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Larvae (#/m^3)	
	Surface	6,241	4,120	1.515	7,369	3,602	2.046	2.052
	Mid-Depth	9,613	3,184	3.019	3,327	2,724	1.222	
	Bottom	9,915	3,369	2.943	4,456	2,943	1.514	
	Combined Depths	25,769	10,673	2.4143	15,152	9,268	1.6348	

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
#/m^3 = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 4.C
RIVER HERRING LARVAE DENSITIES BY TIDE PHASE
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Ebb Tide			Flood Tide			Water Column Density of River Herring Larvae (Sampling Event) (#/m^3)	Water Column Density of River Herring Larvae (Sampling Period) (#/m^3)
		Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of River Herring Larvae (#/m^3)	Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of River Herring Larvae (#/m^3)		
1	Surface	9	498	0.02	0	441	0	0.006	0.0431
1	Mid-Depth	2	424	0.005	0	326	0		
1	Bottom	3	486	0.006	0	332	0		
2	Surface	21	454	0.046	12	513	0.023	0.030	
2	Mid-Depth	7	338	0.02	7	325	0.02		
2	Bottom	18	383	0.047	7	371	0.02		
3	Surface	2	527	0.004	1	490	0.002	0.010	
3	Mid-Depth	13	365	0.036	5	308	0.02		
3	Bottom	2	426	0.005	2	368	0.005		
4	Surface	10	615	0.016	8	457	0.02	0.049	
4	Mid-Depth	40	497	0.081	13	418	0.031		
4	Bottom	64	535	0.12	10	463	0.022		
5	Surface	24	573	0.042	24	592	0.041	0.033	
5	Mid-Depth	0	390	0	22	398	0.055		
5	Bottom	8	364	0.02	12	427	0.028		
6	Surface	92	513	0.18	92	441	0.21	0.165	
6	Mid-Depth	143	424	0.338	24	386	0.062		
6	Bottom	68	455	0.150	18	425	0.042		
7	Surface	2	312	0.006	50	290	0.17	0.044	
7	Mid-Depth	4	227	0.02	8	207	0.04		
7	Bottom	0	223	0	0	199	0		
8	Surface	7	627	0.01	2	377	0.005	0.0044	
8	Mid-Depth	2	520	0.004	0	356	0		
8	Bottom	1	498	0.002	0	358	0		

Entire Sampling Period	Sampling Depth	Ebb Tide			Flood Tide			Water Column Density of River Herring Larvae (#/m^3)
		Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m^3)	CumulativeDensity of River Herring Larvae (#/m^3)	Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of River Herring Larvae (#/m^3)	
	Surface	167	4,120	0.0405	189	3,602	0.0525	0.0431
	Mid-Depth	211	3,184	0.0663	79	2,724	0.029	
	Bottom	164	3,369	0.0487	49	2,943	0.017	
	Combined Depths	542	10,673	0.0508	317	9,268	0.0342	

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
#/m^3 = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 5.A
STRIPED BASS EGG DENSITIES BY DAY/NIGHT
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Daytime			Nighttime			Water Column Density of Striped Bass Eggs (Sampling Event)	Water Column Density of Striped Bass Eggs (Sampling Period)
		Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs ($\#/m^3$)	Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs ($\#/m^3$)	($\#/m^3$)	($\#/m^3$)
1	Surface	39	498	0.078	44	441	0.10	0.130	0.4611
1	Mid-Depth	17	415	0.041	66	336	0.20		
1	Bottom	72	454	0.16	87	364	0.24		
2	Surface	22	438	0.050	73	529	0.14	0.156	
2	Mid-Depth	10	325	0.031	31	338	0.09		
2	Bottom	170	404	0.421	66	350	0.19		
3	Surface	221	562	0.39	82	456	0.180	1.137	
3	Mid-Depth	388	344	1.13	325	329	0.988		
3	Bottom	1,282	421	3.04	526	373	1.41		
4	Surface	57	478	0.119	584	594	0.984	1.866	
4	Mid-Depth	78	394	0.20	1,472	520	2.83		
4	Bottom	1,882	437	4.31	1,496	562	2.66		
5	Surface	5	594	0.01	0	571	0	0.021	
5	Mid-Depth	8	403	0.02	0	385	0		
5	Bottom	44	415	0.11	0	376	0		
6	Surface	3	484	0.006	12	470	0.026	0.014	
6	Mid-Depth	3	419	0.01	2	390	0.01		
6	Bottom	8	452	0.02	8	428	0.02		
7	Surface	8	602	0.01	No Data	No Data	---	0.0075	
7	Mid-Depth	2	434	0.005	No Data	No Data	---		
7	Bottom	1	422	0.002	No Data	No Data	---		
8	Surface	2	472	0.004	0	533	0	0.001	
8	Mid-Depth	0	431	0	0	445	0		
8	Bottom	0	406	0	0	449	0		

Entire Sampling Period	Sampling Depth	Daytime			Nighttime			Water Column Density of Striped Bass Eggs
		Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs ($\#/m^3$)	Cumulative Count of Striped Bass Eggs (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Eggs ($\#/m^3$)	($\#/m^3$)
	Surface	357	4,129	0.086	795	3,592	0.221	0.4611
	Mid-Depth	506	3,165	0.1599	1,896	2,743	0.691	
	Bottom	3,459	3,411	1.014	2,183	2,901	0.7524	
	Combined Depths	4,322	10,705	0.4037	4,874	9,237	0.5277	

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
$\#/m^3$ = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 5.B
STRIPED BASS LARVAE DENSITIES BY DAY/NIGHT
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Daytime			Nighttime			Water Column Density of Striped Bass Larvae (Sampling Event)	Water Column Density of Striped Bass Larvae (Sampling Period)
		Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	CumulativeDensity of Striped Bass Larvae (#/m^3)	Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Larvae (#/m^3)	(#/m^3)	(#/m^3)
1	Surface	14	498	0.03	3	441	0.007	0.018	2.052
1	Mid-Depth	4	415	0.01	5	336	0.015		
1	Bottom	19	454	0.042	1	364	0.003		
2	Surface	39	438	0.09	40	529	0.076	0.148	
2	Mid-Depth	14	325	0.04	68	338	0.201		
2	Bottom	156	404	0.386	37	350	0.11		
3	Surface	29	562	0.052	97	456	0.21	0.6939	
3	Mid-Depth	268	344	0.779	124	329	0.377		
3	Bottom	904	421	2.15	302	373	0.809		
4	Surface	54	478	0.11	6,856	594	11.5	6.839	
4	Mid-Depth	927	394	2.35	4,436	520	8.53		
4	Bottom	4,604	437	10.53	3,536	562	6.30		
5	Surface	3,136	594	5.28	2,660	571	4.66	5.306	
5	Mid-Depth	4,046	403	10.0	1,510	385	3.92		
5	Bottom	1,074	415	2.59	2,132	376	5.67		
6	Surface	16	484	0.03	208	470	0.443	0.589	
6	Mid-Depth	241	419	0.575	304	390	0.779		
6	Bottom	408	452	0.903	380	428	0.888		
7	Surface	41	602	0.068	No Data	No Data	---	0.518	
7	Mid-Depth	447	434	1.03	No Data	No Data	---		
7	Bottom	267	422	0.633	No Data	No Data	---		
8	Surface	13	472	0.03	404	533	0.759	0.553	
8	Mid-Depth	233	431	0.541	313	445	0.703		
8	Bottom	301	406	0.741	250	449	0.556		

Entire Sampling Period	Sampling Depth	Daytime			Nighttime			Water Column Density of Striped Bass Larvae
		Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Larvae (#/m^3)	Cumulative Count of Striped Bass Larvae (#)	Cumulative Sample Volume (m^3)	Cumulative Density of Striped Bass Larvae (#/m^3)	(#/m^3)
	Surface	3,342	4,129	0.809	10,268	3,592	2.858	2.052
	Mid-Depth	6,180	3,165	1.953	6,760	2,743	2.464	
	Bottom	7,733	3,411	2.267	6,638	2,901	2.288	
	Combined Depths	17,255	10,705	1.6119	23,666	9,237	2.562	

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
#/m^3 = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 5.C
RIVER HERRING LARVAE DENSITIES BY DAY/NIGHT
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Sampling Event	Sampling Depth	Daytime			Nighttime			Water Column Density of River Herring Larvae (Sampling Event) (#/m³)	Water Column Density of River Herring Larvae (Sampling Period) (#/m³)
		Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m³)	Cumulative Density of River Herring Larvae (#/m³)	Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m³)	Cumulative Density of River Herring Larvae (#/m³)		
1	Surface	5	498	0.02	4	441	0	0.006	0.0431
1	Mid-Depth	0	415	0.000	2	336	0.006		
1	Bottom	3	454	0.007	0	364	0		
2	Surface	16	438	0.037	17	529	0.032	0.030	
2	Mid-Depth	9	325	0.03	5	338	0.01		
2	Bottom	21	404	0.052	4	350	0.01		
3	Surface	2	562	0.004	1	456	0.002	0.010	
3	Mid-Depth	13	344	0.038	5	329	0.02		
3	Bottom	2	421	0.005	2	373	0.005		
4	Surface	18	478	0.038	0	594	0	0.049	
4	Mid-Depth	13	394	0.033	40	520	0.077		
4	Bottom	58	437	0.13	16	562	0.028		
5	Surface	24	594	0.040	24	571	0.042	0.033	
5	Mid-Depth	22	403	0.05	0	385	0		
5	Bottom	20	415	0.05	0	376	0		
6	Surface	56	484	0.12	128	470	0.273	0.165	
6	Mid-Depth	23	419	0.055	144	390	0.369		
6	Bottom	10	452	0.022	76	428	0.18		
7	Surface	52	602	0.086	No Data	No Data	---	0.044	
7	Mid-Depth	12	434	0.028	No Data	No Data	---		
7	Bottom	0	422	0	No Data	No Data	---		
8	Surface	9	472	0.02	0	533	0	0.0044	
8	Mid-Depth	2	431	0.005	0	445	0		
8	Bottom	1	406	0.002	0	449	0		

Sampling Event	Sampling Depth	Daytime			Nighttime			Water Column Density of River Herring Larvae (#/m³)
		Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m³)	Cumulative Density of River Herring Larvae (#/m³)	Cumulative Count of River Herring Larvae (#)	Cumulative Sample Volume (m³)	Cumulative Density of River Herring Larvae (#/m³)	
Spawning Season	Surface	182	4,129	0.0441	174	3,592	0.0484	0.0431
Spawning Season	Mid-Depth	94	3,165	0.030	196	2,743	0.0715	
Spawning Season	Bottom	115	3,411	0.0337	98	2,901	0.034	
Spawning Season	Combined Depths	391	10,705	0.0365	468	9,237	0.0507	

Notes:
= number of ichthyoplankton
m^3 = cubic meters (volume)
$\#/m^3$ = number of ichthyoplankton per cubic meter (density)

[redacted]

TABLE 6
POPULATION AND ENTRAINMENT ESTIMATES BY TIDE PHASE
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Table 6.A - Estimates of Population, Entrained Populations and Impact By Event

Classification	Depth	Tide	River Discharge (m^3)	Impact Per Event																			
				Event 1					Event 2					Event 3					Event 4				
				Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Ebb	Total Impact Flood	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Ebb	Total Impact Flood	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Ebb	Total Impact Flood	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Ebb	Total Impact Flood
Striped Bass Larvae	Surface	Ebb	9,400,000	0.01	226,000		0.47%	0.11%	0.13	2,527,000		0.46%	0.40%	0.097	1,819,000		0.46%	0.55%	3.17	59,516,000		0.63%	0.18%
		Flood	8,900,000	0.025	444,000				0.035	624,000				0.15	2,722,000				10.9	193,339,000			
	Mid	Ebb	4,900,000	0.02	185,000	3,600			0.18	1,766,000	33,900			0.778	7,623,000	146,500			8.77	85,941,000	1,652,000		
		Flood	4,700,000	0.003	29,000	600			0.065	608,000	12,200			0.351	3,300,000	66,100			2.41	22,672,000	454,400		
	Bottom	Ebb	4,900,000	0.037	363,000				0.316	3,098,000				2.27	22,265,000				12.02	117,776,000			
		Flood	4,700,000	0.006	57,000				0.19	1,823,000				0.646	6,075,000				3.69	34,649,000			
Striped Bass Eggs	Surface	Ebb	9,400,000	0.042	792,000		0.31%	0.54%	0.088	1,657,000		0.10%	0.43%	0.16	2,960,000		0.55%	0.51%	0.570	10,724,000		0.61%	0.15%
		Flood	8,900,000	0.14	2,503,000				0.11	1,907,000				0.449	7,985,000				0.635	11,300,000			
	Mid	Ebb	4,900,000	0.042	416,000	8,000			0.035	347,000	6,700			1.15	11,300,000	217,200			2.96	28,963,000	556,800		
		Flood	4,700,000	0.20	1,871,000	37,500			0.09	840,000	16,800			0.949	8,923,000	178,800			0.20	1,846,000	37,000		
	Bottom	Ebb	4,900,000	0.14	1,372,000				0.496	4,864,000				2.61	25,531,000				5.29	51,856,000			
		Flood	4,700,000	0.27	2,577,000				0.12	1,165,000				1.90	17,818,000				1.18	11,076,000			
River Herring Larvae	Surface	Ebb	9,400,000	0.02	339,000		0.20%	No Impact	0.046	870,000		0.25%	0.52%	0.004	71,000		1.44%	1.29%	0.016	306,000		0.67%	0.73%
		Flood	8,900,000	0	0				0.023	416,000				0.002	36,000				0.02	312,000			
	Mid	Ebb	4,900,000	0.005	46,000	900			0.021	203,000	3,900			0.036	349,000	6,700			0.081	789,000	15,200		
		Flood	4,700,000	0	0	0			0.022	203,000	4,100			0.02	153,000	3,100			0.031	293,000	5,900		
	Bottom	Ebb	4,900,000	0.006	61,000				0.047	461,000				0.005	46,000				0.12	1,172,000			
		Flood	4,700,000	0	0				0.019	177,000				0.005	51,000				0.022	203,000			

Classification	Depth	Tide	River Discharge (m^3)	Impact Per Event																			
				Event 5					Event 6					Event 7					Event 8				
				Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Ebb	Total Impact Flood	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Ebb	Total Impact Flood	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Ebb	Total Impact Flood	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Ebb	Total Impact Flood
Striped Bass Larvae	Surface	Ebb	9,400,000	7.00	131,656,000		0.75%	0.50%	0.17	3,228,000		0.58%	0.78%	0.003	60,000		1.21%	1.07%	0.12	2,217,000		0.54%	0.61%
		Flood	8,900,000	3.01	53,636,000				0.308	5,487,000				0.14	2,457,000				0.910	16,197,000			
	Mid	Ebb	4,900,000	10.7	104,873,000	2,016,000			0.744	7,288,000	140,100			0.91	8,955,000	172,100			0.400	3,923,000	75,400		
		Flood	4,700,000	3.47	32,651,000	654,400			0.596	5,602,000	112,300			1.16	10,885,000	218,100			0.948	8,916,000	178,700		
	Bottom	Ebb	4,900,000	3.37	33,012,000				1.399	13,709,000				0.533	5,227,000				0.794	7,778,000			
		Flood	4,700,000	4.64	43,611,000				0.358	3,362,000				0.745	7,001,000				0.436	4,097,000			
Striped Bass Eggs	Surface	Ebb	9,400,000	0	0		No Impact	0.36%	0.023	440,000		No Impact	0.57%	0	0		No Impact	0.29%	0	0		No Impact	No Impact
		Flood	8,900,000	0.01	150,000				0.007	121,000				0.03	491,000				0.005	94,000			
	Mid	Ebb	4,900,000	0	0	0			0	0	0			0	0	0			0	0	0		
		Flood	4,700,000	0.02	189,000	3,800			0.01	122,000	2,400			0.01	91,000	1,800			0	0	0		
	Bottom	Ebb	4,900,000	0.03	323,000				0.02	172,000				0	0				0	0			
		Flood	4,700,000	0.07	705,000				0.02	177,000				0.005	47,000				0	0			
River Herring Larvae	Surface	Ebb	9,400,000	0.042	788,000		No Impact	0.69%	0.18	3,375,000		0.78%	0.25%	0.006	120,000		1.13%	0.21%	0.01	210,000		0.26%	0.00%
		Flood	8,900,000	0.041	722,000				0.21	3,712,000				0.17	3,071,000				0.005	94,000			
	Mid	Ebb	4,900,000	0	0	0			0.338	3,309,000	63,600			0.02	173,000	3,300			0.004	38,000	700		
		Flood	4,700,000	0.055	520,000	10,400			0.062	585,000	11,700			0.04	363,000	7,300			0	0	0		
	Bottom	Ebb	4,900,000	0.02	215,000				0.150	1,466,000				0	0				0.002	20,000			
		Flood	4,700,000	0.028	264,000				0.042	398,000				0	0				0	0			

TABLE 6.B - Cumulative Estimates of Populations, Entrained Populations and Impact

Classification	Depth	Cumulative River Population During 57 day Sampling Period			Unaltered Operation of System				Suspended Operation for Four Peak Weeks				Suspend Ebb Tide Operations			
					Cumulative Population Entrained During Sampling Period			Entrainment as a Percent of Population	Cumulative Population Entrained During Sampling Period			Entrainment as a Percent of Population	Cumulative Population Entrained During Sampling Period			Entrainment as a Percent of Population
		Ebb Tide	Flood Tide	Combined	Ebb Tide	Flood Tide	Combined		Ebb Tide	Flood Tide	Combined		Ebb Tide	Flood Tide	Combined	
Striped Bass Larvae	**Surface**	1,240,990,000	1,365,606,000	6,248,436,000	25,400,600	10,971,300	36,371,900	**0.58%**	1,961,100	2,855,000	4,816,100	**0.08%**	0	10,971,300	10,971,300	**0.18%**
	Mid	1,321,399,000	547,423,000													
	Bottom	1,151,827,000	621,191,000													
Striped Bass Eggs	**Surface**	89,422,000	152,383,000	1,290,060,000	4,278,200	2,183,700	6,461,900	**0.50%**	96,200	375,900	472,100	**0.04%**	0	2,183,700	2,183,700	**0.17%**
	Mid	222,546,000	109,008,000													
	Bottom	479,972,000	236,729,000													
River Herring Larvae	**Surface**	51,032,000	68,397,000	210,392,000	814,800	317,000	1,131,800	**0.54%**	57,700	75,700	133,400	**0.06%**	0	317,000	317,000	**0.15%**
	Mid	42,404,000	15,798,000													
	Bottom	24,600,000	8,161,000													

Notes:
= population (number) of ichthyoplankton
m^3 = cubic meters (Volume), where:
Volume of water passing through SedCon® turbo system was calculated as follows: unit flow x unit runtime x 7 units per cycle x 2 cycles per ebb tides or flood tides
Volume of water passing [redacted] berth was calculated per Appendix C, accounting for two flood tides and two ebb tides per day
#/m^3 = density (number of ichthyoplankton per volume of water
Population = density (#/m^3) x volume of water
Cumulative populations = summation of sampling event poulations multiplied by the number of days applicable to the sampling event

This table is part of Duffield Associates' report titled, "Entrainment Impact Assessment, Proposed SedCon® Turbo System Installation, [redacted]
Wilmington, Delaware" and should only be viewed in that context.

TABLE 7
POPULATION AND ENTRAINMENT ESTIMATES BY DAY AND NIGHT
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Table 7.A - Estimates of Population, Entrained Polulations and Impact by Event

Classification	Depth	Light Condition	River Discharge (m^3)	Impact Per Event																			
				Event 1					Event 2					Event 3					Event 4				
				Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Day	Total Impact Night	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Day	Total Impact Night	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Day	Total Impact Night	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Day	Total Impact Night
Striped Bass Larvae	Surface	Day	18,300,000	0.03	515,000		0.18%	0.96%	0.09	1,628,000		0.14%	0.87%	0.052	944,000		0.51%	0.46%	0.11	2,066,000		0.35%	0.45%
		Night	18,300,000	0.007	124,000				0.076	1,384,000				0.21	3,897,000				11.5	211,298,000			
	Mid	Day	9,600,000	0.01	93,000	1,800			0.04	414,000	8,100			0.779	7,481,000	146,800			2.35	22,562,000	442,700		
		Night	9,600,000	0.015	143,000	2,800			0.201	1,929,000	37,800			0.377	3,621,000	71,000			8.53	81,927,000	1,607,700		
	Bottom	Day	9,600,000	0.042	402,000				0.386	3,706,000				2.15	20,605,000				10.53	101,125,000			
		Night	9,600,000	0.003	26,000				0.11	1,015,000				0.809	7,770,000				6.30	60,454,000			
Striped Bass Eggs	Surface	Day	18,300,000	0.078	1,433,000		0.23%	0.62%	0.050	919,000		0.11%	0.33%	0.39	7,195,000		0.45%	0.71%	0.119	2,180,000		0.08%	0.75%
		Night	18,300,000	0.10	1,825,000				0.14	2,525,000				0.180	3,294,000				0.984	17,999,000			
	Mid	Day	9,600,000	0.041	393,000	7,700			0.031	296,000	5,800			1.13	10,830,000	212,500			0.20	1,898,000	37,300		
		Night	9,600,000	0.20	1,888,000	37,100			0.09	879,000	17,300			0.988	9,489,000	186,200			2.83	27,186,000	533,500		
	Bottom	Day	9,600,000	0.16	1,522,000				0.421	4,039,000				3.04	29,221,000				4.31	41,337,000			
		Night	9,600,000	0.24	2,297,000				0.19	1,810,000				1.41	13,533,000				2.66	25,577,000			
River Herring Larvae	Surface	Day	18,300,000	0.02	330,000		No Impact	0.49%	0.037	668,000		0.36%	0.33%	0.004	65,000		1.50%	1.22%	0.038	689,000		0.27%	1.43%
		Night	18,300,000	0	166,000				0.032	588,000				0.002	40,000				0	0			
	Mid	Day	9,600,000	0	0	0			0.03	266,000	5,200			0.038	363,000	7,100			0.033	316,000	6,200		
		Night	9,600,000	0.006	57,000	1,100			0.01	142,000	2,800			0.02	146,000	2,900			0.077	739,000	14,500		
	Bottom	Day	9,600,000	0.007	63,000				0.052	499,000				0.005	46,000				0.13	1,274,000			
		Night	9,600,000	0	0				0.01	110,000				0.005	51,000				0.028	274,000			

Classification	Depth	Light Condition	River Discharge (m^3)	Impact Per Event																			
				Event 5					Event 6					Event 7					Event 8				
				Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Day	Total Impact Night	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Day	Total Impact Night	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Day	Total Impact Night	Density (#/m^3)	River Population (#)	Entrained Population (#)	Total Impact Day	Total Impact Night
Striped Bass Larvae	Surface	Day	18,300,000	5.28	96,554,000		0.87%	0.42%	0.03	605,000		0.73%	0.61%	0.068	1,246,000		1.13%	No Data	0.03	504,000		0.79%	0.51%
		Night	18,300,000	4.66	85,314,000				0.443	8,105,000				No Data	No Data				0.759	13,884,000			
	Mid	Day	9,600,000	10.0	96,452,000	1,892,700			0.575	5,519,000	108,300			1.03	9,892,000	194,100			0.541	5,189,000	101,800		
		Night	9,600,000	3.92	37,631,000	738,500			0.779	7,479,000	146,800			No Data	No Data	No Data			0.703	6,753,000	132,500		
	Bottom	Day	9,600,000	2.59	24,857,000				0.903	8,667,000				0.633	6,077,000				0.741	7,114,000			
		Night	9,600,000	5.67	54,444,000				0.888	8,529,000				No Data	No Data				0.556	5,340,000			
Striped Bass Eggs	Surface	Day	18,300,000	0.01	154,000		0.27%	No Impact	0.006	113,000		0.37%	0.14%	0.01	243,000		0.29%	No Data	0.004	78,000		No Impact	No Impact
		Night	18,300,000	0	0				0.026	468,000				No Data	No Data				0	0			
	Mid	Day	9,600,000	0.02	191,000	3,700			0.01	69,000	1,300			0.005	44,000	900			0	0	0		
		Night	9,600,000	0	0	0			0.01	49,000	1,000			No Data	No Data	No Data			0	0	0		
	Bottom	Day	9,600,000	0.11	1,018,000				0.02	170,000				0.002	23,000				0	0			
		Night	9,600,000	0	0				0.02	180,000				No Data	No Data				0	0			
River Herring Larvae	Surface	Day	18,300,000	0.040	739,000		0.60%	0.00%	0.12	2,117,000		0.36%	0.68%	0.086	3,162,000		0.15%	No Data	0.02	349,000		0.22%	No Impact
		Night	18,300,000	0.042	770,000				0.273	4,988,000				No Data	No Data				0	0			
	Mid	Day	9,600,000	0.05	524,000	10,300			0.055	527,000	10,300			0.028	266,000	5,200			0.005	45,000	900		
		Night	9,600,000	0	0	0			0.369	3,542,000	69,500			No Data	No Data	No Data			0	0	0		
	Bottom	Day	9,600,000	0.05	463,000				0.022	212,000				0	0				0.002	24,000			
		Night	9,600,000	0	0				0.18	1,706,000				No Data	No Data				0	0			

TABLE 7.B - Cumulative Estimates of Population, Entrained Populations and Impact

Classification	Depth	Cumulative River Population During Sampling Period			Unaltered Operation of System				Suspend Night Operations for Eight Weeks				Suspend Day Operations for Eight Weeks			
					Cumulative Population Entrained During Sampling Period			Entrainment as a Percent of Population	Cumulative Population Entrained During Sampling Period			Entrainment as a Percent of Population	Cumulative Population Entrained During Sampling Period			Entrainment as a Percent of Population
		Daytime	Nighttime	Combined	Daytime	Nighttime	Combined		Daytime	Nighttime	Combined		Daytime	Nighttime	Combined	
Striped Bass Larvae	Surface	724,311,000	1,664,873,000	5,933,964,000	19,556,400	14,881,200	34,437,600	**0.58%**	19,556,400	0	19,556,400	**0.33%**	0	14,881,200	14,881,200	**0.25%**
	Mid	996,633,000	758,350,000													
	Bottom	968,001,000	821,796,000													
Striped Bass Eggs	Surface	93,475,000	134,247,000	1,277,827,000	2,195,600	4,183,300	6,378,900	**0.50%**	2,195,600	0	2,195,600	**0.17%**	0	4,183,300	4,183,300	**0.33%**
	Mid	111,924,000	213,125,000													
	Bottom	472,212,000	252,844,000													
River Herring Larvae	Surface	60,579,000	60,320,000	212,831,000	337,700	803,600	1,141,300	**0.54%**	337,700	0	337,700	**0.16%**	0	803,600	803,600	**0.38%**
	Mid	17,242,000	40,941,000													
	Bottom	14,474,000	19,275,000													

Notes:
= population (number) of ichthyoplankton
m^3 = cubic meters (Volume), where:
Volume of water passing through SedCon® turbo system was calculated as follows: unit flow x unit runtime x 7 units per cycle x 2 cycles per day or night
Volume of water passing [redacted] berth was calculated per Appendix C, accounting for one flood tide and one ebb tide per day or nigh
#/m^3 = density (number of ichthyoplankton per volume of water
Population = density (#/m^3) x volume of water
Cumulative populations = summation of sampling event poulations multiplied by the number of days applicable to the sampling even

This table is part of Duffield Associates' report titled, "Entrainment Impact Assessment, Proposed SedCon® Turbo System Installation, [redacted]
Wilmington, Delaware" and should only be viewed in that context.

APPENDIX A

ECSI ICHTHYOPLANKTON SURVEY

[redacted]

ICHTHYOPLANKTON SURVEY

Materials and Methods

Field Collections

Ichthyoplankton collections were taken on a weekly basis in the [redacted] as close as possible, and nautically prudent, to the [redacted] south jetty petroleum dock during the eight-week period from April 17 through June 6, 2013. During each weekly event, a single plankton tow was conducted during the midpoint of the ebb and first half of the flood tides during daylight and darkness, yielding four tows per event. Darkness was defined as the period one hour after sunset to one hour before sunrise. Tows were conducted against the prevailing tidal current at a "through the water" boat speed of 2.2 to 3.2 feet per second, as measured by a Marsh/McBirney flowmeter. The collection gear was a one-meter conical plankton net with 500μ mesh, fitted with a General Oceanics flowmeter to facilitate the calculation of sample volume filtered. During each tow, three plankton nets, as described previously, were simultaneously deployed to sample the surface, mid-water and bottom strata of the [redacted] near the petroleum docks. The surface collection net was deployed from the starboard-aft corner of the research vessel on a 75-ft towline. The mid-water and bottom nets were deployed from a davit located mid-ships port-side of the vessel. The length of towline required to achieve a near-bottom collection was determined based on the trigonometric relation of towline angle and location depth. Given the singular sampling location and repetitive nature of the survey, a standard towline length was established, and the mid-water collection net was attached via a splice at the towline's mid-point. Tow duration was five minutes. After each plankton tow, the collections were washed and the contents concentrated into labeled containers and preserved with a 10% rose bengal-formalin solution. Water temperature (°C), dissolved oxygen (mg/L) and salinity (ppt) were measure with a YSI Model 85 water quality meter at all three vertical strata before each tow, and recorded with other relevant data, e.g., date, time, tidal stage, weather, and light condition.

Laboratory Processing

In the laboratory as part of the Phase 1 processing, fish specimens were washed in freshwater, removed from the sample detritus, and transferred to labeled vials filled with isopropanol. Collections containing large numbers of specimen, i.e., > 400 individuals, were sub-sampled using a sum quota protocol requiring that at less 200 specimens were processed from the

resulting split fraction. This was performed on approximately one-third of the collections, and the resulting fraction was no smaller than one-sixteenth. During Phase 2 processing, members of the genera *Alosa* (river herrings, i.e., alewife, blueback herring and hickory shad, and American shad) and *Morone* (i.e., striped bass and white perch), designated as "species of concern", were identified to the lowest practicable taxonomic level, usually to species. The remaining fish were not identified further, and grouped into an "other" category. The following taxonomic references were used to aid in the identification process:

- Lam, C.N.H. and J.C. Roff. 1977. A method for separating alewife *Alosa pseudoharengus* from gizzard shad *Dorosoma cepedianum* larvae. J of Great Lakes Research. 3(3-4):313-316.
- Waldman, et al. 1999. A Comparison of Alternative Approaches to Discriminate Larvae of Striped Bass and White Perch. North American Journal of Fisheries Management 19:470-481.
- Drewry, Geo. 1979. Externally visible features useful for separating the young of striped bass (*Morone saxatilis*) from those of white perch (*Morone americana*) on the Chesapeake Bay region. memo. CEES Chesapeake Biological Laboratory.
- Jones, P. et al. 1978. Development of Fishes of the Mid-Atlantic Bight.
- Lippson, A.J. and L. Moran. 1974. Manual for Identification of Early Developmental Stages of Fishes of the Potomac River Estuary,
- Wang, J. and R. Kernehan. 1979. Fishes of the Delaware Estuaries - a guide to the early life histories.

With respect to the identification of Clupeidae ichthyoplankton, the following separations could be made reliably:

a. Eggs – Clupeidae eggs were identified to species for American shad, hickory shad, Atlantic menhaden and gizzard shad, and to *Alosa* spp. for alewife and blueback herring.
b. Yolk-sac larvae were identified to species for American shad, Atlantic menhaden, and gizzard shad, and to *Alosa* spp. for alewife, blueback herrings and hickory shad.
c. Post-yolk-sac larvae were identified to species for American shad, alewife, and Atlantic menhaden, while blueback herring, hickory shad and gizzard shad are equivocal and were identified as Clupeidae.
d. Juveniles were identifiable to species for American shad, gizzard shad, and Atlantic menhaden. Alewife, blueback herring and hickory shad were identified as *Alosa* spp.

Some specimens could not be identified to species because of the lack of identifying characteristics. Specimens that were in good condition but possessed insufficient distinguishing characteristics were listed at the genus or family level, while specimens in such poor physical condition that no genus or family level identification could be made were designated as 'unidentifiable fish'.

Each specimen's life stage (i.e. egg, larva, juvenile, or adult) was determined from the identification literature descriptions and the total number of each was recorded. During both Phase 1 and 2 processing, a Continuous Plan Type-1 QA/QC protocol was used, where at least 14% of all samples were re-examined, yielding an Allowable Outgoing Quality Limit of 5% on each Phase, and 10% for the total sample.

Event	Tag #	Start Date	Start Time	Depth	Tide	Day/Night	Common name	Scientific Name	Lifestage (fish/eggs)	# Counted	Expanded Total Fish Count	Splits	Comments	Tag #	Sample Volume (m^3)	Expanded Density	Split Density	Surface Water Temp	Mid Water Temp	Bottom Water Temp	Surface Sal	Mid Sal	Bottom Sal	Surface DO	Mid DO	Bottom DO
1	3501	4/17/2013	11:14	Surface	E2	Day	Striped bass	M. saxatilis	EE	20	20	1.000		3501	267.86431	0.07466467	0.074665	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3502	4/17/2013	11:14	Mid	E2	Day	Striped bass	M. saxatilis	EE	14	14	1.000		3502	240.483	0.05821617	0.058216	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3503	4/17/2013	11:14	Bottom	E2	Day	Striped bass	M. saxatilis	EE	56	56	1.000		3503	248.773335	0.22510451	0.225105	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3504	4/17/2013	14:35	Surface	F1	Day	Striped bass	M. saxatilis	EE	19	19	1.000			230.083165	0.08257884	0.082579	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3505	4/17/2013	14:35	Mid	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000			174.518935	0.01719011	0.01719	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3506	4/17/2013	14:35	Bottom	F1	Day	Striped bass	M. saxatilis	EE	16	16	1.000			205.402015	0.07789602	0.077896	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3507	4/17/2013	21:38	Surface	E2	Night	Striped bass	M. saxatilis	EE	1	1	1.000			230.547255	0.00433751	0.004338	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3508	4/17/2013	21:38	Mid	E2	Night	Striped bass	M. saxatilis	EE	4	4	1.000		3508	183.547595	0.02179271	0.021793	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3509	4/17/2013	21:38	Bottom	E2	Night	Striped bass	M. saxatilis	EE	12	12	1.000			237.06561	0.05061890	0.050619	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3510	4/18/2013	3:10	Surface	F1	Night	Striped bass	M. saxatilis	EE	43	43	1.000			210.760145	0.20402339	0.204023	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3511	4/18/2013	3:10	Mid	F1	Night	Striped bass	M. saxatilis	EE	62	62	1.000			151.96838	0.40797961	0.40798	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3512	4/18/2013	3:10	Bottom	F1	Night	Striped bass	M. saxatilis	EE	75	75	1.000		3512	126.48562	0.59295278	0.592953	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3502	4/17/2013	11:14	Mid	E2	Day	Atlantic menhaden	B. tyrannus	JJ	4	4	1.000			240.483	0.01663319	0.016633	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3504	4/17/2013	14:35	Surface	F1	Day	Atlantic menhaden	B. tyrannus	JJ	4	4	1.000			230.083165	0.01738502	0.017385	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3506	4/17/2013	14:35	Bottom	F1	Day	Atlantic menhaden	B. tyrannus	JJ	3	3	1.000		3506	205.402015	0.0146055	0.014606	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3508	4/17/2013	21:38	Mid	E2	Night	Atlantic menhaden	B. tyrannus	JJ	2	2	1.000			183.547595	0.01089636	0.010896	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3509	4/17/2013	21:38	Bottom	E2	Night	Atlantic menhaden	B. tyrannus	JJ	67	67	1.000		3509	237.06561	0.28262218	0.282622	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3510	4/18/2013	3:10	Surface	F1	Night	Atlantic menhaden	B. tyrannus	JJ	14	14	1.000		3510	210.760145	0.06642622	0.066426	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3511	4/18/2013	3:10	Mid	F1	Night	Atlantic menhaden	B. tyrannus	JJ	25	25	1.000			151.96838	0.16450791	0.164508	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3512	4/18/2013	3:10	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	JJ	17	17	1.000			126.48562	0.13440263	0.134403	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3501	4/17/2013	11:14	Surface	E2	Day	Striped bass	M. saxatilis	LL	5	5	1.000			267.86431	0.01866617	0.018666	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3501	4/17/2013	11:14	Surface	E2	Day	Alewife	A. pseudoharengus	LL	5	5	1.000			267.86431	0.01866617	0.018666	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3501	4/17/2013	11:14	Surface	E2	Day	Clupeidae	Clupeidae	LL	2	2	1.000			267.86431	0.00746647	0.007466	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3502	4/17/2013	11:14	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000			240.483	0.01663319	0.016633	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3503	4/17/2013	11:14	Bottom	E2	Day	Striped bass	M. saxatilis	LL	17	17	1.000			248.773335	0.0683353	0.068335	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3503	4/17/2013	11:14	Bottom	E2	Day	Clupeidae	Clupeidae	LL	8	8	1.000			248.773335	0.03215779	0.032158	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3503	4/17/2013	11:14	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	3	3	1.000			248.773335	0.01205917	0.012059	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3503	4/17/2013	11:14	Bottom	E2	Day	Atlantic menhaden	B. tyrannus	LL	1	1	1.000			248.773335	0.00401972	0.00402	14.5	14.1	13.9	0.2	0.3	0.3	9.3	9.4	9.4
1	3504	4/17/2013	14:35	Surface	F1	Day	Striped bass	M. saxatilis	LL	8	8	1.000	chewed up	3504	230.083165	0.03477004	0.03477	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3504	4/17/2013	14:35	Surface	F1	Day	Morone spp.	Morone spp.	LL	1	1	1.000			230.083165	0.00434625	0.004346	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3504	4/17/2013	14:35	Surface	F1	Day	Clupeidae	Clupeidae	LL	1	1	1.000			230.083165	0.00434625	0.004346	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3505	4/17/2013	14:35	Mid	F1	Day	Atlantic menhaden	B. tyrannus	LL	2	2	1.000		3505	174.518935	0.01146007	0.01146	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3506	4/17/2013	14:35	Bottom	F1	Day	Morone spp.	Morone spp.	LL	2	2	1.000			205.402015	0.009737	0.009737	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3506	4/17/2013	14:35	Bottom	F1	Day	Clupeidae	Clupeidae	LL	2	2	1.000			205.402015	0.009737	0.009737	13.7	13.9	14	0.2	0.2	0.2	9.6	9.7	9.6
1	3507	4/17/2013	21:38	Surface	E2	Night	Alewife	A. pseudoharengus	LL	4	4	1.000		3507	230.547255	0.01735002	0.01735	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3507	4/17/2013	21:38	Surface	E2	Night	Clupeidae	Clupeidae	LL	4	4	1.000			230.547255	0.01735002	0.01735	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3507	4/17/2013	21:38	Surface	E2	Night	Striped bass	M. saxatilis	LL	1	1	1.000			230.547255	0.00433751	0.004338	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3507	4/17/2013	21:38	Surface	E2	Night	Atlantic menhaden	B. tyrannus	LL	2	2	1.000			230.547255	0.00867501	0.008675	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3508	4/17/2013	21:38	Mid	E2	Night	Striped bass	M. saxatilis	LL	4	4	1.000			183.547595	0.02179271	0.021793	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3508	4/17/2013	21:38	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	2	1.000			183.547595	0.01089636	0.010896	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3508	4/17/2013	21:38	Mid	E2	Night	Clupeidae	Clupeidae	LL	4	4	1.000			183.547595	0.02179271	0.021793	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3509	4/17/2013	21:38	Bottom	E2	Night	Other	Other	LL	1	1	1.000			237.06561	0.00421824	0.004218	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3509	4/17/2013	21:38	Bottom	E2	Night	Striped bass	M. saxatilis	LL	1	1	1.000			237.06561	0.00421824	0.004218	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3509	4/17/2013	21:38	Bottom	E2	Night	Clupeidae	Clupeidae	LL	2	2	1.000			237.06561	0.00843648	0.008436	13.9	13.6	13.5	0.2	0.2	0.2	9.5	9.7	9.7
1	3510	4/18/2013	3:10	Surface	F1	Night	Other	Other	LL	1	1	1.000			210.760145	0.00474473	0.004745	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3510	4/18/2013	3:10	Surface	F1	Night	Clupeidae	Clupeidae	LL	5	5	1.000			210.760145	0.02372365	0.023724	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3510	4/18/2013	3:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	2	2	1.000			210.760145	0.00948946	0.009489	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3511	4/18/2013	3:10	Mid	F1	Night	Other	Other	LL	4	4	1.000		3511	151.96838	0.02632126	0.026321	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3511	4/18/2013	3:10	Mid	F1	Night	Clupeidae	Clupeidae	LL	2	2	1.000	chewed up		151.96838	0.01316063	0.013161	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3511	4/18/2013	3:10	Mid	F1	Night	Morone spp.	Morone spp.	LL	1	1	1.000			151.96838	0.00658032	0.00658	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
1	3512	4/18/2013	3:10	Bottom	F1	Night	Other	Other	LL	1	1	1.000			126.48562	0.00790604	0.007906	13.1	13.2	13.2	0.2	0.2	0.2	9.4	9.4	9.3
2	3513	4/24/2013	17:25	Surface	E2	Day	Striped bass	M. saxatilis	EE	21	21	1.000		3513	192.998155	0.10880933	0.108809	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3514	4/24/2013	17:25	Mid	E2	Day	Striped bass	M. saxatilis	EE	5	5	1.000		3514	142.074825	0.03519272	0.035193	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3515	4/24/2013	17:25	Bottom	E2	Day	Striped bass	M. saxatilis	EE	150	150	1.000			181.16386	0.82797971	0.82798	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3516	4/24/2013	20:55	Surface	F1	Night	Striped bass	M. saxatilis	EE	54	54	1.000		3516	268.180735	0.20135675	0.201357	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3517	4/24/2013	20:55	Mid	F1	Night	Striped bass	M. saxatilis	EE	24	24	1.000			168.25372	0.14264172	0.142642	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3518	4/24/2013	20:55	Bottom	F1	Night	Striped bass	M. saxatilis	EE	26	26	1.000		3518	148.361135	0.17524805	0.175248	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3519	4/25/2013	5:15	Surface	E2	Night	Striped bass	M. saxatilis	EE	19	19	1.000			260.81858	0.07284757	0.072848	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3520	4/25/2013	5:15	Mid	E2	Night	Striped bass	M. saxatilis	EE	7	7	1.000			196.415545	0.03563873	0.035639	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3521	4/25/2013	5:15	Bottom	E2	Night	Striped bass	M. saxatilis	EE	40	40	1.000			201.647105	0.19836635	0.198366	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3522	4/25/2013	9:05	Surface	F1	Day	Striped bass	M. saxatilis	EE	1	1	1.000			245.29266	0.00407676	0.004077	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	Striped bass	M. saxatilis	EE	5	5	1.000		3523	182.42956	0.02740784	0.027408	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	Striped bass	M. saxatilis	EE	20	20	1.000			222.910865	0.08972196	0.089722	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3517	4/24/2013	20:55	Mid	F1	Night	Atlantic menhaden	B. tyrannus	JJ	55	55	1.000		3517	168.25372	0.32688727	0.326887	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3518	4/24/2013	20:55	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	JJ	21	21	1.000			148.361135	0.1415465	0.141547	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3520	4/25/2013	5:15	Mid	E2	Night	Atlantic menhaden	B. tyrannus	JJ	2	2	1.000		3520	196.415545	0.01018249	0.010182	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3521	4/25/2013	5:15	Bottom	E2	Night	Atlantic menhaden	B. tyrannus	JJ	9	9	1.000			201.647105	0.04463243	0.044632	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3521	4/25/2013	5:15	Bottom	E2	Night	Other	Other	JJ	1	1	1.000			201.647105	0.00495916	0.004959	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3524	4/25/2013	9:05	Bottom	F1	Day	Atlantic menhaden	B. tyrannus	JJ	1	1	1.000		3524	222.910865	0.0044861	0.004486	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3513	4/24/2013	17:25	Surface	E2	Day	Striped bass	M. saxatilis	LL	33	33	1.000			192.998155	0.17098609	0.170986	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3513	4/24/2013	17:25	Surface	E2	Day	Clupeidae	Clupeidae	LL	7	7	1.000			192.998155	0.03626978	0.03627	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3513	4/24/2013	17:25	Surface	E2	Day	Alosa spp.	Alosa spp.	LL	4	4	1.000			192.998155	0.02072559	0.020726	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3513	4/24/2013	17:25	Surface	E2	Day	Alewife	A. pseudoharengus	LL	5	5	1.000			192.998155	0.02590698	0.025907	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3514	4/24/2013	17:25	Mid	E2	Day	Striped bass	M. saxatilis	LL	5	5	1.000			142.074825	0.03519272	0.035193	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3514	4/24/2013	17:25	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000			142.074825	0.02815418	0.028154	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3514	4/24/2013	17:25	Mid	E2	Day	White perch	M. americana	LL	1	1	1.000			142.074825	0.00703854	0.007039	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3514	4/24/2013	17:25	Mid	E2	Day	Other	Other	LL	1	1	1.000			142.074825	0.00703854	0.007039	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3514	4/24/2013	17:25	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000			142.074825	0.01407709	0.014077	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3514	4/24/2013	17:25	Mid	E2	Day	Clupeidae	Clupeidae	LL	1	1	1.000		3515	181.16386	0.00551986	0.00552	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3515	4/24/2013	17:25	Bottom	E2	Day	Atlantic menhaden	B. tyrannus	LL	2	2	1.000			181.16386	0.01103973	0.01104	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3515	4/24/2013	17:25	Bottom	E2	Day	Striped bass	M. saxatilis	LL	94	94	1.000			181.16386	0.51886728	0.518867	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3515	4/24/2013	17:25	Bottom	E2	Day	White perch	M. americana	LL	12	12	1.000			181.16386	0.06623838	0.066238	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3515	4/24/2013	17:25	Bottom	E2	Day	Other	Other	LL	8	8	1.000	PL		181.16386	0.04415892	0.044159	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3515	4/24/2013	17:25	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	14	14	1.000	PL		181.16386	0.07727811	0.077278	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3515	4/24/2013	17:25	Bottom	E2	Day	Clupeidae	Clupeidae	LL	4	4	1.000	YL		181.16386	0.02207946	0.022079	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3515	4/24/2013	17:25	Bottom	E2	Day	Gizzard shad	D. cepedianum	LL	1	1	1.000			181.16386	0.00551986	0.00552	15.2	14.9	14.8	0.2	0.2	0.2	9.6	9.6	9.6
2	3516	4/24/2013	20:55	Surface	F1	Night	Striped bass	M. saxatilis	LL	12	12	1.000			268.180735	0.04474594	0.044746	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3516	4/24/2013	20:55	Surface	F1	Night	White perch	M. americana	LL	1	1	1.000			268.180735	0.00372883	0.003729	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3516	4/24/2013	20:55	Surface	F1	Night	Clupeidae	Clupeidae	LL	8	8	1.000			268.180735	0.02983063	0.029831	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3516	4/24/2013	20:55	Surface	F1	Night	Alosa spp.	Alosa spp.	LL	3	3	1.000			268.180735	0.01118649	0.011186	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3516	4/24/2013	20:55	Surface	F1	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	P. flavescens		268.180735	0.00745766	0.007458	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3516	4/24/2013	20:55	Surface	F1	Night	Other	Other	LL	4	4	1.000			268.180735	0.01491531	0.014915	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3517	4/24/2013	20:55	Mid	F1	Night	Striped bass	M. saxatilis	LL	16	16	1.000	P. flavescents		168.25372	0.09509448	0.095094	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3517	4/24/2013	20:55	Mid	F1	Night	Other	Other	LL	2	2	1.000			168.25372	0.01188681	0.011887	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3518	4/24/2013	20:55	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	LL	9	9	1.000			148.361135	0.06066279	0.060663	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3518	4/24/2013	20:55	Bottom	F1	Night	Other	Other	LL	2	2	1.000			148.361135	0.01348062	0.013481	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3518	4/24/2013	20:55	Bottom	F1	Night	Striped bass	M. saxatilis	LL	10	10	1.000			148.361135	0.0674031	0.067403	14.6	14.5	14.5	0.2	0.2	0.2	9.7	9.8	9.7
2	3519	4/25/2013	5:15	Surface	E2	Night	Striped bass	M. saxatilis	LL	28	28	1.000		3519	260.81858	0.10735432	0.107354	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3519	4/25/2013	5:15	Surface	E2	Night	Clupeidae	Clupeidae	LL	9	9	1.000			260.81858	0.03450674	0.034507	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3519	4/25/2013	5:15	Surface	E2	Night	Alosa spp.	Alosa spp.	LL	5	5	1.000			260.81858	0.01917041	0.01917	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3519	4/25/2013	5:15	Surface	E2	Night	Alewife	A. pseudoharengus	LL	7	7	1.000			260.81858	0.02683858	0.026839	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3519	4/25/2013	5:15	Surface	E2	Night	Other	Other	LL	2	2	1.000			260.81858	0.00766817	0.007668	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3519	4/25/2013	5:15	Surface	E2	Night	Gizzard shad	D. cepedianum	LL	4	4	1.000			260.81858	0.01533633	0.015336	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3520	4/25/2013	5:15	Mid	E2	Night	Striped bass	M. saxatilis	LL	52	52	1.000			196.415545	0.26474483	0.264745	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3520	4/25/2013	5:15	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	2	1.000			196.415545	0.01018249	0.010182	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3520	4/25/2013	5:15	Mid	E2	Night	Clupeidae	Clupeidae	LL	8	8	1.000			196.415545	0.04072997	0.04073	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3520	4/25/2013	5:15	Mid	E2	Night	Alosa spp.	Alosa spp.	LL	3	3	1.000			196.415545	0.01527374	0.015274	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3520	4/25/2013	5:15	Mid	E2	Night	Other	Other	LL	3	3	1.000			196.415545	0.01527374	0.015274	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3520	4/25/2013	5:15	Mid	E2	Night	Gizzard shad	D. cepedianum	LL	5	5	1.000			196.415545	0.02545623	0.025456	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3521	4/25/2013	5:15	Bottom	E2	Night	Atlantic menhaden	B. tyrannus	LL	1	1	1.000		3521	201.647105	0.00495916	0.004959	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3521	4/25/2013	5:15	Bottom	E2	Night	Gizzard shad	D. cepedianum	LL	1	1	1.000			201.647105	0.00495916	0.004959	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3521	4/25/2013	5:15	Bottom	E2	Night	Alosa spp.	Alosa spp.	LL	4	4	1.000			201.647105	0.01983663	0.019837	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3521	4/25/2013	5:15	Bottom	E2	Night	Striped bass	M. saxatilis	LL	27	27	1.000			201.647105	0.13389729	0.133897	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3521	4/25/2013	5:15	Bottom	E2	Night	White perch	M. americana	LL	2	2	1.000			201.647105	0.00991832	0.009918	14.3	14.1	14.1	0.2	0.2	0.2	9.1	9.5	9.3
2	3522	4/25/2013	9:05	Surface	F1	Day	Striped bass	M. saxatilis	LL	6	6	1.000		3522	245.29266	0.02446058	0.024461	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3522	4/25/2013	9:05	Surface	F1	Day	White perch	M. americana	LL	6	6	1.000			245.29266	0.02446058	0.024461	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3522	4/25/2013	9:05	Surface	F1	Day	Alosa spp.	Alosa spp.	LL	2	2	1.000			245.29266	0.00815353	0.008154	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3522	4/25/2013	9:05	Surface	F1	Day	Gizzard shad	D. cepedianum	LL	2	2	1.000			245.29266	0.00815353	0.008154	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3522	4/25/2013	9:05	Surface	F1	Day	Alewife	A. pseudoharengus	LL	5	5	1.000			245.29266	0.02038381	0.020384	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3522	4/25/2013	9:05	Surface	F1	Day	Clupeidae	Clupeidae	LL	4	4	1.000			245.29266	0.01630705	0.016307	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3522	4/25/2013	9:05	Surface	F1	Day	Other	Other	LL	6	6	1.000			245.29266	0.02446058	0.024461	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	Atlantic menhaden	B. tyrannus	LL	1	1	1.000			182.42956	0.00548157	0.005482	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	Gizzard shad	D. cepedianum	LL	5	5	1.000			182.42956	0.02740784	0.027408	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	Clupeidae	Clupeidae	LL	29	29	1.000			182.42956	0.15896547	0.158965	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	Alewife	A. pseudoharengus	LL	6	6	1.000			182.42956	0.03288941	0.032889	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	White perch	M. americana	LL	17	17	1.000			182.42956	0.09318665	0.093187	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	Striped bass	M. saxatilis	LL	5	5	1.000			182.42956	0.02740784	0.027408	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	Other	Other	LL	20	20	1.000			182.42956	0.10963136	0.109631	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3523	4/25/2013	9:05	Mid	F1	Day	Alosa spp.	Alosa spp.	LL	1	1	1.000			182.42956	0.00548157	0.005482	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	Morone spp.	Morone spp.	LL	27	27	1.000			222.910865	0.12112465	0.121125	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	Alosa spp.	Alosa spp.	LL	5	5	1.000			222.910865	0.02243049	0.02243	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	Gizzard shad	D. cepedianum	LL	12	12	1.000			222.910865	0.05383318	0.053833	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	White perch	M. americana	LL	18	18	1.000	P. flavescens		222.910865	0.08074977	0.08075	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	Other	Other	LL	28	28	1.000			222.910865	0.12561075	0.125611	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	Clupeidae	Clupeidae	LL	12	12	1.000			222.910865	0.05383318	0.053833	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	2	2	1.000			222.910865	0.0089722	0.008972	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
2	3524	4/25/2013	9:05	Bottom	F1	Day	Striped bass	M. saxatilis	LL	35	35	1.000			222.910865	0.15701343	0.157013	14.4	14.2	14.1	0.2	0.2	0.2	9.1	9.1	9.1
3	3525	4/30/2013	11:12	Surface	E2	Day	Striped bass	M. saxatilis	EE	63	63	1.000		3525	263.075745	0.23947476	0.239475	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3526	4/30/2013	11:12	Mid	E2	Day	Striped bass	M. saxatilis	EE	148	296	0.500			187.513455	1.57855339	0.789277	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3527	4/30/2013	11:12	Bottom	E2	Day	Striped bass	M. saxatilis	EE	106	848	0.125			225.54774	3.75973619	0.469967	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3528	4/30/2013	13:30	Surface	F1	Day	Striped bass	M. saxatilis	EE	158	158	1.000			299.021625	0.52838988	0.52839	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3529	4/30/2013	13:30	Mid	F1	Day	Striped bass	M. saxatilis	EE	92	92	1.000		3529	156.419425	0.58816224	0.588162	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3530	4/30/2013	13:30	Bottom	F1	Day	Striped bass	M. saxatilis	EE	217	434	0.500			199.63503	2.17396716	1.086984	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3531	4/30/2013	22:48	Surface	E2	Night	Striped bass	M. saxatilis	EE	20	20	1.000			264.130495	0.07572015	0.07572	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3532	4/30/2013	22:48	Mid	E2	Night	Striped bass	M. saxatilis	EE	125	125	1.000			177.598805	0.70383356	0.703834	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3533	4/30/2013	22:48	Bottom	E2	Night	Striped bass	M. saxatilis	EE	131	262	0.500			200.52907	1.30654373	0.653272	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3534	5/1/2013	1:33	Surface	F1	Night	Striped bass	M. saxatilis	EE	62	62	1.000			191.394935	0.32393752	0.323938	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3535	5/1/2013	1:33	Mid	F1	Night	Striped bass	M. saxatilis	EE	200	200	1.000			151.187865	1.32285749	1.322857	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8

3	3536	5/1/2013	1:33	Bottom	F1	Night	Striped bass	M. saxatilis	EE	132	264	0.500		3536	172.59929	1.52955438	0.764777	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3531	4/30/2013	22:48	Surface	E2	Night	Atlantic menhaden	B. tyrannus	JJ	4	4	1.000		3531	264.130495	0.01514403	0.015144	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3535	5/1/2013	1:33	Mid	F1	Night	Atlantic menhaden	B. tyrannus	JJ	17	17	1.000		3535	151.187865	0.11244289	0.112443	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3536	5/1/2013	1:33	Bottom	F1	Night	White perch	M. americana	JJ	1	2	0.500			172.59929	0.01158753	0.005794	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3536	5/1/2013	1:33	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	JJ	13	26	0.500			172.59929	0.15063793	0.075319	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3525	4/30/2013	11:12	Surface	E2	Day	Atlantic menhaden	B. tyrannus	LL	1	1	1.000			263.075745	0.00380119	0.003801	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3525	4/30/2013	11:12	Surface	E2	Day	Gizzard shad	D. cepedianum	LL	2	2	1.000			263.075745	0.00760237	0.007602	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3525	4/30/2013	11:12	Surface	E2	Day	Morone spp.	Morone spp.	LL	2	2	1.000			263.075745	0.00760237	0.007602	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3525	4/30/2013	11:12	Surface	E2	Day	Unidentifiable	Unidentifiable	LL	1	1	1.000			263.075745	0.00380119	0.003801	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3525	4/30/2013	11:12	Surface	E2	Day	Other	Other	LL	6	6	1.000			263.075745	0.02280712	0.022807	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3525	4/30/2013	11:12	Surface	E2	Day	Striped bass	M. saxatilis	LL	13	13	1.000			263.075745	0.04941543	0.049415	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3525	4/30/2013	11:12	Surface	E2	Day	White perch	M. americana	LL	3	3	1.000			263.075745	0.01140356	0.011404	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3525	4/30/2013	11:12	Surface	E2	Day	Clupeidae	Clupeidae	LL	4	4	1.000			263.075745	0.01520475	0.015205	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3525	4/30/2013	11:12	Surface	E2	Day	Alewife	A. pseudoharengus	LL	1	1	1.000			263.075745	0.00380119	0.003801	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3526	4/30/2013	11:12	Mid	E2	Day	Gizzard shad	D. cepedianum	LL	1	2	0.500		3526	187.513455	0.0106659	0.005333	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3526	4/30/2013	11:12	Mid	E2	Day	Striped bass	M. saxatilis	LL	120	240	0.500			187.513455	1.27990815	0.639954	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3526	4/30/2013	11:12	Mid	E2	Day	Other	Other	LL	23	46	0.500			187.513455	0.24531573	0.122658	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3526	4/30/2013	11:12	Mid	E2	Day	White perch	M. americana	LL	8	16	0.500			187.513455	0.08532721	0.042664	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3526	4/30/2013	11:12	Mid	E2	Day	Unidentifiable	Unidentifiable	LL	9	18	0.500			187.513455	0.09599311	0.047997	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3526	4/30/2013	11:12	Mid	E2	Day	Clupeidae	Clupeidae	LL	6	12	0.500			187.513455	0.06399541	0.031998	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3526	4/30/2013	11:12	Mid	E2	Day	Alewife	A. pseudoharengus	LL	5	10	0.500			187.513455	0.05332951	0.026665	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3527	4/30/2013	11:12	Bottom	E2	Day	White perch	M. americana	LL	6	48	0.125		3527	225.54774	0.21281526	0.026602	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3527	4/30/2013	11:12	Bottom	E2	Day	Striped bass	M. saxatilis	LL	102	816	0.125			225.54774	3.61785935	0.452232	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3527	4/30/2013	11:12	Bottom	E2	Day	Morone spp.	Morone spp.	LL	3	24	0.125			225.54774	0.10640763	0.013301	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3527	4/30/2013	11:12	Bottom	E2	Day	Other	Other	LL	5	40	0.125			225.54774	0.17734605	0.022168	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3527	4/30/2013	11:12	Bottom	E2	Day	Gizzard shad	D. cepedianum	LL	2	16	0.125			225.54774	0.07093842	0.008867	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3527	4/30/2013	11:12	Bottom	E2	Day	Clupeidae	Clupeidae	LL	5	40	0.125			225.54774	0.17734605	0.022168	15.9	15.6	15.4	0.2	0.2	0.2	8.5	8.6	8.6
3	3528	4/30/2013	13:30	Surface	F1	Day	Atlantic menhaden	B. tyrannus	LL	9	9	1.000		3528	299.021625	0.03009816	0.030098	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3528	4/30/2013	13:30	Surface	F1	Day	White perch	M. americana	LL	1	1	1.000			299.021625	0.00334424	0.003344	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3528	4/30/2013	13:30	Surface	F1	Day	Other	Other	LL	2	2	1.000			299.021625	0.00668848	0.006688	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3528	4/30/2013	13:30	Surface	F1	Day	Alewife	A. pseudoharengus	LL	1	1	1.000			299.021625	0.00334424	0.003344	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3528	4/30/2013	13:30	Surface	F1	Day	Clupeidae	Clupeidae	LL	6	6	1.000			299.021625	0.02006544	0.020065	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3528	4/30/2013	13:30	Surface	F1	Day	Striped bass	M. saxatilis	LL	14	14	1.000			299.021625	0.04681936	0.046819	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3529	4/30/2013	13:30	Mid	F1	Day	Striped bass	M. saxatilis	LL	28	28	1.000			156.419425	0.1790059	0.179006	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3529	4/30/2013	13:30	Mid	F1	Day	White perch	M. americana	LL	1	1	1.000			156.419425	0.00639307	0.006393	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3529	4/30/2013	13:30	Mid	F1	Day	Other	Other	LL	2	2	1.000			156.419425	0.01278614	0.012786	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3529	4/30/2013	13:30	Mid	F1	Day	Atlantic menhaden	B. tyrannus	LL	1	1	1.000			156.419425	0.00639307	0.006393	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3529	4/30/2013	13:30	Mid	F1	Day	Clupeidae	Clupeidae	LL	9	9	1.000			156.419425	0.05753761	0.057538	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3529	4/30/2013	13:30	Mid	F1	Day	Alewife	A. pseudoharengus	LL	3	3	1.000			156.419425	0.0191792	0.019179	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3530	4/30/2013	13:30	Bottom	F1	Day	Atlantic menhaden	B. tyrannus	LL	9	18	0.500		3530	195.63503	0.09200806	0.046004	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3530	4/30/2013	13:30	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	1	2	0.500			196.63503	0.01017113	0.005086	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3530	4/30/2013	13:30	Bottom	F1	Day	Clupeidae	Clupeidae	LL	4	8	0.500			197.63503	0.04047865	0.020239	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3530	4/30/2013	13:30	Bottom	F1	Day	Striped bass	M. saxatilis	LL	29	58	0.500			198.63503	0.29199281	0.145996	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3530	4/30/2013	13:30	Bottom	F1	Day	Morone spp.	Morone spp.	LL	3	6	0.500			200.63503	0.02990505	0.014953	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3530	4/30/2013	13:30	Bottom	F1	Day	White perch	M. americana	LL	2	4	0.500			201.63503	0.01983782	0.009919	15.7	15.6	15.6	0.2	0.2	0.2	8.6	8.8	8.8
3	3531	4/30/2013	22:48	Surface	E2	Night	Striped bass	M. saxatilis	LL	32	32	1.000			264.130495	0.12115224	0.121152	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3531	4/30/2013	22:48	Surface	E2	Night	White perch	M. americana	LL	2	2	1.000			264.130495	0.00757201	0.007572	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3531	4/30/2013	22:48	Surface	E2	Night	Morone spp.	Morone spp.	LL	4	4	1.000			264.130495	0.01514403	0.015144	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3531	4/30/2013	22:48	Surface	E2	Night	Alewife	A. pseudoharengus	LL	1	1	1.000			264.130495	0.00378601	0.003786	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3531	4/30/2013	22:48	Surface	E2	Night	Clupeidae	Clupeidae	LL	5	5	1.000			264.130495	0.01893004	0.01893	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3531	4/30/2013	22:48	Surface	E2	Night	Other	Other	LL	9	9	1.000			264.130495	0.03407407	0.034074	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3532	4/30/2013	22:48	Mid	E2	Night	Other	Other	LL	3	3	1.000		3532	177.598805	0.01689201	0.016892	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3532	4/30/2013	22:48	Mid	E2	Night	Striped bass	M. saxatilis	LL	44	44	1.000			177.598805	0.24774941	0.247749	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3532	4/30/2013	22:48	Mid	E2	Night	White perch	M. americana	LL	8	8	1.000			177.598805	0.04504535	0.045045	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3532	4/30/2013	22:48	Mid	E2	Night	Atlantic menhaden	B. tyrannus	LL	26	26	1.000			177.598805	0.14639738	0.146397	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3532	4/30/2013	22:48	Mid	E2	Night	Clupeidae	Clupeidae	LL	12	12	1.000			177.598805	0.06756802	0.067568	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3532	4/30/2013	22:48	Mid	E2	Night	Alewife	A. pseudoharengus	LL	3	3	1.000			177.598805	0.01689201	0.016892	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3533	4/30/2013	22:48	Bottom	E2	Night	Atlantic menhaden	B. tyrannus	LL	17	34	0.500		3533	200.52907	0.16955148	0.084776	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3533	4/30/2013	22:48	Bottom	E2	Night	Striped bass	M. saxatilis	LL	64	128	0.500			200.52907	0.63831144	0.319156	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3533	4/30/2013	22:48	Bottom	E2	Night	White perch	M. americana	LL	3	6	0.500			200.52907	0.02992085	0.01496	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3533	4/30/2013	22:48	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	1	2	0.500			200.52907	0.00997362	0.004987	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3533	4/30/2013	22:48	Bottom	E2	Night	Clupeidae	Clupeidae	LL	2	4	0.500			200.52907	0.01994723	0.009974	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3533	4/30/2013	22:48	Bottom	E2	Night	Other	Other	LL	4	8	0.500			200.52907	0.03989447	0.019947	14.8	14.6	14.5	0.2	0.2	0.2	8.7	8.7	8.8
3	3534	5/1/2013	1:33	Surface	F1	Night	Atlantic menhaden	B. tyrannus	LL	19	19	1.000		3534	191.394935	0.09927117	0.099271	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3534	5/1/2013	1:33	Surface	F1	Night	Striped bass	M. saxatilis	LL	61	61	1.000			191.394935	0.31871272	0.318713	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3534	5/1/2013	1:33	Surface	F1	Night	White perch	M. americana	LL	2	2	1.000			191.394935	0.0104496	0.01045	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3534	5/1/2013	1:33	Surface	F1	Night	Clupeidae	Clupeidae	LL	2	2	1.000	hogchoker		191.394935	0.0104496	0.01045	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3534	5/1/2013	1:33	Surface	F1	Night	Other	Other	LL	1	1	1.000			191.394935	0.0052248	0.005225	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3535	5/1/2013	1:33	Mid	F1	Night	Atlantic menhaden	B. tyrannus	LL	5	5	1.000			151.187865	0.03307144	0.033071	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3535	5/1/2013	1:33	Mid	F1	Night	Alewife	A. pseudoharengus	LL	1	1	1.000			151.187865	0.00661429	0.006614	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3535	5/1/2013	1:33	Mid	F1	Night	Alosa spp.	Alosa spp.	LL	1	1	1.000			151.187865	0.00661429	0.006614	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3535	5/1/2013	1:33	Mid	F1	Night	Striped bass	M. saxatilis	LL	80	80	1.000			151.187865	0.529143	0.529143	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3535	5/1/2013	1:33	Mid	F1	Night	Other	Other	LL	3	3	1.000			151.187865	0.01984286	0.019843	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3536	5/1/2013	1:33	Bottom	F1	Night	Striped bass	M. saxatilis	LL	87	174	0.500			172.59929	1.00811539	0.504058	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3536	5/1/2013	1:33	Bottom	F1	Night	Other	Other	LL	1	2	0.500			172.59929	0.01158753	0.005794	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3536	5/1/2013	1:33	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	LL	6	12	0.500			172.59929	0.0695252	0.034763	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
3	3536	5/1/2013	1:33	Bottom	F1	Night	Clupeidae	Clupeidae	LL	1	2	0.500			172.59929	0.01158753	0.005794	15.1	14.9	14.8	0.2	0.2	0.2	8.7	8.8	8.8
4	3537	5/9/2013	4:53	Surface	E2	Night	Striped bass	M. saxatilis	EE	43	344	0.125			382.389065	0.89960731	0.112451	17			0.3			7.8		
4	3538	5/9/2013	4:53	Mid	E2	Night	Striped bass	M. saxatilis	EE	90	1440	0.063			320.68619	4.4903711	0.280648	17			0.3			7.8		
4	3539	5/9/2013	4:53	Bottom	E2	Night	Striped bass	M. saxatilis	EE	82	1312	0.063			339.608405	3.86327305	0.241455	17			0.3			7.8		
4	3540	5/9/2013	8:21	Surface	F1	Day	Striped bass	M. saxatilis	EE	50	50	1.000			245.440325	0.20371551	0.203716	17.2			0.2			7.7		
4	3540	5/9/2013	8:21	Surface	F1	Day	Other	Other	EE	3	3	1.000			245.440325	0.01222293	0.012223	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Striped bass	M. saxatilis	EE	50	50	1.000			218.396535	0.22894136	0.228941	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Other	Other	EE	2	2	1.000			218.396535	0.00915765	0.009158	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	Striped bass	M. saxatilis	EE	181	362	0.500			241.474465	1.49912331	0.749562	17.2			0.2			7.7		
4	3543	5/9/2013	16:55	Surface	E2	Day	Striped bass	M. saxatilis	EE	7	7	1.000		3543	232.952085	0.0300491	0.030049	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3544	5/9/2013	16:55	Mid	E2	Day	Striped bass	M. saxatilis	EE	7	28	0.250		3544	176.037775	0.15905677	0.039764	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3545	5/9/2013	16:55	Bottom	E2	Day	Striped bass	M. saxatilis	EE	95	1520	0.063			195.59284	7.77124561	0.485703	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3546	5/9/2013	21:25	Surface	F1	Night	Striped bass	M. saxatilis	EE	15	240	0.625			211.392995	1.13532617	0.709579	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3547	5/9/2013	21:25	Mid	F1	Night	Striped bass	M. saxatilis	EE	8	32	0.250			199.115705	0.16071058	0.040178	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3548	5/9/2013	21:25	Bottom	F1	Night	Striped bass	M. saxatilis	EE	23	184	0.125			221.898305	0.82920868	0.103651	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3537	5/9/2013	4:53	Surface	E2	Night	Atlantic menhaden	B. tyrannus	JJ	35	280	0.125		3537	382.389065	0.73223851	0.09153	17			0.3			7.8		
4	3538	5/9/2013	4:53	Mid	E2	Night	Atlantic menhaden	B. tyrannus	JJ	18	288	0.063			320.68619	0.89807422	0.05613	17			0.3			7.8		
4	3545	5/9/2013	16:55	Bottom	E2	Day	Atlantic menhaden	B. tyrannus	JJ	3	48	0.063			195.59284	0.24540776	0.015338	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3547	5/9/2013	21:25	Mid	F1	Night	Atlantic menhaden	B. tyrannus	JJ	16	64	0.250			199.115705	0.32142116	0.080355	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3548	5/9/2013	21:25	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	JJ	11	88	0.125		3548	221.898305	0.39657806	0.049572	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3537	5/9/2013	4:53	Surface	E2	Night	Clupeidae	Clupeidae	LL	4	32	0.125			382.389065	0.0836844	0.010461	17			0.3			7.8		
4	3537	5/9/2013	4:53	Surface	E2	Night	Morone spp.	Morone spp.	LL	18	144	0.125			382.389065	0.37657981	0.047072	17			0.3			7.8		
4	3537	5/9/2013	4:53	Surface	E2	Night	Striped bass	M. saxatilis	LL	225	1800	0.125			382.389065	4.70724758	0.588406	17			0.3			7.8		
4	3537	5/9/2013	4:53	Surface	E2	Night	White perch	M. americana	LL	4	32	0.125			382.389065	0.0836844	0.010461	17			0.3			7.8		
4	3537	5/9/2013	4:53	Surface	E2	Night	Other	Other	LL	7	56	0.125			382.389065	0.1464477	0.018306	17			0.3			7.8		
4	3538	5/9/2013	4:53	Mid	E2	Night	Atlantic menhaden	B. tyrannus	LL	7	112	0.063		3538	320.68619	0.34925109	0.021828	17			0.3			7.8		
4	3538	5/9/2013	4:53	Mid	E2	Night	Striped bass	M. saxatilis	LL	216	3456	0.063			320.68619	10.7768906	0.673556	17			0.3			7.8		
4	3538	5/9/2013	4:53	Mid	E2	Night	White perch	M. americana	LL	1	16	0.063			320.68619	0.04989301	0.003118	17			0.3			7.8		
4	3538	5/9/2013	4:53	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	32	0.063			320.68619	0.09978602	0.006237	17			0.3			7.8		
4	3538	5/9/2013	4:53	Mid	E2	Night	Gizzard shad	D. cepedianum	LL	1	16	0.063			320.68619	0.04989301	0.003118	17			0.3			7.8		
4	3538	5/9/2013	4:53	Mid	E2	Night	Other	Other	LL	4	64	0.063			320.68619	0.19957205	0.012473	17			0.3			7.8		
4	3539	5/9/2013	4:53	Bottom	E2	Night	Atlantic menhaden	B. tyrannus	LL	46	736	0.063		3539	339.608405	2.16720196	0.13545	17			0.3			7.8		
4	3539	5/9/2013	4:53	Bottom	E2	Night	Striped bass	M. saxatilis	LL	127	2032	0.063			339.608405	5.98336193	0.37396	17			0.3			7.8		
4	3539	5/9/2013	4:53	Bottom	E2	Night	Gizzard shad	D. cepedianum	LL	1	16	0.063			339.608405	0.04711309	0.002945	17			0.3			7.8		
4	3539	5/9/2013	4:53	Bottom	E2	Night	White perch	M. americana	LL	2	32	0.063			339.608405	0.09422617	0.005889	17			0.3			7.8		
4	3539	5/9/2013	4:53	Bottom	E2	Night	Other	Other	LL	10	160	0.063			339.608405	0.47113086	0.029446	17			0.3			7.8		
4	3539	5/9/2013	4:53	Bottom	E2	Night	Clupeidae	Clupeidae	LL	4	64	0.063			339.608405	0.18845234	0.011778	17			0.3			7.8		
4	3539	5/9/2013	4:53	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	1	16	0.063			339.608405	0.04711309	0.002945	17			0.3			7.8		
4	3540	5/9/2013	8:21	Surface	F1	Day	Gizzard shad	D. cepedianum	LL	1	1	1.000		3540	245.440325	0.00407431	0.004074	17.2			0.2			7.7		
4	3540	5/9/2013	8:21	Surface	F1	Day	White perch	M. americana	LL	10	10	1.000			245.440325	0.0407431	0.040743	17.2			0.2			7.7		
4	3540	5/9/2013	8:21	Surface	F1	Day	Striped bass	M. saxatilis	LL	50	50	1.000			245.440325	0.20371551	0.203716	17.2			0.2			7.7		
4	3540	5/9/2013	8:21	Surface	F1	Day	Atlantic menhaden	B. tyrannus	LL	12	12	1.000			245.440325	0.04889172	0.048892	17.2			0.2			7.7		
4	3540	5/9/2013	8:21	Surface	F1	Day	Clupeidae	Clupeidae	LL	10	10	1.000			245.440325	0.0407431	0.040743	17.2			0.2			7.7		
4	3540	5/9/2013	8:21	Surface	F1	Day	Alewife	A. pseudoharengus	LL	8	8	1.000			245.440325	0.03259448	0.032594	17.2			0.2			7.7		
4	3540	5/9/2013	8:21	Surface	F1	Day	Other	Other	LL	7	7	1.000			245.440325	0.02852017	0.02852	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Gizzard shad	D. cepedianum	LL	1	1	1.000		3541	218.396535	0.00457883	0.004579	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Striped bass	M. saxatilis	LL	27	27	1.000			218.396535	0.12362834	0.123628	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	White perch	M. americana	LL	6	6	1.000			218.396535	0.02747296	0.027473	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Other	Other	LL	17	17	1.000			218.396535	0.07784006	0.07784	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Unidentifiable	Unidentifiable	LL	1	1	1.000			218.396535	0.00457883	0.004579	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Atlantic menhaden	B. tyrannus	LL	1	1	1.000			218.396535	0.00457883	0.004579	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Clupeidae	Clupeidae	LL	12	12	1.000			218.396535	0.05494593	0.054946	17.2			0.2			7.7		
4	3541	5/9/2013	8:21	Mid	F1	Day	Alewife	A. pseudoharengus	LL	5	5	1.000			218.396535	0.02289414	0.022894	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	Gizzard shad	D. cepedianum	LL	2	4	0.500		3542	241.474465	0.0165649	0.008282	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	Atlantic menhaden	B. tyrannus	LL	1	2	0.500			241.474465	0.00828245	0.004141	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	Striped bass	M. saxatilis	LL	102	204	0.500			241.474465	0.84480982	0.422405	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	White perch	M. americana	LL	7	14	0.500			241.474465	0.05797714	0.028989	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	Other	Other	LL	3	6	0.500			241.474465	0.02484735	0.012424	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	Unidentifiable	Unidentifiable	LL	2	4	0.500			241.474465	0.0165649	0.008282	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	Clupeidae	Clupeidae	LL	12	24	0.500			241.474465	0.09938939	0.049695	17.2			0.2			7.7		
4	3542	5/9/2013	8:21	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	5	10	0.500			241.474465	0.04141225	0.020706	17.2			0.2			7.7		
4	3543	5/9/2013	16:55	Surface	E2	Day	Clupeidae	Clupeidae	LL	15	15	1.000			232.952085	0.06439092	0.064391	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3543	5/9/2013	16:55	Surface	E2	Day	Alewife	A. pseudoharengus	LL	10	10	1.000			232.952085	0.04292728	0.042927	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3543	5/9/2013	16:55	Surface	E2	Day	Unidentifiable	Unidentifiable	LL	1	1	1.000			232.952085	0.00429273	0.004293	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3543	5/9/2013	16:55	Surface	E2	Day	White perch	M. americana	LL	2	2	1.000			232.952085	0.00858546	0.008585	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3543	5/9/2013	16:55	Surface	E2	Day	Other	Other	LL	1	1	1.000			232.952085	0.00429273	0.004293	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3543	5/9/2013	16:55	Surface	E2	Day	Striped bass	M. saxatilis	LL	4	4	1.000			232.952085	0.01717091	0.017171	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3544	5/9/2013	16:55	Mid	E2	Day	Striped bass	M. saxatilis	LL	225	900	0.250			176.037775	5.11253906	1.278135	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3544	5/9/2013	16:55	Mid	E2	Day	White perch	M. americana	LL	9	36	0.250			176.037775	0.20450156	0.051125	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3544	5/9/2013	16:55	Mid	E2	Day	Gizzard shad	D. cepedianum	LL	17	68	0.250			176.037775	0.38628073	0.09657	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3544	5/9/2013	16:55	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	8	0.250			176.037775	0.04544479	0.011361	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3544	5/9/2013	16:55	Mid	E2	Day	Clupeidae	Clupeidae	LL	1	4	0.250			176.037775	0.0227224	0.005681	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3544	5/9/2013	16:55	Mid	E2	Day	Other	Other	LL	1	4	0.250			176.037775	0.0227224	0.005681	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3545	5/9/2013	16:55	Bottom	E2	Day	Gizzard shad	D. cepedianum	LL	6	96	0.063		3545	195.59284	0.49081551	0.030676	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3545	5/9/2013	16:55	Bottom	E2	Day	Striped bass	M. saxatilis	LL	275	4400	0.063			195.59284	22.495711	1.405982	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8

4	3545	5/9/2013	16:55	Bottom	E2	Day	White perch	M. americana	LL	2	32	0.063			195.59284	0.16360517	0.010225	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3545	5/9/2013	16:55	Bottom	E2	Day	Other	Other	LL	3	48	0.063			195.59284	0.24540776	0.015338	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3545	5/9/2013	16:55	Bottom	E2	Day	Atlantic menhaden	B. tyrannus	LL	7	112	0.063			195.59284	0.5726181	0.035789	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3545	5/9/2013	16:55	Bottom	E2	Day	Clupeidae	Clupeidae	LL	4	64	0.063			195.59284	0.32721034	0.020451	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3545	5/9/2013	16:55	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	3	48	0.063			195.59284	0.24540776	0.015338	18.6	18.1	17.9	0.3	0.3	0.3	7.8	8	7.8
4	3546	5/9/2013	21:25	Surface	F1	Night	Other	Other	LL	4	64	0.063		3546	211.392995	0.30275365	0.018922	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3546	5/9/2013	21:25	Surface	F1	Night	Clupeidae	Clupeidae	LL	3	18	0.063			211.392995	0.08514946	0.005322	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3546	5/9/2013	21:25	Surface	F1	Night	White perch	M. americana	LL	13	208	0.063			211.392995	0.98394935	0.061497	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3546	5/9/2013	21:25	Surface	F1	Night	Morone spp.	Morone spp.	LL	9	144	0.063			211.392995	0.6811957	0.042575	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3546	5/9/2013	21:25	Surface	F1	Night	Striped bass	M. saxatilis	LL	298	4768	0.063			211.392995	22.5551466	1.409697	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3547	5/9/2013	21:25	Mid	F1	Night	Other	Other	LL	3	12	0.250		3547	199.115705	0.06026647	0.015067	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3547	5/9/2013	21:25	Mid	F1	Night	Alewife	A. pseudoharengus	LL	2	8	0.250			199.115705	0.04017764	0.010044	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3547	5/9/2013	21:25	Mid	F1	Night	Clupeidae	Clupeidae	LL	2	8	0.250			199.115705	0.04017764	0.010044	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3547	5/9/2013	21:25	Mid	F1	Night	White perch	M. americana	LL	8	32	0.250			199.115705	0.16071058	0.040178	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3547	5/9/2013	21:25	Mid	F1	Night	Morone spp.	Morone spp.	LL	6	24	0.250			199.115705	0.12053293	0.030133	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3547	5/9/2013	21:25	Mid	F1	Night	Striped bass	M. saxatilis	LL	239	956	0.250			199.115705	4.80122851	1.200307	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3548	5/9/2013	21:25	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	LL	5	40	0.125			221.898305	0.18026276	0.022533	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3548	5/9/2013	21:25	Bottom	F1	Night	Other	Other	LL	2	16	0.125			221.898305	0.0721051	0.009013	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3548	5/9/2013	21:25	Bottom	F1	Night	Striped bass	M. saxatilis	LL	188	1504	0.125			221.898305	6.77787962	0.847235	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3548	5/9/2013	21:25	Bottom	F1	Night	White perch	M. americana	LL	8	64	0.125			221.898305	0.28842041	0.036053	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
4	3548	5/9/2013	21:25	Bottom	F1	Night	Clupeidae	Clupeidae	LL	2	16	0.125			221.898305	0.0721051	0.009013	17.8	17.7	17.6	0.2	0.2	0.3	7.7	7.9	7.9
5	3551	5/13/2013	8:36	Bottom	E2	Day	Striped bass	M. saxatilis	EE	6	12	0.500			187.850975	0.06388042	0.03194	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3552	5/13/2013	11:11	Surface	F1	Day	Striped bass	M. saxatilis	EE	5	5	1.000			316.192955	0.01581313	0.015813	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3553	5/13/2013	11:11	Mid	F1	Day	Striped bass	M. saxatilis	EE	4	8	0.500			197.470295	0.04051242	0.020256	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3554	5/13/2013	11:11	Bottom	F1	Day	Striped bass	M. saxatilis	EE	8	32	0.250		3554	226.94001	0.14100643	0.035252	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3551	5/13/2013	8:36	Bottom	E2	Day	Atlantic menhaden	B. tyrannus	JJ	4	8	0.500		3551	187.850975	0.04258695	0.021293	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3552	5/13/2013	11:11	Surface	F1	Day	Atlantic menhaden	B. tyrannus	JJ	1	1	1.000		3552	316.192955	0.00316263	0.003163	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3555	5/13/2013	21:10	Surface	E2	Night	Atlantic menhaden	B. tyrannus	JJ	8	32	0.250		3555	294.718245	0.10857828	0.027145	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3556	5/13/2013	21:10	Mid	E2	Night	Atlantic menhaden	B. tyrannus	JJ	32	64	0.500		3556	184.813295	0.34629543	0.173148	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3557	5/13/2013	21:10	Bottom	E2	Night	Atlantic menhaden	B. tyrannus	JJ	21	84	0.250		3557	176.10106	0.47699883	0.11925	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3558	5/13/2013	23:10	Surface	F1	Night	Atlantic menhaden	B. tyrannus	JJ	1	8	0.125		3558	275.859315	0.02900029	0.003625	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3559	5/13/2013	23:10	Mid	F1	Night	Atlantic menhaden	B. tyrannus	JJ	8	32	0.250		3559	200.4025	0.15967865	0.03992	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3560	5/13/2013	23:10	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	JJ	2	8	0.250		3560	199.832935	0.04003344	0.010008	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3549	5/13/2013	8:36	Surface	E2	Day	Striped bass	M.saxatilis	LL	184	2944	0.063		3549	278.179765	10.5830846	0.661443	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3549	5/13/2013	8:36	Surface	E2	Day	Morone spp.	Morone spp.	LL	5	80	0.063			278.179765	0.28758382	0.017974	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3549	5/13/2013	8:36	Surface	E2	Day	White perch	M. americana	LL	3	48	0.063			278.179765	0.17255029	0.010784	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3549	5/13/2013	8:36	Surface	E2	Day	Gizzard shad	D. cepedianum	LL	2	32	0.063			278.179765	0.11503353	0.00719	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3549	5/13/2013	8:36	Surface	E2	Day	Alewife	A. pseudoharengus	LL	1	16	0.063			278.179765	0.05751676	0.003595	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3549	5/13/2013	8:36	Surface	E2	Day	Clupeidae	Clupeidae	LL	9	144	0.063			278.179765	0.51765088	0.032353	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3549	5/13/2013	8:36	Surface	E2	Day	Other	Other	LL	7	112	0.063			278.179765	0.40261735	0.025164	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3550	5/13/2013	8:36	Mid	E2	Day	Striped bass	M. saxatilis	LL	230	3680	0.063		3550	205.233255	17.9308173	1.120676	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3550	5/13/2013	8:36	Mid	E2	Day	Morone spp.	Morone spp.	LL	6	96	0.063			205.233255	0.46776045	0.029235	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3550	5/13/2013	8:36	Mid	E2	Day	Clupeidae	Clupeidae	LL	6	96	0.063			205.233255	0.46776045	0.029235	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3550	5/13/2013	8:36	Mid	E2	Day	Other	Other	LL	4	64	0.063			205.233255	0.3118403	0.01949	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3551	5/13/2013	8:36	Bottom	E2	Day	White perch	M. americana	LL	7	14	0.500			187.850975	0.07452716	0.037264	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3551	5/13/2013	8:36	Bottom	E2	Day	Morone spp.	Morone spp.	LL	25	50	0.500			187.850975	0.26616843	0.133084	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3551	5/13/2013	8:36	Bottom	E2	Day	Striped bass	M. saxatilis	LL	132	264	0.500			187.850975	1.40536934	0.702685	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3551	5/13/2013	8:36	Bottom	E2	Day	Clupeidae	Clupeidae	LL	61	122	0.500			187.850975	0.64945098	0.324725	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3551	5/13/2013	8:36	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	4	8	0.500			187.850975	0.04258695	0.021293	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3551	5/13/2013	8:36	Bottom	E2	Day	Gizzard shad	D. cepedianum	LL	2	4	0.500	Gobiosoma spp.		187.850975	0.02129347	0.010647	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3551	5/13/2013	8:36	Bottom	E2	Day	Other	Other	LL	13	26	0.500			187.850975	0.13840759	0.069204	16.1	16.2	16.4	0.2	0.2	0.2	8.2	8.1	8.2
5	3552	5/13/2013	11:11	Surface	F1	Day	White perch	M. americana	LL	3	3	1.000			316.192955	0.00948788	0.009488	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3552	5/13/2013	11:11	Surface	F1	Day	Gizzard shad	D. cepedianum	LL	4	4	1.000			316.192955	0.0126505	0.012651	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3552	5/13/2013	11:11	Surface	F1	Day	Alewife	A. pseudoharengus	LL	8	8	1.000			316.192955	0.02530101	0.025301	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3552	5/13/2013	11:11	Surface	F1	Day	Clupeidae	Clupeidae	LL	142	142	1.000			316.192955	0.44909286	0.449093	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3552	5/13/2013	11:11	Surface	F1	Day	Other	Other	LL	40	40	1.000			316.192955	0.12650503	0.126505	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3552	5/13/2013	11:11	Surface	F1	Day	Morone spp.	Morone spp.	LL	17	17	1.000			316.192955	0.05376464	0.053765	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3552	5/13/2013	11:11	Surface	F1	Day	Striped bass	M. saxatilis	LL	95	95	1.000			316.192955	0.30044945	0.300449	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3553	5/13/2013	11:11	Mid	F1	Day	Striped bass	M. saxatilis	LL	132	264	0.500		3553	197.470295	1.33690994	0.668455	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3553	5/13/2013	11:11	Mid	F1	Day	White perch	M. americana	LL	13	26	0.500			197.470295	0.13166537	0.065833	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3553	5/13/2013	11:11	Mid	F1	Day	Morone spp.	Morone spp.	LL	3	6	0.500			197.470295	0.03038432	0.015192	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3553	5/13/2013	11:11	Mid	F1	Day	Gizzard shad	D. cepedianum	LL	15	30	0.500			197.470295	0.15192158	0.075961	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3553	5/13/2013	11:11	Mid	F1	Day	Alewife	A. pseudoharengus	LL	11	22	0.500			197.470295	0.11140916	0.055705	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3553	5/13/2013	11:11	Mid	F1	Day	Clupeidae	Clupeidae	LL	42	84	0.500			197.470295	0.42538044	0.21269	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3553	5/13/2013	11:11	Mid	F1	Day	Other	Other	LL	26	52	0.500			197.470295	0.26333075	0.131665	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3554	5/13/2013	11:11	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	3	12	0.250			226.94001	0.05287741	0.013219	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3554	5/13/2013	11:11	Bottom	F1	Day	Clupeidae	Clupeidae	LL	9	36	0.250			226.94001	0.15863223	0.039658	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3554	5/13/2013	11:11	Bottom	F1	Day	Gizzard shad	D. cepedianum	LL	4	16	0.250			226.94001	0.07050321	0.017626	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3554	5/13/2013	11:11	Bottom	F1	Day	White perch	M. americana	LL	8	32	0.250			226.94001	0.14100643	0.035252	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3554	5/13/2013	11:11	Bottom	F1	Day	Other	Other	LL	14	56	0.250			226.94001	0.24676125	0.06169	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3554	5/13/2013	11:11	Bottom	F1	Day	Morone spp.	Morone spp.	LL	2	8	0.250			226.94001	0.03525161	0.008813	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3554	5/13/2013	11:11	Bottom	F1	Day	Striped bass	M. saxatilis	LL	188	752	0.250			226.94001	3.31365104	0.828413	16	16.3	16.1	0.2	0.2	0.2	7.8	8.2	8.1
5	3555	5/13/2013	21:10	Surface	E2	Night	Striped bass	M. saxatilis	LL	237	948	0.250			294.718245	3.21663153	0.804158	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3555	5/13/2013	21:10	Surface	E2	Night	White perch	M. americana	LL	6	24	0.250			294.718245	0.08143371	0.020358	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3555	5/13/2013	21:10	Surface	E2	Night	Morone spp.	Morone spp.	LL	10	40	0.250			294.718245	0.13572285	0.033931	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3555	5/13/2013	21:10	Surface	E2	Night	Alewife	A. pseudoharengus	LL	2	8	0.250			294.718245	0.02714457	0.006786	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3555	5/13/2013	21:10	Surface	E2	Night	Clupeidae	Clupeidae	LL	9	36	0.250			294.718245	0.12215056	0.030538	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3555	5/13/2013	21:10	Surface	E2	Night	Gizzard shad	D. cepedianum	LL	1	4	0.250			294.718245	0.01357228	0.003393	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3556	5/13/2013	21:10	Mid	E2	Night	Clupeidae	Clupeidae	LL	24	48	0.500			184.813295	0.25972157	0.129861	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3556	5/13/2013	21:10	Mid	E2	Night	White perch	M. americana	LL	4	8	0.500			184.813295	0.04328693	0.021643	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3556	5/13/2013	21:10	Mid	E2	Night	Morone spp.	Morone spp.	LL	15	30	0.500			184.813295	0.16232598	0.081163	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3556	5/13/2013	21:10	Mid	E2	Night	Striped bass	M.saxatilis	LL	184	368	0.500			184.813295	1.99119874	0.995599	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3556	5/13/2013	21:10	Mid	E2	Night	Other	Other	LL	22	44	0.500			184.813295	0.23807811	0.119039	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3557	5/13/2013	21:10	Bottom	E2	Night	Striped bass	M. saxatilis	LL	201	804	0.250			176.10106	4.56556025	1.14139	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3557	5/13/2013	21:10	Bottom	E2	Night	White perch	M. americana	LL	5	20	0.250			176.10106	0.11357115	0.028393	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3557	5/13/2013	21:10	Bottom	E2	Night	Morone spp.	Morone spp.	LL	27	108	0.250			176.10106	0.61328421	0.153321	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3557	5/13/2013	21:10	Bottom	E2	Night	Gizzard shad	D. cepedianum	LL	1	4	0.250			176.10106	0.02271423	0.005679	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3557	5/13/2013	21:10	Bottom	E2	Night	Clupeidae	Clupeidae	LL	7	28	0.250			176.10106	0.15899961	0.03975	16.4	16.8	16.6	0.2	0.2	0.2	8	8.2	7.9
5	3558	5/13/2013	23:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	207	1656	0.125			275.859315	6.00305993	0.750382	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3558	5/13/2013	23:10	Surface	F1	Night	White perch	M. americana	LL	4	32	0.125			275.859315	0.11600116	0.0145	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3558	5/13/2013	23:10	Surface	F1	Night	Morone spp.	Morone spp.	LL	2	16	0.125			275.859315	0.05800058	0.00725	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3558	5/13/2013	23:10	Surface	F1	Night	Alewife	A. pseudoharengus	LL	2	16	0.125			275.859315	0.05800058	0.00725	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3558	5/13/2013	23:10	Surface	F1	Night	Clupeidae	Clupeidae	LL	3	24	0.125	Eastern Silvery Minnow		275.859315	0.08700087	0.010875	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3558	5/13/2013	23:10	Surface	F1	Night	Other	Other	LL	76	608	0.125			275.859315	2.204022	0.275503	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3559	5/13/2013	23:10	Mid	F1	Night	Clupeidae	Clupeidae	LL	5	20	0.250			200.4025	0.09979915	0.02495	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3559	5/13/2013	23:10	Mid	F1	Night	White perch	M. americana	LL	2	8	0.250			200.4025	0.03991966	0.00998	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3559	5/13/2013	23:10	Mid	F1	Night	Striped bass	M. saxatilis	LL	278	1112	0.250			200.4025	5.54883297	1.387208	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3559	5/13/2013	23:10	Mid	F1	Night	Other	Other	LL	44	176	0.250			200.4025	0.87823256	0.219558	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3560	5/13/2013	23:10	Bottom	F1	Night	Striped bass	M. saxatilis	LL	303	1212	0.250			199.832935	6.0650663	1.516267	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3560	5/13/2013	23:10	Bottom	F1	Night	White perch	M. americana	LL	2	8	0.250			199.832935	0.04003344	0.010008	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3560	5/13/2013	23:10	Bottom	F1	Night	Morone spp.	Morone spp.	LL	2	8	0.250			199.832935	0.04003344	0.010008	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3560	5/13/2013	23:10	Bottom	F1	Night	Gizzard shad	D. cepedianum	LL	1	4	0.250			199.832935	0.02001672	0.005004	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3560	5/13/2013	23:10	Bottom	F1	Night	Clupeidae	Clupeidae	LL	4	16	0.250			199.832935	0.08006688	0.020017	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
5	3560	5/13/2013	23:10	Bottom	F1	Night	Other	Other	LL	35	140	0.250			199.832935	0.70058522	0.175146	15.5	15.9	15.7	0.2	0.2	0.2	8	8.5	8.2
6	3561	5/20/2013	2:51	Surface	E2	Night	Striped bass	M. saxatilis	EE	3	12	0.250		3561	244.849665	0.04900966	0.012252	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	Striped bass	M. saxatilis	EE	1	4	0.250			209.283495	0.01911283	0.004778	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3565	5/20/2013	5:10	Mid	F1	Night	Striped bass	M. saxatilis	EE	1	2	0.250		3565	195.97255	0.01020551	0.002551	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3566	5/20/2013	5:10	Bottom	F1	Night	Striped bass	M. saxatilis	EE	4	4	1.000			218.438725	0.01831177	0.018312	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3569	5/20/2013	14:00	Bottom	E2	Day	Striped bass	M. saxatilis	EE	2	4	0.500		3569	245.37704	0.01630144	0.008151	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3570	5/20/2013	17:10	Surface	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000			216.455795	0.01385964	0.01386	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3571	5/20/2013	17:10	Mid	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000		3571	189.93938	0.01579451	0.015795	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3572	5/20/2013	17:10	Bottom	F1	Day	Striped bass	M. saxatilis	EE	4	4	1.000			206.52005	0.01936858	0.019369	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3562	5/20/2013	2:51	Mid	E2	Night	Atlantic menhaden	B. tyrannus	JJ	4	16	0.250			194.263855	0.08236221	0.020591	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	Atlantic menhaden	B. tyrannus	JJ	21	84	0.250		3563	209.283495	0.40136944	0.100342	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3565	5/20/2013	5:10	Mid	F1	Night	Atlantic menhaden	B. tyrannus	JJ	38	76	0.250			195.97255	0.38780942	0.096952	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3566	5/20/2013	5:10	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	JJ	47	47	1.000		3566	218.438725	0.21516331	0.215163	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3571	5/20/2013	17:10	Mid	F1	Day	Atlantic menhaden	B. tyrannus	JJ	1	1	1.000			189.93938	0.00526484	0.005265	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3572	5/20/2013	17:10	Bottom	F1	Day	Atlantic menhaden	B. tyrannus	JJ	2	2	1.000		3572	206.52005	0.00968429	0.009684	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3561	5/20/2013	2:51	Surface	E2	Night	Striped bass	M. saxatilis	LL	20	80	0.250			244.849665	0.3267311	0.081683	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3561	5/20/2013	2:51	Surface	E2	Night	White perch	M. americana	LL	8	32	0.250			244.849665	0.13069244	0.032673	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3561	5/20/2013	2:51	Surface	E2	Night	Clupeidae	Clupeidae	LL	104	416	0.250			244.849665	1.69900171	0.42475	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3561	5/20/2013	2:51	Surface	E2	Night	Alewife	A. pseudoharengus	LL	10	40	0.250			244.849665	0.16336555	0.040841	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3561	5/20/2013	2:51	Surface	E2	Night	Other	Other	LL	63	252	0.250			244.849665	1.02920296	0.257301	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3562	5/20/2013	2:51	Mid	E2	Night	Other	Other	LL	37	148	0.250		3562	194.263855	0.76185042	0.190463	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3562	5/20/2013	2:51	Mid	E2	Night	Atlantic menhaden	B. tyrannus	LL	2	8	0.250			194.263855	0.0411811	0.010295	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3562	5/20/2013	2:51	Mid	E2	Night	Gizzard shad	D. cepedianum	LL	1	4	0.250			194.263855	0.02059055	0.005148	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3562	5/20/2013	2:51	Mid	E2	Night	American shad	A. sapidissima	LL	3	12	0.250			194.263855	0.06177166	0.015443	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3562	5/20/2013	2:51	Mid	E2	Night	Striped bass	M. saxatilis	LL	62	248	0.250			194.263855	1.27661422	0.319154	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3562	5/20/2013	2:51	Mid	E2	Night	White perch	M. americana	LL	7	28	0.250			194.263855	0.14413386	0.036033	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3562	5/20/2013	2:51	Mid	E2	Night	Clupeidae	Clupeidae	LL	127	508	0.250			194.263855	2.6150001	0.65375	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3562	5/20/2013	2:51	Mid	E2	Night	Alewife	A. pseudoharengus	LL	28	112	0.250			194.263855	0.57653545	0.144134	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	Striped bass	M. saxatilis	LL	84	336	0.250			209.283495	1.60547778	0.401369	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	White perch	M. americana	LL	4	16	0.250			209.283495	0.07645132	0.019113	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	Alosa spp.	Alosa spp.	LL	1	4	0.250			209.283495	0.01911283	0.004778	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	Gizzard shad	D. cepedianum	LL	1	4	0.250			209.283495	0.01911283	0.004778	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	16	64	0.250			209.283495	0.30580529	0.076451	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	Clupeidae	Clupeidae	LL	170	680	0.250	Eastern Silvery Minnow		209.283495	3.24918121	0.812295	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3563	5/20/2013	2:51	Bottom	E2	Night	Other	Other	LL	39	156	0.250			209.283495	0.7454004	0.18635	17.5	17.5	17.5	0.2	0.2	0.2	8.2	8.3	8.3
6	3564	5/20/2013	5:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	16	128	0.125		3564	224.767225	0.56947805	0.071185	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3564	5/20/2013	5:10	Surface	F1	Night	White perch	M. americana	LL	1	8	0.125			224.767225	0.03559238	0.004449	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3564	5/20/2013	5:10	Surface	F1	Night	Clupeidae	Clupeidae	LL	130	1040	0.125			224.767225	4.62700912	0.578376	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3564	5/20/2013	5:10	Surface	F1	Night	Alewife	A. pseudoharengus	LL	7	56	0.125			224.767225	0.24914664	0.031143	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3564	5/20/2013	5:10	Surface	F1	Night	American shad	A. sapidissima	LL	4	32	0.125			224.767225	0.14236951	0.017796	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3564	5/20/2013	5:10	Surface	F1	Night	Other	Other	LL	40	320	0.125			224.767225	1.42369511	0.177962	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3565	5/20/2013	5:10	Mid	F1	Night	Striped bass	M. saxatilis	LL	28	56	0.250			195.97255	0.28575431	0.071439	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3565	5/20/2013	5:10	Mid	F1	Night	White perch	M. americana	LL	6	12	0.250			195.97255	0.06123307	0.015308	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3565	5/20/2013	5:10	Mid	F1	Night	Other	Other	LL	92	184	0.250			195.97255	0.93890701	0.234727	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3565	5/20/2013	5:10	Mid	F1	Night	Atlantic menhaden	B. tyrannus	LL	13	26	0.250			195.97255	0.13267164	0.033168	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3565	5/20/2013	5:10	Mid	F1	Night	Clupeidae	Clupeidae	LL	45	90	0.250			195.97255	0.45924799	0.114812	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2

6	3565	5/20/2013	5:10	Mid	F1	Night	Alewife	A. pseudoharengus	LL	9	18	0.250			195.97255	0.0918496	0.022962	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3565	5/20/2013	5:10	Mid	F1	Night	American shad	A. sapidissima	LL	1	2	0.250			195.97255	0.01020551	0.002551	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3566	5/20/2013	5:10	Bottom	F1	Night	Other	Other	LL	92	92	1.000			218.438725	0.42117074	0.421171	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3566	5/20/2013	5:10	Bottom	F1	Night	Clupeidae	Clupeidae	LL	63	63	1.000			218.438725	0.2884104	0.28841	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3566	5/20/2013	5:10	Bottom	F1	Night	Striped bass	M. saxatilis	LL	44	44	1.000			218.438725	0.20142949	0.201429	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3566	5/20/2013	5:10	Bottom	F1	Night	White perch	M. americana	LL	4	4	1.000			218.438725	0.01831177	0.018312	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3566	5/20/2013	5:10	Bottom	F1	Night	American shad	A. sapidissima	LL	8	8	1.000			218.438725	0.03662354	0.036624	17.5	17.5	17.5	0.2	0.2	0.2	8	8.3	8.2
6	3567	5/20/2013	14:00	Surface	E2	Day	Other	Other	LL	3	12	0.250		3567	267.69555	0.04482704	0.011207	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3567	5/20/2013	14:00	Surface	E2	Day	White perch	M. americana	LL	5	20	0.250			267.69555	0.07471174	0.018678	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3567	5/20/2013	14:00	Surface	E2	Day	Striped bass	M. saxatilis	LL	2	8	0.250			267.69555	0.0298847	0.007471	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3567	5/20/2013	14:00	Surface	E2	Day	Alewife	A. pseudoharengus	LL	13	52	0.250			267.69555	0.19425052	0.048563	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3567	5/20/2013	14:00	Surface	E2	Day	Clupeidae	Clupeidae	LL	242	968	0.250			267.69555	3.61604816	0.904012	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3568	5/20/2013	14:00	Mid	E2	Day	Clupeidae	Clupeidae	LL	222	222	1.000		3568	229.30265	0.96815279	0.968153	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3568	5/20/2013	14:00	Mid	E2	Day	Alewife	A. pseudoharengus	LL	18	18	1.000			229.30265	0.07849887	0.078499	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3568	5/20/2013	14:00	Mid	E2	Day	Striped bass	M. saxatilis	LL	67	67	1.000			229.30265	0.29219026	0.29219	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3568	5/20/2013	14:00	Mid	E2	Day	White perch	M. americana	LL	54	54	1.000			229.30265	0.23549662	0.235497	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3568	5/20/2013	14:00	Mid	E2	Day	Other	Other	LL	43	43	1.000			229.30265	0.18752509	0.187525	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3568	5/20/2013	14:00	Mid	E2	Day	Atlantic menhaden	B. tyrannus	LL	1	1	1.000			229.30265	0.00436105	0.004361	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3568	5/20/2013	14:00	Mid	E2	Day	American shad	A. sapidissima	LL	1	1	1.000			229.30265	0.00436105	0.004361	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3569	5/20/2013	14:00	Bottom	E2	Day	Striped bass	M. saxatilis	LL	150	300	0.500			245.37704	1.22260828	0.611304	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3569	5/20/2013	14:00	Bottom	E2	Day	White perch	M. americana	LL	9	18	0.500			245.37704	0.0733565	0.036678	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3569	5/20/2013	14:00	Bottom	E2	Day	Gizzard shad	D. cepedianum	LL	4	8	0.500			245.37704	0.03260289	0.016301	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3569	5/20/2013	14:00	Bottom	E2	Day	Clupeidae	Clupeidae	LL	37	74	0.500	Eastern Silvery Minnow		245.37704	0.30157671	0.150788	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3569	5/20/2013	14:00	Bottom	E2	Day	Other	Other	LL	4	8	0.500			245.37704	0.03260289	0.016301	21.2	20.4	20.5	0.2	0.2	0.2	7.1	7.1	7
6	3570	5/20/2013	17:10	Surface	F1	Day	American shad	A. sapidissima	LL	1	1	1.000		3570	216.455795	0.00461988	0.00462	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3570	5/20/2013	17:10	Surface	F1	Day	Clupeidae	Clupeidae	LL	240	240	1.000			216.455795	1.10877142	1.108771	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3570	5/20/2013	17:10	Surface	F1	Day	Gizzard shad	D. cepedianum	LL	2	2	1.000			216.455795	0.00923976	0.00924	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3570	5/20/2013	17:10	Surface	F1	Day	Alewife	A. pseudoharengus	LL	3	3	1.000			216.455795	0.01385964	0.01386	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3570	5/20/2013	17:10	Surface	F1	Day	Striped bass	M. saxatilis	LL	8	8	1.000			216.455795	0.03695905	0.036959	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3570	5/20/2013	17:10	Surface	F1	Day	White perch	M. americana	LL	6	6	1.000			216.455795	0.02771929	0.027719	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3570	5/20/2013	17:10	Surface	F1	Day	Other	Other	LL	26	26	1.000			216.455795	0.1201169	0.120117	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3571	5/20/2013	17:10	Mid	F1	Day	Striped bass	M. saxatilis	LL	174	174	1.000			189.93938	0.91608175	0.916082	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3571	5/20/2013	17:10	Mid	F1	Day	White perch	M. americana	LL	6	6	1.000			189.93938	0.03158903	0.031589	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3571	5/20/2013	17:10	Mid	F1	Day	Clupeidae	Clupeidae	LL	111	111	1.000			189.93938	0.58439698	0.584397	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3571	5/20/2013	17:10	Mid	F1	Day	Gizzard shad	D. cepedianum	LL	4	4	1.000			189.93938	0.02105935	0.021059	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3571	5/20/2013	17:10	Mid	F1	Day	Other	Other	LL	79	79	1.000			189.93938	0.41592217	0.415922	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3571	5/20/2013	17:10	Mid	F1	Day	American shad	A. sapidissima	LL	4	4	1.000			189.93938	0.02105935	0.021059	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3572	5/20/2013	17:10	Bottom	F1	Day	Striped bass	M. saxatilis	LL	105	105	1.000			206.52005	0.50842521	0.508425	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3572	5/20/2013	17:10	Bottom	F1	Day	White perch	M. americana	LL	8	8	1.000			206.52005	0.03873716	0.038737	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3572	5/20/2013	17:10	Bottom	F1	Day	Morone spp.	Morone spp.	LL	3	3	1.000			206.52005	0.01452643	0.014526	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3572	5/20/2013	17:10	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	10	10	1.000			206.52005	0.04842145	0.048421	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3572	5/20/2013	17:10	Bottom	F1	Day	Clupeidae	Clupeidae	LL	72	72	1.000			206.52005	0.34863443	0.348634	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
6	3572	5/20/2013	17:10	Bottom	F1	Day	Other	Other	LL	75	75	1.000			206.52005	0.36316087	0.363161	19.9	19.7	19.8	0.2	0.2	0.2	6.7	6.9	6.9
7	3574	5/30/2013	11:30	Mid	E2	Day	Other	Other	EE	1	1	1.000		3574	226.539205	0.00441425	0.004414	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3576	5/30/2013	13:39	Surface	F1	Day	Striped bass	M. saxatilis	EE	4	8	0.500		3576	289.76092	0.02760897	0.013804	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3577	5/30/2013	13:39	Mid	F1	Day	Striped bass	M. saxatilis	EE	1	2	0.500		3577	207.258375	0.00964979	0.004825	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3578	5/30/2013	13:39	Bottom	F1	Day	Striped bass	M. saxatilis	EE	1	1	1.000		3578	198.7149	0.00503234	0.005032	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3573	5/30/2013	11:30	Surface	E2	Day	Atlantic menhaden	B. tyrannus	JJ	3	3	1.000		3573	312.206	0.00960904	0.009609	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3573	5/30/2013	11:30	Surface	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000			312.206	0.00640603	0.006406	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3573	5/30/2013	11:30	Surface	E2	Day	Striped bass	M. saxatilis	LL	1	1	1.000			312.206	0.00320301	0.003203	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3573	5/30/2013	11:30	Surface	E2	Day	Other	Other	LL	3	3	1.000			312.206	0.00960904	0.009609	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3573	5/30/2013	11:30	Surface	E2	Day	Clupeidae	Clupeidae	LL	346	346	1.000			312.206	1.10824263	1.108243	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3574	5/30/2013	11:30	Mid	E2	Day	Other	Other	LL	19	19	1.000			226.539205	0.08387069	0.083871	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3574	5/30/2013	11:30	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000			226.539205	0.01765699	0.017657	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3574	5/30/2013	11:30	Mid	E2	Day	White perch	M. americana	LL	18	18	1.000			226.539205	0.07945645	0.079456	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3574	5/30/2013	11:30	Mid	E2	Day	Striped bass	M. saxatilis	LL	203	203	1.000			226.539205	0.89609214	0.896092	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3574	5/30/2013	11:30	Mid	E2	Day	Clupeidae	Clupeidae	LL	76	76	1.000			226.539205	0.33548277	0.335483	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3574	5/30/2013	11:30	Mid	E2	Day	Alewife	A. pseudoharengus	LL	4	4	1.000			226.539205	0.01765699	0.017657	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3574	5/30/2013	11:30	Mid	E2	Day	Gizzard shad	D. cepedianum	LL	1	1	1.000			226.539205	0.00441425	0.004414	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3575	5/30/2013	11:30	Bottom	E2	Day	Clupeidae	Clupeidae	LL	8	8	1.000		3575	223.10072	0.03585824	0.035858	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3575	5/30/2013	11:30	Bottom	E2	Day	Striped bass	M. saxatilis	LL	111	111	1.000			223.10072	0.49753313	0.497533	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3575	5/30/2013	11:30	Bottom	E2	Day	White perch	M. americana	LL	1	1	1.000			223.10072	0.00448228	0.004482	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3575	5/30/2013	11:30	Bottom	E2	Day	Morone spp.	Morone spp.	LL	8	8	1.000			223.10072	0.03585824	0.035858	22.5	22	21.8	0.3	0.3	0.3	8	8	7.8
7	3576	5/30/2013	13:39	Surface	F1	Day	Striped bass	M. saxatilis	LL	20	40	0.500			289.76092	0.13804484	0.069022	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3576	5/30/2013	13:39	Surface	F1	Day	White perch	M. americana	LL	4	8	0.500			289.76092	0.02760897	0.013804	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3576	5/30/2013	13:39	Surface	F1	Day	Other	Other	LL	19	38	0.500			289.76092	0.1311426	0.065571	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3576	5/30/2013	13:39	Surface	F1	Day	Clupeidae	Clupeidae	LL	268	536	0.500			289.76092	1.84980086	0.9249	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3576	5/30/2013	13:39	Surface	F1	Day	Alewife	A. pseudoharengus	LL	25	50	0.500			289.76092	0.17255605	0.086278	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3577	5/30/2013	13:39	Mid	F1	Day	Striped bass	M. saxatilis	LL	119	238	0.500			207.258375	1.14832513	0.574163	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3577	5/30/2013	13:39	Mid	F1	Day	White perch	M. americana	LL	4	8	0.500			207.258375	0.03859916	0.0193	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3577	5/30/2013	13:39	Mid	F1	Day	Morone spp.	Morone spp.	LL	1	2	0.500			207.258375	0.00964979	0.004825	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3577	5/30/2013	13:39	Mid	F1	Day	Clupeidae	Clupeidae	LL	62	124	0.500			207.258375	0.59828704	0.299144	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3577	5/30/2013	13:39	Mid	F1	Day	Alewife	A. pseudoharengus	LL	4	8	0.500			207.258375	0.03859916	0.0193	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3577	5/30/2013	13:39	Mid	F1	Day	Other	Other	LL	11	22	0.500			207.258375	0.1061477	0.053074	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3578	5/30/2013	13:39	Bottom	F1	Day	Striped bass	M. saxatilis	LL	117	117	1.000			198.7149	0.58878323	0.588783	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3578	5/30/2013	13:39	Bottom	F1	Day	White perch	M. americana	LL	2	2	1.000			198.7149	0.01006467	0.010065	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3578	5/30/2013	13:39	Bottom	F1	Day	Morone spp.	Morone spp.	LL	31	31	1.000			198.7149	0.15600239	0.156002	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3578	5/30/2013	13:39	Bottom	F1	Day	Clupeidae	Clupeidae	LL	1	1	1.000			198.7149	0.00503234	0.005032	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
7	3578	5/30/2013	13:39	Bottom	F1	Day	Other	Other	LL	5	5	1.000			198.7149	0.02516168	0.025162	21.8	21.4	21.5	0.2	0.2	0.2	7.5	7.7	7.7
8	3581	6/6/2013	4:15	Bottom	E2	Night	Other	Other	AA	1	1	1.000			269.93162	0.00370464	0.003705	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3584	6/6/2013	7:54	Bottom	F1	Day	White perch	M. americana	AA	1	1	1.000		3584	178.442605	0.00560404	0.005604	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3582	6/6/2013	7:54	Surface	F1	Day	Striped bass	M. saxatilis	EE	2	2	1.000		3582	211.96256	0.00943563	0.009436	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3580	6/6/2013	4:15	Mid	E2	Night	Atlantic menhaden	B. tyrannus	JJ	1	1	1.000		3580	271.513745	0.00368305	0.003683	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3581	6/6/2013	4:15	Bottom	E2	Night	Atlantic menhaden	B. tyrannus	JJ	3	3	1.000	Blue Fish	3581	269.93162	0.01111393	0.011114	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3589	6/6/2013	21:36	Mid	F1	Night	Atlantic menhaden	B. tyrannus	JJ	2	2	1.000		3589	173.464185	0.01152976	0.01153	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3590	6/6/2013	21:36	Bottom	F1	Night	Hickory shad	A. mediocris	JJ	2	2	1.000		3590	179.47626	0.01114354	0.011144	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3590	6/6/2013	21:36	Bottom	F1	Night	Atlantic menhaden	B. tyrannus	JJ	5	5	1.000			179.47626	0.02785884	0.027859	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3579	6/6/2013	4:15	Surface	E2	Night	Clupeidae	Clupeidae	LL	1	1	1.000		3579	367.51709	0.00272096	0.002721	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3579	6/6/2013	4:15	Surface	E2	Night	Striped bass	M. saxatilis	LL	59	59	1.000			367.51709	0.16053675	0.160537	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3579	6/6/2013	4:15	Surface	E2	Night	White perch	M. americana	LL	1	1	1.000			367.51709	0.00272096	0.002721	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3579	6/6/2013	4:15	Surface	E2	Night	Morone spp.	Morone spp.	LL	6	6	1.000			367.51709	0.01632577	0.016326	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3579	6/6/2013	4:15	Surface	E2	Night	Other	Other	LL	1	1	1.000			367.51709	0.00272096	0.002721	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3580	6/6/2013	4:15	Mid	E2	Night	Morone spp.	Morone spp.	LL	30	30	1.000			271.513745	0.11049164	0.110492	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3580	6/6/2013	4:15	Mid	E2	Night	Striped bass	M. saxatilis	LL	167	167	1.000			271.513745	0.61507015	0.61507	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3580	6/6/2013	4:15	Mid	E2	Night	White perch	M. americana	LL	2	2	1.000			271.513745	0.00736611	0.007366	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3580	6/6/2013	4:15	Mid	E2	Night	Clupeidae	Clupeidae	LL	4	4	1.000			271.513745	0.01473222	0.014732	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3581	6/6/2013	4:15	Bottom	E2	Night	Morone spp.	Morone spp.	LL	78	78	1.000			269.93162	0.28896207	0.288962	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3581	6/6/2013	4:15	Bottom	E2	Night	Striped bass	M. saxatilis	LL	57	57	1.000			269.93162	0.21116459	0.211165	21.4	20.9	20.6	0.3	0.3	0.3	6.5	6.5	6.6
8	3582	6/6/2013	7:54	Surface	F1	Day	Striped bass	M. saxatilis	LL	4	4	1.000			211.96256	0.01887126	0.018871	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3582	6/6/2013	7:54	Surface	F1	Day	White perch	M. americana	LL	4	4	1.000			211.96256	0.01887126	0.018871	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3582	6/6/2013	7:54	Surface	F1	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	Gut tracks damamged		211.96256	0.00943563	0.009436	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3582	6/6/2013	7:54	Surface	F1	Day	Clupeidae	Clupeidae	LL	86	86	1.000			211.96256	0.40573203	0.405732	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3582	6/6/2013	7:54	Surface	F1	Day	Other	Other	LL	17	17	1.000			211.96256	0.08020284	0.080203	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3583	6/6/2013	7:54	Mid	F1	Day	Clupeidae	Clupeidae	LL	11	11	1.000		3583	182.89365	0.06014424	0.060144	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3583	6/6/2013	7:54	Mid	F1	Day	Striped bass	M. saxatilis	LL	210	210	1.000			182.89365	1.14820826	1.148208	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3583	6/6/2013	7:54	Mid	F1	Day	White perch	M. americana	LL	5	5	1.000			182.89365	0.02733829	0.027338	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3583	6/6/2013	7:54	Mid	F1	Day	Morone spp.	Morone spp.	LL	12	12	1.000			182.89365	0.0656119	0.065612	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3583	6/6/2013	7:54	Mid	F1	Day	Other	Other	LL	5	5	1.000			182.89365	0.02733829	0.027338	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3584	6/6/2013	7:54	Bottom	F1	Day	White perch	M. americana	LL	2	2	1.000			178.442605	0.01120809	0.011208	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3584	6/6/2013	7:54	Bottom	F1	Day	Striped bass	M. saxatilis	LL	32	32	1.000	Chewed up		178.442605	0.17932937	0.179329	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3584	6/6/2013	7:54	Bottom	F1	Day	Morone spp.	Morone spp.	LL	9	9	1.000			178.442605	0.05043639	0.050436	21.9	21.8	21.7	0.2	0.2	0.2	6.3	6.4	6.4
8	3585	6/6/2013	17:07	Surface	E2	Day	Clupeidae	Clupeidae	LL	122	122	1.000		3585	259.93259	0.46935246	0.469352	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3585	6/6/2013	17:07	Surface	E2	Day	Alewife	A. pseudoharengus	LL	7	7	1.000			259.93259	0.02693006	0.02693	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3585	6/6/2013	17:07	Surface	E2	Day	Striped bass	M. saxatilis	LL	9	9	1.000			259.93259	0.03462436	0.034624	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3585	6/6/2013	17:07	Surface	E2	Day	White perch	M. americana	LL	2	2	1.000			259.93259	0.0076943	0.007694	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3586	6/6/2013	17:07	Mid	E2	Day	Striped bass	M. saxatilis	LL	11	11	1.000		3586	248.140485	0.04432973	0.04433	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3586	6/6/2013	17:07	Mid	E2	Day	White perch	M. americana	LL	15	15	1.000			248.140485	0.06044963	0.06045	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3586	6/6/2013	17:07	Mid	E2	Day	Clupeidae	Clupeidae	LL	11	11	1.000			248.140485	0.04432973	0.04433	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3586	6/6/2013	17:07	Mid	E2	Day	Other	Other	LL	1	1	1.000			248.140485	0.00402998	0.00403	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3586	6/6/2013	17:07	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000			248.140485	0.00805995	0.00806	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3586	6/6/2013	17:07	Mid	E2	Day	Gizzard shad	D. cepedianum	LL	1	1	1.000			248.140485	0.00402998	0.00403	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3587	6/6/2013	17:07	Bottom	E2	Day	Striped bass	M. saxatilis	LL	260	260	1.000		3587	227.762715	1.1415389	1.141539	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3587	6/6/2013	17:07	Bottom	E2	Day	White perch	M. americana	LL	5	5	1.000			227.762715	0.02195267	0.021953	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3587	6/6/2013	17:07	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	1	1	1.000			227.762715	0.00439053	0.004391	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3587	6/6/2013	17:07	Bottom	E2	Day	Clupeidae	Clupeidae	LL	5	5	1.000			227.762715	0.02195267	0.021953	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3587	6/6/2013	17:07	Bottom	E2	Day	Other	Other	LL	7	7	1.000			227.762715	0.03073374	0.030734	22.8	22.6	22.5	0.3	0.3	0.3	6.4	6.5	6.4
8	3588	6/6/2013	21:36	Surface	F1	Night	Atlantic menhaden	B. tyrannus	LL	1	1	1.000		3588	164.983995	0.00606119	0.006061	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3588	6/6/2013	21:36	Surface	F1	Night	Striped bass	M. saxatilis	LL	332	332	1.000			164.983995	2.01231641	2.012316	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3588	6/6/2013	21:36	Surface	F1	Night	White perch	M. americana	LL	5	5	1.000			164.983995	0.03030597	0.030306	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3588	6/6/2013	21:36	Surface	F1	Night	Morone spp.	Morone spp.	LL	7	7	1.000			164.983995	0.04242836	0.042428	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3588	6/6/2013	21:36	Surface	F1	Night	Clupeidae	Clupeidae	LL	2	2	1.000			164.983995	0.01212239	0.012122	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3588	6/6/2013	21:36	Surface	F1	Night	Other	Other	LL	5	5	1.000			164.983995	0.03030597	0.030306	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3589	6/6/2013	21:36	Mid	F1	Night	Morone spp.	Morone spp.	LL	70	70	1.000			173.464185	0.40354151	0.403542	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3589	6/6/2013	21:36	Mid	F1	Night	Striped bass	M. saxatilis	LL	46	46	1.000			173.464185	0.26518442	0.265184	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3589	6/6/2013	21:36	Mid	F1	Night	Clupeidae	Clupeidae	LL	1	1	1.000			173.464185	0.00576488	0.005765	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3589	6/6/2013	21:36	Mid	F1	Night	Other	Other	LL	3	3	1.000	Counted gill rakers		173.464185	0.01729464	0.017295	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3590	6/6/2013	21:36	Bottom	F1	Night	Morone spp.	Morone spp.	LL	29	29	1.000			179.47626	0.16158126	0.161581	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3590	6/6/2013	21:36	Bottom	F1	Night	Striped bass	M. saxatilis	LL	86	86	1.000			179.47626	0.47917201	0.479172	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5
8	3590	6/6/2013	21:36	Bottom	F1	Night	White perch	M. americana	LL	21	21	1.000			179.47626	0.11700712	0.117007	22.2	22.1	22.1	0.2	0.3	0.3	6.4	6.6	6.5

APPENDIX B

ICHTHYOPLANKTON COLLECTIONS SUMMARIZED BY GROUP OF CONCERN

Appendix B
Table B.1 - Striped Bass By Event
Entrainment Impact Assessment
[redacted]
Wilmington, Delaware

Event	Tag #	Start Date	Start Time	Depth	Tide	Day/Night	Common name	Scientific Name	Lifestage (fish/eggs)	# Counted	Expanded Total Fish Count	Splits	Sample Volume	Density	Comments
1	3501	4/17/2013	11:14	Surface	E2	Day	Striped bass	M. saxatilis	LL	5	5	1.000	268	0.019	
1	3504	4/17/2013	14:35	Surface	F1	Day	Striped bass	M. saxatilis	LL	8	8	1.000	230	0.035	
1	3504	4/17/2013	14:35	Surface	F1	Day	Morone spp.	Morone spp.	LL	1	1	1.000	230	0.004	chewed up
1	3507	4/17/2013	21:38	Surface	E2	Night	Striped bass	M. saxatilis	LL	1	1	1.000	231	0.004	
1	3510	4/18/2013	3:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	2	2	1.000	211	0.009	
1				Event Total							17		939	0.0181	Event Average Surface Density
2	3513	4/24/2013	17:25	Surface	E2	Day	Striped bass	M. saxatilis	LL	33	33	1.000	193	0.171	
2	3516	4/24/2013	20:55	Surface	F1	Night	Striped bass	M. saxatilis	LL	12	12	1.000	268	0.045	
2	3519	4/25/2013	5:15	Surface	E2	Night	Striped bass	M. saxatilis	LL	28	28	1.000	261	0.107	
2	3522	4/25/2013	9:05	Surface	F1	Day	Striped bass	M. saxatilis	LL	6	6	1.000	245	0.024	
2				Event Total							79		967	0.0817	Event Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Morone spp.	Morone spp.	LL	2	2	1.000	263	0.008	
3	3525	4/30/2013	11:12	Surface	E2	Day	Striped bass	M. saxatilis	LL	13	13	1.000	263	0.049	
3	3528	4/30/2013	13:30	Surface	F1	Day	Striped bass	M. saxatilis	LL	14	14	1.000	299	0.047	
3	3531	4/30/2013	22:48	Surface	E2	Night	Striped bass	M. saxatilis	LL	32	32	1.000	264	0.121	
3	3531	4/30/2013	22:48	Surface	E2	Night	Morone spp.	Morone spp.	LL	4	4	1.000	264	0.015	
3	3534	5/1/2013	1:33	Surface	F1	Night	Striped bass	M. saxatilis	LL	61	61	1.000	191	0.319	
3				Event Total							126		1018	0.1238	Event Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	Morone spp.	Morone spp.	LL	18	144	0.125	382	0.377	
4	3537	5/9/2013	4:53	Surface	E2	Night	Striped bass	M. saxatilis	LL	225	1800	0.125	382	4.707	
4	3540	5/9/2013	8:21	Surface	F1	Day	Striped bass	M. saxatilis	LL	50	50	1.000	245	0.204	
4	3543	5/9/2013	16:55	Surface	E2	Day	Striped bass	M. saxatilis	LL	4	4	1.000	233	0.017	
4	3546	5/9/2013	21:25	Surface	F1	Night	Morone spp.	Morone spp.	LL	9	144	0.063	211	0.681	
4	3546	5/9/2013	21:25	Surface	F1	Night	Striped bass	M. saxatilis	LL	298	4768	0.063	211	22.555	
4				Event Total							6910		1072	6.4448	Event Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Striped bass	M.saxatilis	LL	184	2944	0.063	278	10.583	
5	3549	5/13/2013	8:36	Surface	E2	Day	Morone spp.	Morone spp.	LL	5	80	0.063	278	0.288	
5	3552	5/13/2013	11:11	Surface	F1	Day	Morone spp.	Morone spp.	LL	17	17	1.000	316	0.054	
5	3552	5/13/2013	11:11	Surface	F1	Day	Striped bass	M. saxatilis	LL	95	95	1.000	316	0.300	
5	3555	5/13/2013	21:10	Surface	E2	Night	Striped bass	M. saxatilis	LL	237	948	0.250	295	3.217	
5	3555	5/13/2013	21:10	Surface	E2	Night	Morone spp.	Morone spp.	LL	10	40	0.250	295	0.136	
5	3558	5/13/2013	23:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	207	1656	0.125	276	6.003	
5	3558	5/13/2013	23:10	Surface	F1	Night	Morone spp.	Morone spp.	LL	2	16	0.125	276	0.058	

5				Event Total							5796		1165	4.9753	Event Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Striped bass	M. saxatilis	LL	20	80	0.250	245	0.327	
6	3564	5/20/2013	5:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	16	128	0.125	225	0.569	
6	3567	5/20/2013	14:00	Surface	E2	Day	Striped bass	M. saxatilis	LL	2	8	0.250	268	0.030	
6	3570	5/20/2013	17:10	Surface	F1	Day	Striped bass	M. saxatilis	LL	8	8	1.000	216	0.037	
6				Event Total							224		954	0.2349	Event Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Striped bass	M. saxatilis	LL	1	1	1.000	312	0.003	
7	3576	5/30/2013	13:39	Surface	F1	Day	Striped bass	M. saxatilis	LL	20	40	0.500	290	0.138	
7				Event Total							41		602	0.0681	Event Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	Striped bass	M. saxatilis	LL	59	59	1.000	368	0.161	
8	3579	6/6/2013	4:15	Surface	E2	Night	Morone spp.	Morone spp.	LL	6	6	1.000	368	0.016	
8	3582	6/6/2013	7:54	Surface	F1	Day	Striped bass	M. saxatilis	LL	4	4	1.000	212	0.019	
8	3585	6/6/2013	17:07	Surface	E2	Day	Striped bass	M. saxatilis	LL	9	9	1.000	260	0.035	
8	3588	6/6/2013	21:36	Surface	F1	Night	Striped bass	M. saxatilis	LL	332	332	1.000	165	2.012	
8	3588	6/6/2013	21:36	Surface	F1	Night	Morone spp.	Morone spp.	LL	7	7	1.000	165	0.042	
8				Event Total							417		1004	0.4152	Event Average Surface Density
			Spawning Season Surface Total								**13610**		**7721**	**1.763**	**Surface Average Density**
1	3502	4/17/2013	11:14	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	240	0.017	
1	3505	4/17/2013	14:35	Mid	F1	Day	Striped Bass	Larvae	LL	0	0	1.000	175	0.000	
1	3508	4/17/2013	21:38	Mid	E2	Night	Striped bass	M. saxatilis	LL	4	4	1.000	184	0.022	
1	3511	4/18/2013	3:10	Mid	F1	Night	Morone spp.	Morone spp.	LL	1	1	1.000	152	0.007	chewed up
1				Event Total							9		751	0.0120	Event Average Mid-Depth Density
2	3514	4/24/2013	17:25	Mid	E2	Day	Striped bass	M. saxatilis	LL	5	5	1.000	142	0.035	
2	3514	4/24/2013	17:25	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	142	0.028	
2	3517	4/24/2013	20:55	Mid	F1	Night	Striped bass	M. saxatilis	LL	16	16	1.000	142	0.113	
2	3520	4/25/2013	5:15	Mid	E2	Night	Striped bass	M. saxatilis	LL	52	52	1.000	196	0.265	
2	3523	4/25/2013	9:05	Mid	F1	Day	Striped bass	M. saxatilis	LL	5	5	1.000	182	0.027	
2				Event Total							82		663	0.1237	Event Average Mid-Depth Density
3	3526	4/30/2013	11:12	Mid	E2	Day	Striped bass	M. saxatilis	LL	120	240	0.500	188	1.280	
3	3529	4/30/2013	13:30	Mid	F1	Day	Striped bass	M. saxatilis	LL	28	28	1.000	156	0.179	
3	3532	4/30/2013	22:48	Mid	E2	Night	Striped bass	M. saxatilis	LL	44	44	1.000	178	0.248	
3	3535	5/1/2013	1:33	Mid	F1	Night	Striped bass	M. saxatilis	LL	80	80	1.000	151	0.529	
3				Event Total							392		673	0.5827	Event Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Striped bass	M. saxatilis	LL	216	3456	0.063	321	10.777	
4	3541	5/9/2013	8:21	Mid	F1	Day	Striped bass	M. saxatilis	LL	27	27	1.000	218	0.124	
4	3544	5/9/2013	16:55	Mid	E2	Day	Striped bass	M. saxatilis	LL	225	900	0.250	176	5.113	
4	3547	5/9/2013	21:25	Mid	F1	Night	Morone spp.	Morone spp.	LL	6	24	0.250	199	0.121	
4	3547	5/9/2013	21:25	Mid	F1	Night	Striped bass	M. saxatilis	LL	239	956	0.250	199	4.801	

4				Event Total							5363		914	5.8661	Event Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	Striped bass	M. saxatilis	LL	230	3680	0.063	205	17.931	
5	3550	5/13/2013	8:36	Mid	E2	Day	Morone spp.	Morone spp.	LL	6	96	0.063	205	0.468	
5	3553	5/13/2013	11:11	Mid	F1	Day	Striped bass	M. saxatilis	LL	132	264	0.500	197	1.337	
5	3553	5/13/2013	11:11	Mid	F1	Day	Morone spp.	Morone spp.	LL	3	6	0.500	197	0.030	
5	3556	5/13/2013	21:10	Mid	E2	Night	Morone spp.	Morone spp.	LL	15	30	0.500	185	0.162	
5	3556	5/13/2013	21:10	Mid	E2	Night	Striped bass	M.saxatilis	LL	184	368	0.500	185	1.991	
5	3559	5/13/2013	23:10	Mid	F1	Night	Striped bass	M. saxatilis	LL	278	1112	0.250	200	5.549	
5				Event Total							5556		788	7.0515	Event Average Mid-Depth Density
6	3562	5/20/2013	2:51	Mid	E2	Night	Striped bass	M. saxatilis	LL	62	248	0.250	194	1.277	
6	3565	5/20/2013	5:10	Mid	F1	Night	Striped bass	M. saxatilis	LL	28	56	0.250	196	0.286	
6	3568	5/20/2013	14:00	Mid	E2	Day	Striped bass	M. saxatilis	LL	67	67	1.000	229	0.292	
6	3571	5/20/2013	17:10	Mid	F1	Day	Striped bass	M. saxatilis	LL	174	174	1.000	190	0.916	
6				Event Total							545		809	0.6733	Event Average Mid-Depth Density
7	3574	5/30/2013	11:30	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	227	0.018	
7	3574	5/30/2013	11:30	Mid	E2	Day	Striped bass	M. saxatilis	LL	203	203	1.000	227	0.896	
7	3577	5/30/2013	13:39	Mid	F1	Day	Striped bass	M. saxatilis	LL	119	238	0.500	207	1.148	
7	3577	5/30/2013	13:39	Mid	F1	Day	Morone spp.	Morone spp.	LL	1	2	0.500	207	0.010	
7				Event Total							447		434	1.0304	Event Average Mid-Depth Density
8	3580	6/6/2013	4:15	Mid	E2	Night	Morone spp.	Morone spp.	LL	30	30	1.000	272	0.110	
8	3580	6/6/2013	4:15	Mid	E2	Night	Striped bass	M. saxatilis	LL	167	167	1.000	272	0.615	
8	3583	6/6/2013	7:54	Mid	F1	Day	Striped bass	M. saxatilis	LL	210	210	1.000	183	1.148	
8	3583	6/6/2013	7:54	Mid	F1	Day	Morone spp.	Morone spp.	LL	12	12	1.000	183	0.066	
8	3586	6/6/2013	17:07	Mid	E2	Day	Striped bass	M. saxatilis	LL	11	11	1.000	248	0.044	
8	3589	6/6/2013	21:36	Mid	F1	Night	Morone spp.	Morone spp.	LL	70	70	1.000	173	0.404	
8	3589	6/6/2013	21:36	Mid	F1	Night	Striped bass	M. saxatilis	LL	46	46	1.000	173	0.265	
8				Event Total							546		876	0.6233	Event Average Mid-Depth Density
			Spawning Season Mid-Depth Total								**12940**		**5908**	**2.190**	**Mid-Depth Average Density**
1	3503	4/17/2013	11:14	Bottom	E2	Day	Striped bass	M. saxatilis	LL	17	17	1.000	249	0.068	
1	3506	4/17/2013	14:35	Bottom	F1	Day	Morone spp.	Morone spp.	LL	2	2	1.000	205	0.010	
1	3509	4/17/2013	21:38	Bottom	E2	Night	Striped bass	M. saxatilis	LL	1	1	1.000	237	0.004	
1	3512	4/18/2013	3:10	Bottom	F1	Night	Striped Bass	Larvae	LL	0	0	1.000	126	0.000	
1				Event Total							20		818	0.0245	Event Average Bottom Density
2	3515	4/24/2013	17:25	Bottom	E2	Day	Striped bass	M. saxatilis	LL	94	94	1.000	181	0.519	
2	3518	4/24/2013	20:55	Bottom	F1	Night	Striped bass	M. saxatilis	LL	10	10	1.000	148	0.067	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Morone spp.	Morone spp.	LL	27	27	1.000		0.121	
2	3521	4/25/2013	5:15	Bottom	E2	Night	Striped bass	M. saxatilis	LL	27	27	1.000	202	0.134	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Striped bass	M. saxatilis	LL	35	35	1.000	223	0.157	
2				Event Total							193		754	0.2559	Event Average Bottom Density

3	3527	4/30/2013	11:12	Bottom	E2	Day	Striped bass	M. saxatilis	LL	102	816	0.125	226	3.618	
3	3527	4/30/2013	11:12	Bottom	E2	Day	Morone spp.	Morone spp.	LL	3	24	0.125	226	0.106	
3	3530	4/30/2013	13:30	Bottom	F1	Day	Striped bass	M. saxatilis	LL	29	58	0.500	196	0.296	
3	3530	4/30/2013	13:30	Bottom	F1	Day	Morone spp.	Morone spp.	LL	3	6	0.500	196	0.031	
3	3533	4/30/2013	22:48	Bottom	E2	Night	Striped bass	M. saxatilis	LL	64	128	0.500	201	0.638	
3	3536	5/1/2013	1:33	Bottom	F1	Night	Striped bass	M. saxatilis	LL	87	174	0.500	173	1.008	
3				Event Total							1206		794	1.5183	Event Average Bottom Density
4	3539	5/9/2013	4:53	Bottom	E2	Night	Striped bass	M. saxatilis	LL	127	2032	0.063	340	5.983	
4	3542	5/9/2013	8:21	Bottom	F1	Day	Striped bass	M. saxatilis	LL	102	204	0.500	241	0.845	
4	3545	5/9/2013	16:55	Bottom	E2	Day	Striped bass	M. saxatilis	LL	275	4400	0.063	196	22.496	
4	3548	5/9/2013	21:25	Bottom	F1	Night	Striped bass	M. saxatilis	LL	188	1504	0.125	222	6.778	
4				Event Total							8140		999	8.1516	Event Average Bottom Density
5	3551	5/13/2013	8:36	Bottom	E2	Day	Morone spp.	Morone spp.	LL	25	50	0.500	188	0.266	
5	3551	5/13/2013	8:36	Bottom	E2	Day	Striped bass	M. saxatilis	LL	132	264	0.500	188	1.405	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Morone spp.	Morone spp.	LL	2	8	0.250	227	0.035	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Striped bass	M. saxatilis	LL	188	752	0.250	227	3.314	
5	3557	5/13/2013	21:10	Bottom	E2	Night	Striped bass	M. saxatilis	LL	201	804	0.250	176	4.566	
5	3557	5/13/2013	21:10	Bottom	E2	Night	Morone spp.	Morone spp.	LL	27	108	0.250	176	0.613	
5	3560	5/13/2013	23:10	Bottom	F1	Night	Striped bass	M. saxatilis	LL	303	1212	0.250	200	6.065	
5	3560	5/13/2013	23:10	Bottom	F1	Night	Morone spp.	Morone spp.	LL	2	8	0.250	200	0.040	
5				Event Total							3206		791	4.0545	Event Average Bottom Density
6	3563	5/20/2013	2:51	Bottom	E2	Night	Striped bass	M. saxatilis	LL	84	336	0.250	209	1.605	
6	3566	5/20/2013	5:10	Bottom	F1	Night	Striped bass	M. saxatilis	LL	44	44	1.000	218	0.201	
6	3569	5/20/2013	14:00	Bottom	E2	Day	Striped bass	M. saxatilis	LL	150	300	0.500	245	1.223	
6	3572	5/20/2013	17:10	Bottom	F1	Day	Striped bass	M. saxatilis	LL	105	105	1.000	207	0.508	
6	3572	5/20/2013	17:10	Bottom	F1	Day	Morone spp.	Morone spp.	LL	3	3	1.000	207	0.015	
6				Event Total							788		880	0.8958	Event Average Bottom Density
7	3575	5/30/2013	11:30	Bottom	E2	Day	Striped bass	M. saxatilis	LL	111	111	1.000	223	0.498	
7	3575	5/30/2013	11:30	Bottom	E2	Day	Morone spp.	Morone spp.	LL	8	8	1.000	223	0.036	
7	3578	5/30/2013	13:39	Bottom	F1	Day	Striped bass	M. saxatilis	LL	117	117	1.000	199	0.589	
7	3578	5/30/2013	13:39	Bottom	F1	Day	Morone spp.	Morone spp.	LL	31	31	1.000	199	0.156	
7				Event Total							267		422	0.6330	Event Average Bottom Density
8	3581	6/6/2013	4:15	Bottom	E2	Night	Morone spp.	Morone spp.	LL	78	78	1.000	270	0.289	
8	3581	6/6/2013	4:15	Bottom	E2	Night	Striped bass	M. saxatilis	LL	57	57	1.000	270	0.211	
8	3584	6/6/2013	7:54	Bottom	F1	Day	Striped bass	M. saxatilis	LL	32	32	1.000	178	0.179	
8	3584	6/6/2013	7:54	Bottom	F1	Day	Morone spp.	Morone spp.	LL	9	9	1.000	178	0.050	Chewed up
8	3587	6/6/2013	17:07	Bottom	E2	Day	Striped bass	M. saxatilis	LL	260	260	1.000	228	1.142	
8	3590	6/6/2013	21:36	Bottom	F1	Night	Morone spp.	Morone spp.	LL	29	29	1.000	179	0.162	
8	3590	6/6/2013	21:36	Bottom	F1	Night	Striped bass	M. saxatilis	LL	86	86	1.000	179	0.479	

8				Event Total							551		856	0.6440	Event Average Bottom Density
				Spawning Season Bottom Total							**14371**		**6312**	**2.277**	**Bottom Average Density**
EGGS															
1	3501	4/17/2013	11:14	Surface	E2	Day	Striped bass	M. saxatilis	EE	20	20	1.000	268	0.075	
1	3504	4/17/2013	14:35	Surface	F1	Day	Striped bass	M. saxatilis	EE	19	19	1.000	230	0.083	
1	3507	4/17/2013	21:38	Surface	E2	Night	Striped bass	M. saxatilis	EE	1	1	1.000	231	0.004	
1	3510	4/18/2013	3:10	Surface	F1	Night	Striped bass	M. saxatilis	EE	43	43	1.000	211	0.204	
1				Event Total							83		939	0.0884	Event Average Surface Density
2	3513	4/24/2013	17:25	Surface	E2	Day	Striped bass	M. saxatilis	EE	21	21	1.000	193	0.109	
2	3516	4/24/2013	20:55	Surface	F1	Night	Striped bass	M. saxatilis	EE	54	54	1.000	268	0.201	
2	3519	4/25/2013	5:15	Surface	E2	Night	Striped bass	M. saxatilis	EE	19	19	1.000	261	0.073	
2	3522	4/25/2013	9:05	Surface	F1	Day	Striped bass	M. saxatilis	EE	1	1	1.000	245	0.004	
2				Event Total							95		967	0.0982	Event Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Striped bass	M. saxatilis	EE	63	63	1.000	263	0.239	
3	3528	4/30/2013	13:30	Surface	F1	Day	Striped bass	M. saxatilis	EE	158	158	1.000	299	0.528	
3	3531	4/30/2013	22:48	Surface	E2	Night	Striped bass	M. saxatilis	EE	20	20	1.000	264	0.076	
3	3534	5/1/2013	1:33	Surface	F1	Night	Striped bass	M. saxatilis	EE	62	62	1.000	191	0.324	
3				Event Total							303		1018	0.2978	Event Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	Striped bass	M. saxatilis	EE	43	344	0.125	382	0.900	
4	3540	5/9/2013	8:21	Surface	F1	Day	Striped bass	M. saxatilis	EE	50	50	1.000	245	0.204	
4	3543	5/9/2013	16:55	Surface	E2	Day	Striped bass	M. saxatilis	EE	7	7	1.000	233	0.030	
4	3546	5/9/2013	21:25	Surface	F1	Night	Striped bass	M. saxatilis	EE	15	240	0.625	211	1.135	
4				Event Total							641		1072	0.5979	Event Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	278	0.000	
5	3552	5/13/2013	11:11	Surface	F1	Day	Striped bass	M. saxatilis	EE	5	5	1.000	316	0.016	
5	3555	5/13/2013	21:10	Surface	E2	Night	Striped bass	Eggs	EE	0	0	1.000	295	0.000	
5	3558	5/13/2013	23:10	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	276	0.000	
5				Event Total							5		1165	0.0043	Event Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Striped bass	M. saxatilis	EE	3	12	0.250	245	0.049	
6	3564	5/20/2013	5:10	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	225	0.000	
6	3567	5/20/2013	14:00	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	268	0.000	
6	3570	5/20/2013	17:10	Surface	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	216	0.014	
6				Event Total							15		954	0.0157	Event Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	312	0.000	
7	3576	5/30/2013	13:39	Surface	F1	Day	Striped bass	M. saxatilis	EE	4	8	0.500	290	0.028	
7				Event Total							8		602	0.0133	Event Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	Striped bass	Eggs	EE	0	0	1.000	368	0.000	

8	3582	6/6/2013	7:54	Surface	F1	Day	Striped bass	M. saxatilis	EE	2	2	1.000	212	0.009	
8	3585	6/6/2013	17:07	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	260	0.000	
8	3588	6/6/2013	21:36	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	165	0.000	
8				Event Total							2		1004	0.0020	Event Average Surface Density
			Spawning Season Surface Total								**1152**		**7721**	**0.149**	**Surface Average Density**
1	3502	4/17/2013	11:14	Mid	E2	Day	Striped bass	M. saxatilis	EE	14	14	1.000	240	0.058	
1	3505	4/17/2013	14:35	Mid	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	175	0.017	
1	3508	4/17/2013	21:38	Mid	E2	Night	Striped bass	M. saxatilis	EE	4	4	1.000	184	0.022	
1	3511	4/18/2013	3:10	Mid	F1	Night	Striped bass	M. saxatilis	EE	62	62	1.000	152	0.408	
1				Event Total							83		751	0.1106	Event Average Mid-Depth Density
2	3514	4/24/2013	17:25	Mid	E2	Day	Striped bass	M. saxatilis	EE	5	5	1.000	142	0.035	
2	3517	4/24/2013	20:55	Mid	F1	Night	Striped bass	M. saxatilis	EE	24	24	1.000	142	0.169	
2	3520	4/25/2013	5:15	Mid	E2	Night	Striped bass	M. saxatilis	EE	7	7	1.000	196	0.036	
2	3523	4/25/2013	9:05	Mid	F1	Day	Striped bass	M. saxatilis	EE	5	5	1.000	182	0.027	
2				Event Total							41		663	0.0618	Event Average Mid-Depth Density
3	3526	4/30/2013	11:12	Mid	E2	Day	Striped bass	M. saxatilis	EE	148	296	0.500	188	1.579	
3	3529	4/30/2013	13:30	Mid	F1	Day	Striped bass	M. saxatilis	EE	92	92	1.000	156	0.588	
3	3532	4/30/2013	22:48	Mid	E2	Night	Striped bass	M. saxatilis	EE	125	125	1.000	178	0.704	
3	3535	5/1/2013	1:33	Mid	F1	Night	Striped bass	M. saxatilis	EE	200	200	1.000	151	1.323	
3				Event Total							713		673	1.0599	Event Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Striped bass	M. saxatilis	EE	90	1440	0.063	321	4.490	
4	3541	5/9/2013	8:21	Mid	F1	Day	Striped bass	M. saxatilis	EE	50	50	1.000	218	0.229	
4	3544	5/9/2013	16:55	Mid	E2	Day	Striped bass	M. saxatilis	EE	7	28	0.250	176	0.159	
4	3547	5/9/2013	21:25	Mid	F1	Night	Striped bass	M. saxatilis	EE	8	32	0.250	199	0.161	
4				Event Total							1550		914	1.6954	Event Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	205	0.000	
5	3553	5/13/2013	11:11	Mid	F1	Day	Striped bass	M. saxatilis	EE	4	8	0.500	197	0.041	
5	3556	5/13/2013	21:10	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	185	0.000	
5	3559	5/13/2013	23:10	Mid	F1	Night	Striped bass	Eggs	EE	0	0	1.000	200	0.000	
5				Event Total							8		788	0.0102	Event Average Mid-Depth Density
6	3562	5/20/2013	2:51	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	194	0.000	
6	3565	5/20/2013	5:10	Mid	F1	Night	Striped bass	M. saxatilis	EE	1	2	0.250	196	0.010	
6	3568	5/20/2013	14:00	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	229	0.000	
6	3571	5/20/2013	17:10	Mid	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	190	0.016	
6				Event Total							5		809	0.0062	Event Average Mid-Depth Density
7	3574	5/30/2013	11:30	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	227	0.000	
7	3577	5/30/2013	13:39	Mid	F1	Day	Striped bass	M. saxatilis	EE	1	2	0.500	207	0.010	
7				Event Total							2		434	0.0046	Event Average Mid-Depth Density

8	3580	6/6/2013	4:15	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	272	0.000	
8	3583	6/6/2013	7:54	Mid	F1	Day	Striped bass	Eggs	EE	0	0	1.000	183	0.000	
8	3586	6/6/2013	17:07	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	248	0.000	
8	3589	6/6/2013	21:36	Mid	F1	Night	Striped bass	Eggs	EE	0	0	1.000	173	0.000	
8				Event Total							0		876	0.0000	Event Average Mid-Depth Density
			Spawning Season Mid-Depth Total								**2402**		**5908**	**0.407**	**Mid-Depth Average Density**
1	3503	4/17/2013	11:14	Bottom	E2	Day	Striped bass	M. saxatilis	EE	56	56	1.000	249	0.225	
1	3506	4/17/2013	14:35	Bottom	F1	Day	Striped bass	M. saxatilis	EE	16	16	1.000	205	0.078	
1	3509	4/17/2013	21:38	Bottom	E2	Night	Striped bass	M. saxatilis	EE	12	12	1.000	237	0.051	
1	3512	4/18/2013	3:10	Bottom	F1	Night	Striped bass	M. saxatilis	EE	75	75	1.000	126	0.593	
1				Event Total							159		818	0.1944	Event AverageBottom Density
2	3515	4/24/2013	17:25	Bottom	E2	Day	Striped bass	M. saxatilis	EE	150	150	1.000	181	0.828	
2	3518	4/24/2013	20:55	Bottom	F1	Night	Striped bass	M. saxatilis	EE	26	26	1.000	148	0.175	
2	3521	4/25/2013	5:15	Bottom	E2	Night	Striped bass	M. saxatilis	EE	40	40	1.000	202	0.198	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Striped bass	M. saxatilis	EE	20	20	1.000	223	0.090	
2				Event Total							236		754	0.3130	Event AverageBottom Density
3	3527	4/30/2013	11:12	Bottom	E2	Day	Striped bass	M. saxatilis	EE	106	848	0.125	226	3.760	
3	3530	4/30/2013	13:30	Bottom	F1	Day	Striped bass	M. saxatilis	EE	217	434	0.500	196	2.218	
3	3533	4/30/2013	22:48	Bottom	E2	Night	Striped bass	M. saxatilis	EE	131	262	0.500	201	1.307	
3	3536	5/1/2013	1:33	Bottom	F1	Night	Striped bass	M. saxatilis	EE	132	264	0.500	173	1.530	
3				Event Total							1808		794	2.2762	Event AverageBottom Density
4	3539	5/9/2013	4:53	Bottom	E2	Night	Striped bass	M. saxatilis	EE	82	1312	0.063	340	3.863	
4	3542	5/9/2013	8:21	Bottom	F1	Day	Striped bass	M. saxatilis	EE	181	362	0.500	241	1.499	
4	3545	5/9/2013	16:55	Bottom	E2	Day	Striped bass	M. saxatilis	EE	95	1520	0.063	196	7.771	
4	3548	5/9/2013	21:25	Bottom	F1	Night	Striped bass	M. saxatilis	EE	23	184	0.125	222	0.829	
4				Event Total							3378		999	3.3828	Event AverageBottom Density
5	3551	5/13/2013	8:36	Bottom	E2	Day	Striped bass	M. saxatilis	EE	6	12	0.500	188	0.064	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Striped bass	M. saxatilis	EE	8	32	0.250	227	0.141	
5	3557	5/13/2013	21:10	Bottom	E2	Night	Striped bass	Eggs	EE	0	0	1.000	176	0.000	
5	3560	5/13/2013	23:10	Bottom	F1	Night	Striped bass	Eggs	EE	0	0	1.000	200	0.000	
5				Event Total							44		791	0.0556	Event AverageBottom Density
6	3563	5/20/2013	2:51	Bottom	E2	Night	Striped bass	M. saxatilis	EE	1	4	0.250	209	0.019	
6	3566	5/20/2013	5:10	Bottom	F1	Night	Striped bass	M. saxatilis	EE	4	4	1.000	218	0.018	
6	3569	5/20/2013	14:00	Bottom	E2	Day	Striped bass	M. saxatilis	EE	2	4	0.500	245	0.016	
6	3572	5/20/2013	17:10	Bottom	F1	Day	Striped bass	M. saxatilis	EE	4	4	1.000	207	0.019	
6				Event Total							16		880	0.0182	Event AverageBottom Density
7	3575	5/30/2013	11:30	Bottom	E2	Day	Striped bass	Eggs	EE	0	0	1.000	223	0.000	

7	3578	5/30/2013	13:39	Bottom	F1	Day	Striped bass	M. saxatilis	EE	1	1	1.000	199	0.005	
7				Event Total							1		422	0.0024	Event AverageBottom Density
8	3581	6/6/2013	4:15	Bottom	E2	Night	Striped bass	Eggs	EE	0	0	1.000	270	0.000	
8	3584	6/6/2013	7:54	Bottom	F1	Day	Striped bass	Eggs	EE	0	0	1.000	178	0.000	
8	3587	6/6/2013	17:07	Bottom	E2	Day	Striped bass	Eggs	EE	0	0	1.000	228	0.000	
8	3590	6/6/2013	21:36	Bottom	F1	Night	Striped bass	Eggs	EE	0	0	1.000	179	0.000	
8				Event Total							0		856	0.0000	Event AverageBottom Density
			Spawning Season Bottom Total								**5642**		**6312**	**0.894**	**Bottom Average Density**

Appendix B
Table B.2 - River Herring By Event
Entrainment Impact Assessment
[redacted]
Wilmington, Delaware

Event	Tag #	Start Date	Start Time	Depth	Tide	Day/Night	Common name	Scientific Name	Lifestage (fish/eggs)	# Counted	Expanded Total Fish Count	Splits	Sample Volume	Density (Count/m^3)	Comments
1	3501	4/17/2013	11:14	Surface	E2	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	268	0.02	
1	3504	4/17/2013	14:35	Surface	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	230	0.00	
1	3507	4/17/2013	21:38	Surface	E2	Night	Alewife	A. pseudoharengus	LL	4	4	1.000	231	0.02	
1	3510	4/18/2013	3:10	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	211	0.00	
1				Event Total							9		939	0.0096	Event Average Surface Density
2	3513	4/24/2013	17:25	Surface	E2	Day	Alosa spp.	Alosa spp.	LL	4	4	1.000	193	0.02	
2	3513	4/24/2013	17:25	Surface	E2	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	193	0.03	
2	3516	4/24/2013	20:55	Surface	F1	Night	Alosa spp.	Alosa spp.	LL	3	3	1.000	268	0.01	
2	3516	4/24/2013	20:55	Surface	F1	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	268	0.01	
2	3519	4/25/2013	5:15	Surface	E2	Night	Alosa spp.	Alosa spp.	LL	5	5	1.000	261	0.02	
2	3519	4/25/2013	5:15	Surface	E2	Night	Alewife	A. pseudoharengus	LL	7	7	1.000	261	0.03	
2	3522	4/25/2013	9:05	Surface	F1	Day	Alosa spp.	Alosa spp.	LL	2	2	1.000	245	0.01	
2	3522	4/25/2013	9:05	Surface	F1	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	245	0.02	
2				Event Total							33		967	0.034	Event Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	263	0.00	
3	3528	4/30/2013	13:30	Surface	F1	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	299	0.00	
3	3531	4/30/2013	22:48	Surface	E2	Night	Alewife	A. pseudoharengus	LL	1	1	1.000	264	0.00	
3	3534	5/1/2013	1:33	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	191	0.00	
3				Event Total							3		1018	0.0029	Event Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	River Herring	Alosa spp.	LL	0	0	0.125	382	0.00	
4	3540	5/9/2013	8:21	Surface	F1	Day	Alewife	A. pseudoharengus	LL	8	8	1.000	245	0.03	
4	3543	5/9/2013	16:55	Surface	E2	Day	Alewife	A. pseudoharengus	LL	10	10	1.000	233	0.04	
4	3546	5/9/2013	21:25	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	0.063	211	0.00	
4				Event Total							18		1072	0.017	Event Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Alewife	A. pseudoharengus	LL	1	16	0.063	278	0.06	
5	3552	5/13/2013	11:11	Surface	F1	Day	Alewife	A. pseudoharengus	LL	8	8	1.000	316	0.03	
5	3555	5/13/2013	21:10	Surface	E2	Night	Alewife	A. pseudoharengus	LL	2	8	0.250	295	0.03	
5	3558	5/13/2013	23:10	Surface	F1	Night	Alewife	A. pseudoharengus	LL	2	16	0.125	276	0.06	
5				Event Total							48		1165	0.041	Event Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Alewife	A. pseudoharengus	LL	10	40	0.250	245	0.16	
6	3564	5/20/2013	5:10	Surface	F1	Night	Alewife	A. pseudoharengus	LL	7	56	0.125	225	0.25	

6	3564	5/20/2013	5:10	Surface	F1	Night	American shad	A. sapidissima	LL	4	32	0.125	225	0.14	
6	3567	5/20/2013	14:00	Surface	E2	Day	Alewife	A. pseudoharengus	LL	13	52	0.250	268	0.19	
6	3570	5/20/2013	17:10	Surface	F1	Day	American shad	A. sapidissima	LL	1	1	1.000	216	0.00	
6	3570	5/20/2013	17:10	Surface	F1	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	216	0.01	
6				Event Total							184		954	0.19	Event Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	312	0.01	
7	3576	5/30/2013	13:39	Surface	F1	Day	Alewife	A. pseudoharengus	LL	25	50	0.500	290	0.17	
7				Event Total							52		602	0.086	Event Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	368	0.00	
8	3582	6/6/2013	7:54	Surface	F1	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	212	0.01	
8	3585	6/6/2013	17:07	Surface	E2	Day	Alewife	A. pseudoharengus	LL	7	7	1.000	260	0.03	
8	3588	6/6/2013	21:36	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	165	0.00	
8				Event Total							9		1004	0.0090	Event Average Surface Density
			Spawning Season Surface Total								**356**		**7721**	**0.046**	**Surface Average Density**
1	3502	4/17/2013	11:14	Mid	E2	Day	River Herring	Alosa spp.	LL	0	0	1.000	240	0.00	
1	3505	4/17/2013	14:35	Mid	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	175	0.00	
1	3508	4/17/2013	21:38	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	184	0.01	
1	3511	4/18/2013	3:10	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	152	0.00	
1				Event Total							2		751	0.0027	Event Average Mid-Depth Density
2	3514	4/24/2013	17:25	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	142	0.01	
2	3517	4/24/2013	20:55	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	142	0.00	
2	3520	4/25/2013	5:15	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	196	0.01	
2	3520	4/25/2013	5:15	Mid	E2	Night	Alosa spp.	Alosa spp.	LL	3	3	1.000	196	0.02	
2	3523	4/25/2013	9:05	Mid	F1	Day	Alewife	A. pseudoharengus	LL	6	6	1.000	182	0.03	
2	3523	4/25/2013	9:05	Mid	F1	Day	Alosa spp.	Alosa spp.	LL	1	1	1.000	182	0.01	
2				Event Total							14		663	0.021	Event Average Mid-Depth Density
3	3526	4/30/2013	11:12	Mid	E2	Day	Alewife	A. pseudoharengus	LL	5	10	0.500	188	0.05	
3	3529	4/30/2013	13:30	Mid	F1	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	156	0.02	
3	3532	4/30/2013	22:48	Mid	E2	Night	Alewife	A. pseudoharengus	LL	3	3	1.000	178	0.02	
3	3535	5/1/2013	1:33	Mid	F1	Night	Alewife	A. pseudoharengus	LL	1	1	1.000	151	0.01	
3	3535	5/1/2013	1:33	Mid	F1	Night	Alosa spp.	Alosa spp.	LL	1	1	1.000	151	0.01	
3				Event Total							18		673	0.027	Event Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	32	0.063	321	0.10	
4	3541	5/9/2013	8:21	Mid	F1	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	218	0.02	
4	3544	5/9/2013	16:55	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	8	0.250	176	0.05	
4	3547	5/9/2013	21:25	Mid	F1	Night	Alewife	A. pseudoharengus	LL	2	8	0.250	199	0.04	
4				Event Total							53		914	0.058	Event Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	River Herring	Alosa spp.	LL	0	0	0.063	205	0.00	

5	3553	5/13/2013	11:11	Mid	F1	Day	Alewife	A. pseudoharengus	LL	11	22	0.500	197	0.11		
5	3556	5/13/2013	21:10	Mid	E2	Night	River Herring	Alosa spp.	LL	0	0	0.500	185	0.00		
5	3559	5/13/2013	23:10	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	0.250	200	0.00		
5				Event Total							22		788	0.028	Event Average Mid-Depth Density	
6	3562	5/20/2013	2:51	Mid	E2	Night	American shad	A. sapidissima	LL	3	12	0.250	194	0.06		
6	3562	5/20/2013	2:51	Mid	E2	Night	Alewife	A. pseudoharengus	LL	28	112	0.250	194	0.58		
6	3565	5/20/2013	5:10	Mid	F1	Night	Alewife	A. pseudoharengus	LL	9	18	0.250	196	0.09		
6	3565	5/20/2013	5:10	Mid	F1	Night	American shad	A. sapidissima	LL	1	2	0.250	196	0.01		
6	3568	5/20/2013	14:00	Mid	E2	Day	Alewife	A. pseudoharengus	LL	18	18	1.000	229	0.08		
6	3568	5/20/2013	14:00	Mid	E2	Day	American shad	A. sapidissima	LL	1	1	1.000	229	0.00		
6	3571	5/20/2013	17:10	Mid	F1	Day	American shad	A. sapidissima	LL	4	4	1.000	190	0.02		
6				Event Total							167		809	0.21	Event Average Mid-Depth Density	
7	3574	5/30/2013	11:30	Mid	E2	Day	Alewife	A. pseudoharengus	LL	4	4	1.000	227	0.02		
7	3577	5/30/2013	13:39	Mid	F1	Day	Alewife	A. pseudoharengus	LL	4	8	0.500	207	0.04		
7				Event Total							12		434	0.028	Event Average Mid-Depth Density	
8	3580	6/6/2013	4:15	Mid	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	272	0.00		
8	3583	6/6/2013	7:54	Mid	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	183	0.00		
8	3586	6/6/2013	17:07	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	248	0.01		
8	3589	6/6/2013	21:36	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	173	0.00		
8				Event Total							2		876	0.0023	Event Average Mid-Depth Density	
			Spawning Season Surface Total								**290**		**5908**	**0.049**	**Mid-Depth Average Density**	
1	3503	4/17/2013	11:14	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	249	0.01		
1	3506	4/17/2013	14:35	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	205	0.00		
1	3509	4/17/2013	21:38	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	237	0.00		
1	3512	4/18/2013	3:10	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	126	0.00		
1				Event Total							3		818	0.0037	Event Average Bottom Density	
2	3515	4/24/2013	17:25	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	14	14	1.000	181	0.08		PL
2	3518	4/24/2013	20:55	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	148	0.00		
2	3521	4/25/2013	5:15	Bottom	E2	Night	Alosa spp.	Alosa spp.	LL	4	4	1.000	202	0.02		
2	3524	4/25/2013	9:05	Bottom	F1	Day	Alosa spp.	Alosa spp.	LL	5	5	1.000	223	0.02		
2	3524	4/25/2013	9:05	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	223	0.01		
2				Event Total							25		754	0.033	Event Average Bottom Density	
3	3527	4/30/2013	11:12	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	0.125	226	0.00		
3	3530	4/30/2013	13:30	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	1	2	0.500	196	0.01		
3	3533	4/30/2013	22:48	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	1	2	0.500	201	0.01		
3	3536	5/1/2013	1:33	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.500	173	0.00		
3				Event Total							4		794	0.0050	Event Average Bottom Density	
4	3539	5/9/2013	4:53	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	1	16	0.063	340	0.05		

4	3542	5/9/2013	8:21	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	5	10	0.500	241	0.04	
4	3545	5/9/2013	16:55	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	3	48	0.063	196	0.25	
4	3548	5/9/2013	21:25	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.125	222	0.00	
4				Event Total							74		999	0.074	Event Average Bottom Density
5	3551	5/13/2013	8:36	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	4	8	0.500	188	0.04	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	3	12	0.250	227	0.05	
5	3557	5/13/2013	21:10	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	0.250	176	0.00	
5	3560	5/13/2013	23:10	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.250	200	0.00	
5				Event Total							20		791	0.025	Event Average Bottom Density
6	3563	5/20/2013	2:51	Bottom	E2	Night	Alosa spp.	Alosa spp.	LL	1	4	0.250	209	0.02	
6	3563	5/20/2013	2:51	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	16	64	0.250	209	0.31	
6	3566	5/20/2013	5:10	Bottom	F1	Night	American shad	A. sapidissima	LL	8	8	1.000	218	0.04	
6	3569	5/20/2013	14:00	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	0.500	245	0.00	
6	3572	5/20/2013	17:10	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	10	10	1.000	207	0.05	
6				Event Total							86		880	0.098	Event Average Bottom Density
7	3575	5/30/2013	11:30	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	1.000	223	0.00	
7	3578	5/30/2013	13:39	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	199	0.00	
7				Event Total							0		422	0.00	Event Average Bottom Density
8	3581	6/6/2013	4:15	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	270	0.00	
8	3584	6/6/2013	7:54	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	178	0.00	
8	3587	6/6/2013	17:07	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	228	0.0044	
8	3590	6/6/2013	21:36	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	179	0.00	
8				Event Total							1		856	0.0012	Event Average Bottom Density
			Spawning Season Surface Total								**213**		**6312**	**0.034**	**Bottom Average Density**

Appendix B
Table B.3 - Striped Bass By Tide
Entrainment Impact Assessment
[redacted]
Wilmington, Delaware

Event	Tag #	Start Date	Start Time	Depth	Tide	Day/Night	Common name	Scientific Name	Lifestage (fish/eggs)	# Counted	Expanded Total Fish Count	Splits	Sample Volume	Density	Comments
1	3501	4/17/2013	11:14	Surface	E2	Day	Striped bass	M. saxatilis	LL	5	5	1.000	268	0.019	
1	3507	4/17/2013	21:38	Surface	E2	Night	Striped bass	M. saxatilis	LL	1	1	1.000	231	0.004	
1				Ebb Tide Total							6		498	0.0120	Event Ebb Tide Average Surface Density
1	3504	4/17/2013	14:35	Surface	F1	Day	Striped bass	M. saxatilis	LL	8	8	1.000	230	0.035	
1	3504	4/17/2013	14:35	Surface	F1	Day	Morone spp.	Morone spp.	LL	1	1	1.000	230	0.004	chewed up
1	3510	4/18/2013	3:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	2	2	1.000	211	0.009	
1				Flood Tide Total							11		441	0.0250	Event Flood Tide Average Surface Density
2	3513	4/24/2013	17:25	Surface	E2	Day	Striped bass	M. saxatilis	LL	33	33	1.000	193	0.171	
2	3519	4/25/2013	5:15	Surface	E2	Night	Striped bass	M. saxatilis	LL	28	28	1.000	261	0.107	
2				Ebb Tide Total							61		454	0.1344	Event Ebb Tide Average Surface Density
2	3516	4/24/2013	20:55	Surface	F1	Night	Striped bass	M. saxatilis	LL	12	12	1.000	268	0.045	
2	3522	4/25/2013	9:05	Surface	F1	Day	Striped bass	M. saxatilis	LL	6	6	1.000	245	0.024	
2				Flood Tide Total							18		513	0.0351	Event Flood Tide Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Morone spp.	Morone spp.	LL	2	2	1.000	263	0.008	
3	3525	4/30/2013	11:12	Surface	E2	Day	Striped bass	M. saxatilis	LL	13	13	1.000	263	0.049	
3	3531	4/30/2013	22:48	Surface	E2	Night	Striped bass	M. saxatilis	LL	32	32	1.000	264	0.121	
3	3531	4/30/2013	22:48	Surface	E2	Night	Morone spp.	Morone spp.	LL	4	4	1.000	264	0.015	
3				Ebb Tide Total							51		527	0.0967	Event Ebb Tide Average Surface Density
3	3528	4/30/2013	13:30	Surface	F1	Day	Striped bass	M. saxatilis	LL	14	14	1.000	299	0.047	
3	3534	5/1/2013	1:33	Surface	F1	Night	Striped bass	M. saxatilis	LL	61	61	1.000	191	0.319	
3				Flood Tide Total							75		490	0.1529	Event Flood Tide Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	Morone spp.	Morone spp.	LL	18	144	0.125	382	0.377	
4	3537	5/9/2013	4:53	Surface	E2	Night	Striped bass	M. saxatilis	LL	225	1800	0.125	382	4.707	
4	3543	5/9/2013	16:55	Surface	E2	Day	Striped bass	M. saxatilis	LL	4	4	1.000	233	0.017	
4				Ebb Tide Total							1948		615	3.1657	Event Ebb Tide Average Surface Density
4	3540	5/9/2013	8:21	Surface	F1	Day	Striped bass	M. saxatilis	LL	50	50	1.000	245	0.204	
4	3546	5/9/2013	21:25	Surface	F1	Night	Morone spp.	Morone spp.	LL	9	144	0.063	211	0.681	
4	3546	5/9/2013	21:25	Surface	F1	Night	Striped bass	M. saxatilis	LL	298	4768	0.063	211	22.555	
4				Flood Tide Total							4962		457	10.8617	Event Flood Tide Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Striped bass	M.saxatilis	LL	184	2944	0.063	278	10.583	
5	3549	5/13/2013	8:36	Surface	E2	Day	Morone spp.	Morone spp.	LL	5	80	0.063	278	0.288	
5	3555	5/13/2013	21:10	Surface	E2	Night	Striped bass	M. saxatilis	LL	237	948	0.250	295	3.217	
5	3555	5/13/2013	21:10	Surface	E2	Night	Morone spp.	Morone spp.	LL	10	40	0.250	295	0.136	
5				Ebb Tide Total							4012		573	7.0030	Event Ebb Tide Average Surface Density

5	3552	5/13/2013	11:11	Surface	F1	Day	Morone spp.	Morone spp.	LL	17	17	1.000	316	0.054	
5	3552	5/13/2013	11:11	Surface	F1	Day	Striped bass	M. saxatilis	LL	95	95	1.000	316	0.300	
5	3558	5/13/2013	23:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	207	1656	0.125	276	6.003	
5	3558	5/13/2013	23:10	Surface	F1	Night	Morone spp.	Morone spp.	LL	2	16	0.125	276	0.058	
5				Flood Tide Total							1784		592	3.0132	Event Flood Tide Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Striped bass	M. saxatilis	LL	20	80	0.250	245	0.327	
6	3567	5/20/2013	14:00	Surface	E2	Day	Striped bass	M. saxatilis	LL	2	8	0.250	268	0.030	
6				Ebb Tide Total							88		513	0.1717	Event Ebb Tide Average Surface Density
6	3564	5/20/2013	5:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	16	128	0.125	225	0.569	
6	3570	5/20/2013	17:10	Surface	F1	Day	Striped bass	M. saxatilis	LL	8	8	1.000	216	0.037	
6				Flood Tide Total							136		441	0.3082	Event Flood Tide Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Striped bass	M. saxatilis	LL	1	1	1.000	312	0.003	
7				Ebb Tide Total							1		312	0.0032	Event Ebb Tide Average Surface Density
7	3576	5/30/2013	13:39	Surface	F1	Day	Striped bass	M. saxatilis	LL	20	40	0.500	290	0.138	
7				Flood Tide Total							40		290	0.1380	Event Flood Tide Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	Striped bass	M. saxatilis	LL	59	59	1.000	368	0.161	
8	3579	6/6/2013	4:15	Surface	E2	Night	Morone spp.	Morone spp.	LL	6	6	1.000	368	0.016	
8	3585	6/6/2013	17:07	Surface	E2	Day	Striped bass	M. saxatilis	LL	9	9	1.000	260	0.035	
8				Ebb Tide Total							74		627	0.1179	Event Ebb Tide Average Surface Density
8	3582	6/6/2013	7:54	Surface	F1	Day	Striped bass	M. saxatilis	LL	4	4	1.000	212	0.019	
8	3588	6/6/2013	21:36	Surface	F1	Night	Striped bass	M. saxatilis	LL	332	332	1.000	165	2.012	
8	3588	6/6/2013	21:36	Surface	F1	Night	Morone spp.	Morone spp.	LL	7	7	1.000	165	0.042	
8				Flood Tide Total							343		377	0.9099	Event Flood Tide Average Surface Density
				Spawning Season Ebb Tide Surface Total							**6241**		**4120**	**1.515**	**Ebb Tide Surface Average Density**
				Spawning Season Flood Tide Surface Total							**7369**		**3602**	**2.046**	**Flood Tide Surface Average Density**
1	3502	4/17/2013	11:14	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	240	0.017	
1	3508	4/17/2013	21:38	Mid	E2	Night	Striped bass	M. saxatilis	LL	4	4	1.000	184	0.022	
1				Ebb Tide Total							8		424	0.0189	Event Ebb Tide Average Mid-Depth Density
1	3505	4/17/2013	14:35	Mid	F1	Day	Striped Bass	Larvae	LL	0	0	1.000	175	0.000	
1	3511	4/18/2013	3:10	Mid	F1	Night	Morone spp.	Morone spp.	LL	1	1	1.000	152	0.007	chewed up
1				Flood Tide Total							1		326	0.0031	Event Flood Tide Average Mid-Depth Density
2	3514	4/24/2013	17:25	Mid	E2	Day	Striped bass	M. saxatilis	LL	5	5	1.000	142	0.035	
2	3514	4/24/2013	17:25	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	142	0.028	
2	3520	4/25/2013	5:15	Mid	E2	Night	Striped bass	M. saxatilis	LL	52	52	1.000	196	0.265	
2				Ebb Tide Total							61		338	0.1802	Event Ebb Tide Average Mid-Depth Density
2	3517	4/24/2013	20:55	Mid	F1	Night	Striped bass	M. saxatilis	LL	16	16	1.000	142	0.113	
2	3523	4/25/2013	9:05	Mid	F1	Day	Striped bass	M. saxatilis	LL	5	5	1.000	182	0.027	
2				Flood Tide Total							21		325	0.0647	Event Flood Tide Average Mid-Depth Density

3	3526	4/30/2013	11:12	Mid	E2	Day	Striped bass	M. saxatilis	LL	120	240	0.500	188	1.280	
3	3532	4/30/2013	22:48	Mid	E2	Night	Striped bass	M. saxatilis	LL	44	44	1.000	178	0.248	
3				Ebb Tide Total							284		365	0.7778	Event Ebb Tide Average Mid-Depth Density
3	3529	4/30/2013	13:30	Mid	F1	Day	Striped bass	M. saxatilis	LL	28	28	1.000	156	0.179	
3	3535	5/1/2013	1:33	Mid	F1	Night	Striped bass	M. saxatilis	LL	80	80	1.000	151	0.529	
3				Flood Tide Total							108		308	0.3511	Event Flood Tide Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Striped bass	M. saxatilis	LL	216	3456	0.063	321	10.777	
4	3544	5/9/2013	16:55	Mid	E2	Day	Striped bass	M. saxatilis	LL	225	900	0.250	176	5.113	
4				Ebb Tide Total							4356		497	8.7695	Event Ebb Tide Average Mid-Depth Density
4	3541	5/9/2013	8:21	Mid	F1	Day	Striped bass	M. saxatilis	LL	27	27	1.000	218	0.124	
4	3547	5/9/2013	21:25	Mid	F1	Night	Morone spp.	Morone spp.	LL	6	24	0.250	199	0.121	
4	3547	5/9/2013	21:25	Mid	F1	Night	Striped bass	M. saxatilis	LL	239	956	0.250	199	4.801	
4				Flood Tide Total							1007		418	2.4119	Event Flood Tide Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	Striped bass	M. saxatilis	LL	230	3680	0.063	205	17.931	
5	3550	5/13/2013	8:36	Mid	E2	Day	Morone spp.	Morone spp.	LL	6	96	0.063	205	0.468	
5	3556	5/13/2013	21:10	Mid	E2	Night	Morone spp.	Morone spp.	LL	15	30	0.500	185	0.162	
5	3556	5/13/2013	21:10	Mid	E2	Night	Striped bass	M.saxatilis	LL	184	368	0.500	185	1.991	
5				Ebb Tide Total							4174		390	10.7013	Event Ebb Tide Average Mid-Depth Density
5	3553	5/13/2013	11:11	Mid	F1	Day	Striped bass	M. saxatilis	LL	132	264	0.500	197	1.337	
5	3553	5/13/2013	11:11	Mid	F1	Day	Morone spp.	Morone spp.	LL	3	6	0.500	197	0.030	
5	3559	5/13/2013	23:10	Mid	F1	Night	Striped bass	M. saxatilis	LL	278	1112	0.250	200	5.549	
5				Flood Tide Total							1382		398	3.4735	Event Flood Tide Average Mid-Depth Density
6	3562	5/20/2013	2:51	Mid	E2	Night	Striped bass	M. saxatilis	LL	62	248	0.250	194	1.277	
6	3568	5/20/2013	14:00	Mid	E2	Day	Striped bass	M. saxatilis	LL	67	67	1.000	229	0.292	
6				Ebb Tide Total							315		424	0.7437	Event Ebb Tide Average Mid-Depth Density
6	3565	5/20/2013	5:10	Mid	F1	Night	Striped bass	M. saxatilis	LL	28	56	0.250	196	0.286	
6	3571	5/20/2013	17:10	Mid	F1	Day	Striped bass	M. saxatilis	LL	174	174	1.000	190	0.916	
6				Flood Tide Total							230		386	0.5960	Event Flood Tide Average Mid-Depth Density
7	3574	5/30/2013	11:30	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	227	0.018	
7	3574	5/30/2013	11:30	Mid	E2	Day	Striped bass	M. saxatilis	LL	203	203	1.000	227	0.896	
7				Ebb Tide Total							207		227	0.9137	Event Ebb Tide Average Mid-Depth Density
7	3577	5/30/2013	13:39	Mid	F1	Day	Striped bass	M. saxatilis	LL	119	238	0.500	207	1.148	
7	3577	5/30/2013	13:39	Mid	F1	Day	Morone spp.	Morone spp.	LL	1	2	0.500	207	0.010	
7				Flood Tide Total							240		207	1.1580	Event Flood Tide Average Mid-Depth Density
8	3580	6/6/2013	4:15	Mid	E2	Night	Morone spp.	Morone spp.	LL	30	30	1.000	272	0.110	
8	3580	6/6/2013	4:15	Mid	E2	Night	Striped bass	M. saxatilis	LL	167	167	1.000	272	0.615	
8	3586	6/6/2013	17:07	Mid	E2	Day	Striped bass	M. saxatilis	LL	11	11	1.000	248	0.044	
8				Ebb Tide Total							208		520	0.4003	Event Ebb Tide Average Mid-Depth Density
8	3583	6/6/2013	7:54	Mid	F1	Day	Striped bass	M. saxatilis	LL	210	210	1.000	183	1.148	
8	3583	6/6/2013	7:54	Mid	F1	Day	Morone spp.	Morone spp.	LL	12	12	1.000	183	0.066	

8	3589	6/6/2013	21:36	Mid	F1	Night	Morone spp.	Morone spp.	LL	70	70	1.000	173	0.404	
8	3589	6/6/2013	21:36	Mid	F1	Night	Striped bass	M. saxatilis	LL	46	46	1.000	173	0.265	
8				Flood Tide Total							338		356	0.9485	Event Flood Tide Average Mid-Depth Density

		Spawning Season Ebb Tide Mid-Depth Total									**9613**		**3184**	**3.019**	**Ebb Tide Mid-Depth Average Density**
		Spawning Season Flood Tide Mid-Depth Total									**3327**		**2724**	**1.222**	**Flood Tide Mid-Depth Average Density**
1	3503	4/17/2013	11:14	Bottom	E2	Day	Striped bass	M. saxatilis	LL	17	17	1.000	249	0.068	
1	3509	4/17/2013	21:38	Bottom	E2	Night	Striped bass	M. saxatilis	LL	1	1	1.000	237	0.004	
1				Ebb Tide Total							18		486	0.0370	Event Ebb Tide AverageBottom Density
1	3506	4/17/2013	14:35	Bottom	F1	Day	Morone spp.	Morone spp.	LL	2	2	1.000	205	0.010	
1	3512	4/18/2013	3:10	Bottom	F1	Night	Striped Bass	Larvae	LL	0	0	1.000	126	0.000	
1				Flood Tide Total							2		332	0.0060	Event Flood Tide Average Bottom Density
2	3515	4/24/2013	17:25	Bottom	E2	Day	Striped bass	M. saxatilis	LL	94	94	1.000	181	0.519	
2	3521	4/25/2013	5:15	Bottom	E2	Night	Striped bass	M. saxatilis	LL	27	27	1.000	202	0.134	
2				Ebb Tide Total							121		383	0.3161	Event Ebb Tide AverageBottom Density
2	3518	4/24/2013	20:55	Bottom	F1	Night	Striped bass	M. saxatilis	LL	10	10	1.000	148	0.067	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Morone spp.	Morone spp.	LL	27	27	1.000		0.009	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Striped bass	M. saxatilis	LL	35	35	1.000	223	0.157	
2				Flood Tide Total							72		371	0.1939	Event Flood Tide Average Bottom Density
3	3527	4/30/2013	11:12	Bottom	E2	Day	Striped bass	M. saxatilis	LL	102	816	0.125	226	3.618	
3	3527	4/30/2013	11:12	Bottom	E2	Day	Morone spp.	Morone spp.	LL	3	24	0.125	226	0.106	
3	3533	4/30/2013	22:48	Bottom	E2	Night	Striped bass	M. saxatilis	LL	64	128	0.500	201	0.638	
3				Ebb Tide Total							968		426	2.2719	Event Ebb Tide AverageBottom Density
3	3530	4/30/2013	13:30	Bottom	F1	Day	Striped bass	M. saxatilis	LL	29	58	0.500	196	0.296	
3	3530	4/30/2013	13:30	Bottom	F1	Day	Morone spp.	Morone spp.	LL	3	6	0.500	196	0.031	
3	3536	5/1/2013	1:33	Bottom	F1	Night	Striped bass	M. saxatilis	LL	87	174	0.500	173	1.008	
3				Flood Tide Total							238		368	0.6463	Event Flood Tide Average Bottom Density
4	3539	5/9/2013	4:53	Bottom	E2	Night	Striped bass	M. saxatilis	LL	127	2032	0.063	340	5.983	
4	3545	5/9/2013	16:55	Bottom	E2	Day	Striped bass	M. saxatilis	LL	275	4400	0.063	196	22.496	
4				Ebb Tide Total							6432		535	12.0179	Event Ebb Tide AverageBottom Density
4	3542	5/9/2013	8:21	Bottom	F1	Day	Striped bass	M. saxatilis	LL	102	204	0.500	241	0.845	
4	3548	5/9/2013	21:25	Bottom	F1	Night	Striped bass	M. saxatilis	LL	188	1504	0.125	222	6.778	
4				Flood Tide Total							1708		463	3.6860	Event Flood Tide Average Bottom Density
5	3551	5/13/2013	8:36	Bottom	E2	Day	Morone spp.	Morone spp.	LL	25	50	0.500	188	0.266	
5	3551	5/13/2013	8:36	Bottom	E2	Day	Striped bass	M. saxatilis	LL	132	264	0.500	188	1.405	
5	3557	5/13/2013	21:10	Bottom	E2	Night	Striped bass	M. saxatilis	LL	201	804	0.250	176	4.566	
5	3557	5/13/2013	21:10	Bottom	E2	Night	Morone spp.	Morone spp.	LL	27	108	0.250	176	0.613	
5				Ebb Tide Total							1226		364	3.3686	Event Ebb Tide AverageBottom Density
5	3554	5/13/2013	11:11	Bottom	F1	Day	Morone spp.	Morone spp.	LL	2	8	0.250	227	0.035	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Striped bass	M. saxatilis	LL	188	752	0.250	227	3.314	

5	3560	5/13/2013	23:10	Bottom	F1	Night	Striped bass	M. saxatilis	LL	303	1212	0.250	200	6.065		
5	3560	5/13/2013	23:10	Bottom	F1	Night	Morone spp.	Morone spp.	LL	2	8	0.250	200	0.040		
5				Flood Tide Total							1980		427	4.6395	Event Flood Tide Average Bottom Density	
6	3563	5/20/2013	2:51	Bottom	E2	Night	Striped bass	M. saxatilis	LL	84	336	0.250	209	1.605		
6	3569	5/20/2013	14:00	Bottom	E2	Day	Striped bass	M. saxatilis	LL	150	300	0.500	245	1.223		
6				Ebb Tide Total							636		455	1.3988	Event Ebb Tide AverageBottom Density	
6	3566	5/20/2013	5:10	Bottom	F1	Night	Striped bass	M. saxatilis	LL	44	44	1.000	218	0.201		
6	3572	5/20/2013	17:10	Bottom	F1	Day	Striped bass	M. saxatilis	LL	105	105	1.000	207	0.508		
6	3572	5/20/2013	17:10	Bottom	F1	Day	Morone spp.	Morone spp.	LL	3	3	1.000	207	0.015		
6				Flood Tide Total							152		425	0.3577	Event Flood Tide Average Bottom Density	
7	3575	5/30/2013	11:30	Bottom	E2	Day	Striped bass	M. saxatilis	LL	111	111	1.000	223	0.498		
7	3575	5/30/2013	11:30	Bottom	E2	Day	Morone spp.	Morone spp.	LL	8	8	1.000	223	0.036		
7				Ebb Tide Total							119		223	0.5334	Event Ebb Tide AverageBottom Density	
7	3578	5/30/2013	13:39	Bottom	F1	Day	Striped bass	M. saxatilis	LL	117	117	1.000	199	0.589		
7	3578	5/30/2013	13:39	Bottom	F1	Day	Morone spp.	Morone spp.	LL	31	31	1.000	199	0.156		
7				Flood Tide Total							148		199	0.7448	Event Flood Tide Average Bottom Density	
8	3581	6/6/2013	4:15	Bottom	E2	Night	Morone spp.	Morone spp.	LL	78	78	1.000	270	0.289		
8	3581	6/6/2013	4:15	Bottom	E2	Night	Striped bass	M. saxatilis	LL	57	57	1.000	270	0.211		
8	3587	6/6/2013	17:07	Bottom	E2	Day	Striped bass	M. saxatilis	LL	260	260	1.000	228	1.142		
8				Ebb Tide Total							395		498	0.7937	Event Ebb Tide AverageBottom Density	
8	3584	6/6/2013	7:54	Bottom	F1	Day	Striped bass	M. saxatilis	LL	32	32	1.000	178	0.179		
8	3584	6/6/2013	7:54	Bottom	F1	Day	Morone spp.	Morone spp.	LL	9	9	1.000	178	0.050	Chewed up	
8	3590	6/6/2013	21:36	Bottom	F1	Night	Morone spp.	Morone spp.	LL	29	29	1.000	179	0.162		
8	3590	6/6/2013	21:36	Bottom	F1	Night	Striped bass	M. saxatilis	LL	86	86	1.000	179	0.479		
8				Flood Tide Total							156		358	0.4359	Event Flood Tide Average Bottom Density	
				Spawning Season Ebb Tide Bottom Total							**9915**		**3369**	**2.943**	**Ebb Tide Bottom Average Density**	
				Spawning Season Flood Tide Bottom Total							**4456**		**2943**	**1.514**	**Flood Tide Bottom Average Density**	
EGGS																
1	3501	4/17/2013	11:14	Surface	E2	Day	Striped bass	M. saxatilis	EE	20	20	1.000	268	0.075		
1	3507	4/17/2013	21:38	Surface	E2	Night	Striped bass	M. saxatilis	EE	1	1	1.000	231	0.004		
1				Ebb Tide Total							21		498	0.0421	Event Ebb Tide Average Surface Density	
1	3504	4/17/2013	14:35	Surface	F1	Day	Striped bass	M. saxatilis	EE	19	19	1.000	230	0.083		
1	3510	4/18/2013	3:10	Surface	F1	Night	Striped bass	M. saxatilis	EE	43	43	1.000	211	0.204		
1				Flood Tide Total							62		441	0.1406	Event Flood Tide Average Surface Density	
2	3513	4/24/2013	17:25	Surface	E2	Day	Striped bass	M. saxatilis	EE	21	21	1.000	193	0.109		
2	3519	4/25/2013	5:15	Surface	E2	Night	Striped bass	M. saxatilis	EE	19	19	1.000	261	0.073		
2				Ebb Tide Total							40		454	0.0881	Event Ebb Tide Average Surface Density	
2	3516	4/24/2013	20:55	Surface	F1	Night	Striped bass	M. saxatilis	EE	54	54	1.000	268	0.201		
2	3522	4/25/2013	9:05	Surface	F1	Day	Striped bass	M. saxatilis	EE	1	1	1.000	245	0.004		

2				Flood Tide Total							55		513	0.1071	Event Flood Tide Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Striped bass	M. saxatilis	EE	63	63	1.000	263	0.239	
3	3531	4/30/2013	22:48	Surface	E2	Night	Striped bass	M. saxatilis	EE	20	20	1.000	264	0.076	
3				Ebb Tide Total							83		527	0.1574	Event Ebb Tide Average Surface Density
3	3528	4/30/2013	13:30	Surface	F1	Day	Striped bass	M. saxatilis	EE	158	158	1.000	299	0.528	
3	3534	5/1/2013	1:33	Surface	F1	Night	Striped bass	M. saxatilis	EE	62	62	1.000	191	0.324	
3				Flood Tide Total							220		490	0.4486	Event Flood Tide Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	Striped bass	M. saxatilis	EE	43	344	0.125	382	0.900	
4	3543	5/9/2013	16:55	Surface	E2	Day	Striped bass	M. saxatilis	EE	7	7	1.000	233	0.030	
4				Ebb Tide Total							351		615	0.5704	Event Ebb Tide Average Surface Density
4	3540	5/9/2013	8:21	Surface	F1	Day	Striped bass	M. saxatilis	EE	50	50	1.000	245	0.204	
4	3546	5/9/2013	21:25	Surface	F1	Night	Striped bass	M. saxatilis	EE	15	240	0.625	211	1.135	
4				Flood Tide Total							290		457	0.6348	Event Flood Tide Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	278	0.000	
5	3555	5/13/2013	21:10	Surface	E2	Night	Striped bass	Eggs	EE	0	0	1.000	295	0.000	
5				Ebb Tide Total							0		573	0.0000	Event Ebb Tide Average Surface Density
5	3552	5/13/2013	11:11	Surface	F1	Day	Striped bass	M. saxatilis	EE	5	5	1.000	316	0.016	
5	3558	5/13/2013	23:10	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	276	0.000	
5				Flood Tide Total							5		592	0.0084	Event Flood Tide Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Striped bass	M. saxatilis	EE	3	12	0.250	245	0.049	
6	3567	5/20/2013	14:00	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	268	0.000	
6				Ebb Tide Total							12		513	0.0234	Event Ebb Tide Average Surface Density
6	3564	5/20/2013	5:10	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	225	0.000	
6	3570	5/20/2013	17:10	Surface	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	216	0.014	
6				Flood Tide Total							3		441	0.0068	Event Flood Tide Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	312	0.000	
7				Ebb Tide Total							0		312	0.0000	Event Ebb Tide Average Surface Density
7	3576	5/30/2013	13:39	Surface	F1	Day	Striped bass	M. saxatilis	EE	4	8	0.500	290	0.028	
7				Flood Tide Total							8		290	0.0276	Event Flood Tide Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	Striped bass	Eggs	EE	0	0	1.000	368	0.000	
8	3585	6/6/2013	17:07	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	260	0.000	
8				Ebb Tide Total							0		627	0.0000	Event Ebb Tide Average Surface Density
8	3582	6/6/2013	7:54	Surface	F1	Day	Striped bass	M. saxatilis	EE	2	2	1.000	212	0.009	
8	3588	6/6/2013	21:36	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	165	0.000	
8				Flood Tide Total							2		377	0.0053	Event Flood Tide Average Surface Density
Spawning Season Ebb Tide Surface Total											**507**		**4120**	**0.123**	**Ebb Tide Surface Average Density**
Spawning Season Flood Tide Surface Total											**645**		**3602**	**0.179**	**Flood Tide Surface Average Density**

1	3502	4/17/2013	11:14	Mid	E2	Day	Striped bass	M. saxatilis	EE	14	14	1.000	240	0.058	
1	3508	4/17/2013	21:38	Mid	E2	Night	Striped bass	M. saxatilis	EE	4	4	1.000	184	0.022	
1				Ebb Tide Total							18		424	0.0424	Event Ebb Tide Average Mid-Depth Density
1	3505	4/17/2013	14:35	Mid	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	175	0.017	
1	3511	4/18/2013	3:10	Mid	F1	Night	Striped bass	M. saxatilis	EE	62	62	1.000	152	0.408	
1				Flood Tide Total							65		326	0.1991	Event Flood Tide Average Mid-Depth Density
2	3514	4/24/2013	17:25	Mid	E2	Day	Striped bass	M. saxatilis	EE	5	5	1.000	142	0.035	
2	3520	4/25/2013	5:15	Mid	E2	Night	Striped bass	M. saxatilis	EE	7	7	1.000	196	0.036	
2				Ebb Tide Total							12		338	0.0355	Event Ebb Tide Average Mid-Depth Density
2	3517	4/24/2013	20:55	Mid	F1	Night	Striped bass	M. saxatilis	EE	24	24	1.000	142	0.169	
2	3523	4/25/2013	9:05	Mid	F1	Day	Striped bass	M. saxatilis	EE	5	5	1.000	182	0.027	
2				Flood Tide Total							29		325	0.0894	Event Flood Tide Average Mid-Depth Density
3	3526	4/30/2013	11:12	Mid	E2	Day	Striped bass	M. saxatilis	EE	148	296	0.500	188	1.579	
3	3532	4/30/2013	22:48	Mid	E2	Night	Striped bass	M. saxatilis	EE	125	125	1.000	178	0.704	
3				Ebb Tide Total							421		365	1.1531	Event Ebb Tide Average Mid-Depth Density
3	3529	4/30/2013	13:30	Mid	F1	Day	Striped bass	M. saxatilis	EE	92	92	1.000	156	0.588	
3	3535	5/1/2013	1:33	Mid	F1	Night	Striped bass	M. saxatilis	EE	200	200	1.000	151	1.323	
3				Flood Tide Total							292		308	0.9493	Event Flood Tide Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Striped bass	M. saxatilis	EE	90	1440	0.063	321	4.490	
4	3544	5/9/2013	16:55	Mid	E2	Day	Striped bass	M. saxatilis	EE	7	28	0.250	176	0.159	
4				Ebb Tide Total							1468		497	2.9554	Event Ebb Tide Average Mid-Depth Density
4	3541	5/9/2013	8:21	Mid	F1	Day	Striped bass	M. saxatilis	EE	50	50	1.000	218	0.229	
4	3547	5/9/2013	21:25	Mid	F1	Night	Striped bass	M. saxatilis	EE	8	32	0.250	199	0.161	
4				Flood Tide Total							82		418	0.1964	Event Flood Tide Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	205	0.000	
5	3556	5/13/2013	21:10	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	185	0.000	
5				Ebb Tide Total							0		390	0.0000	Event Ebb Tide Average Mid-Depth Density
5	3553	5/13/2013	11:11	Mid	F1	Day	Striped bass	M. saxatilis	EE	4	8	0.500	197	0.041	
5	3559	5/13/2013	23:10	Mid	F1	Night	Striped bass	Eggs	EE	0	0	1.000	200	0.000	
5				Flood Tide Total							8		398	0.0201	Event Flood Tide Average Mid-Depth Density
6	3562	5/20/2013	2:51	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	194	0.000	
6	3568	5/20/2013	14:00	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	229	0.000	
6				Ebb Tide Total							0		424	0.0000	Event Ebb Tide Average Mid-Depth Density
6	3565	5/20/2013	5:10	Mid	F1	Night	Striped bass	M. saxatilis	EE	1	2	0.250	196	0.010	
6	3571	5/20/2013	17:10	Mid	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	190	0.016	
6				Flood Tide Total							5		386	0.0130	Event Flood Tide Average Mid-Depth Density
7	3574	5/30/2013	11:30	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	227	0.000	
7				Ebb Tide Total							0		227	0.0000	Event Ebb Tide Average Mid-Depth Density

7	3577	5/30/2013	13:39	Mid	F1	Day	Striped bass	M. saxatilis	EE	1	2	0.500	207	0.010	
7				Flood Tide Total							2		207	0.0096	Event Flood Tide Average Mid-Depth Density
8	3580	6/6/2013	4:15	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	272	0.000	
8	3586	6/6/2013	17:07	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	248	0.000	
8				Ebb Tide Total							0		520	0.0000	Event Ebb Tide Average Mid-Depth Density
8	3583	6/6/2013	7:54	Mid	F1	Day	Striped bass	Eggs	EE	0	0	1.000	183	0.000	
8	3589	6/6/2013	21:36	Mid	F1	Night	Striped bass	Eggs	EE	0	0	1.000	173	0.000	
8				Flood Tide Total							0		356	0.0000	Event Flood Tide Average Mid-Depth Density
				Spawning Season Ebb Tide Mid-Depth Total							**1919**		**3184**	**0.603**	**Ebb Tide Mid-Depth Average Density**
				Spawning Season Flood Tide Mid-Depth Total							**483**		**2724**	**0.177**	**Flood Tide Mid-Depth Average Density**
1	3503	4/17/2013	11:14	Bottom	E2	Day	Striped bass	M. saxatilis	EE	56	56	1.000	249	0.225	
1	3509	4/17/2013	21:38	Bottom	E2	Night	Striped bass	M. saxatilis	EE	12	12	1.000	237	0.051	
1				Ebb Tide Total							68		486	0.1400	Event Ebb Tide Average Bottom Density
1	3506	4/17/2013	14:35	Bottom	F1	Day	Striped bass	M. saxatilis	EE	16	16	1.000	205	0.078	
1	3512	4/18/2013	3:10	Bottom	F1	Night	Striped bass	M. saxatilis	EE	75	75	1.000	126	0.593	
1				Flood Tide Total							91		332	0.2742	Event Flood Tide Average Bottom Density
2	3515	4/24/2013	17:25	Bottom	E2	Day	Striped bass	M. saxatilis	EE	150	150	1.000	181	0.828	
2	3521	4/25/2013	5:15	Bottom	E2	Night	Striped bass	M. saxatilis	EE	40	40	1.000	202	0.198	
2				Ebb Tide Total							190		383	0.4963	Event Ebb Tide Average Bottom Density
2	3518	4/24/2013	20:55	Bottom	F1	Night	Striped bass	M. saxatilis	EE	26	26	1.000	148	0.175	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Striped bass	M. saxatilis	EE	20	20	1.000	223	0.090	
2				Flood Tide Total							46		371	0.1239	Event Flood Tide Average Bottom Density
3	3527	4/30/2013	11:12	Bottom	E2	Day	Striped bass	M. saxatilis	EE	106	848	0.125	226	3.760	
3	3533	4/30/2013	22:48	Bottom	E2	Night	Striped bass	M. saxatilis	EE	131	262	0.500	201	1.307	
3				Ebb Tide Total							1110		426	2.6052	Event Ebb Tide Average Bottom Density
3	3530	4/30/2013	13:30	Bottom	F1	Day	Striped bass	M. saxatilis	EE	217	434	0.500	196	2.218	
3	3536	5/1/2013	1:33	Bottom	F1	Night	Striped bass	M. saxatilis	EE	132	264	0.500	173	1.530	
3				Flood Tide Total							698		368	1.8955	Event Flood Tide Average Bottom Density
4	3539	5/9/2013	4:53	Bottom	E2	Night	Striped bass	M. saxatilis	EE	82	1312	0.063	340	3.863	
4	3545	5/9/2013	16:55	Bottom	E2	Day	Striped bass	M. saxatilis	EE	95	1520	0.063	196	7.771	
4				Ebb Tide Total							2832		535	5.2915	Event Ebb Tide Average Bottom Density
4	3542	5/9/2013	8:21	Bottom	F1	Day	Striped bass	M. saxatilis	EE	181	362	0.500	241	1.499	
4	3548	5/9/2013	21:25	Bottom	F1	Night	Striped bass	M. saxatilis	EE	23	184	0.125	222	0.829	
4				Flood Tide Total							546		463	1.1783	Event Flood Tide Average Bottom Density
5	3551	5/13/2013	8:36	Bottom	E2	Day	Striped bass	M. saxatilis	EE	6	12	0.500	188	0.064	
5	3557	5/13/2013	21:10	Bottom	E2	Night	Striped bass	Eggs	EE	0	0	1.000	176	0.000	
5				Ebb Tide Total							12		364	0.0330	Event Ebb Tide Average Bottom Density

Appendix B
Table B.4 - River Herring By Tide
Entrainment Impact Assessment
[redacted]
Wilmington, Delaware

Event	Tag #	Start Date	Start Time	Depth	Tide	Day/Night	Common name	Scientific Name	Lifestage (fish/eggs)	# Counted	Expanded Total Fish Count	Splits	Sample Volume	Density (Count/m^3)	Comments
1	3501	4/17/2013	11:14	Surface	E2	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	268	0.02	
1	3507	4/17/2013	21:38	Surface	E2	Night	Alewife	A. pseudoharengus	LL	4	4	1.000	231	0.02	
1				Ebb Tide Total							9		498	0.0181	Event EbbTide Average Surface Density
1	3504	4/17/2013	14:35	Surface	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	230	0.00	
1	3510	4/18/2013	3:10	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	211	0.00	
1				Flood Tide Total							0		441	0.0000	Event Flood Tide Average Surface Density
2	3513	4/24/2013	17:25	Surface	E2	Day	Alosa spp.	Alosa spp.	LL	4	4	1.000	193	0.02	
2	3513	4/24/2013	17:25	Surface	E2	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	193	0.03	
2	3519	4/25/2013	5:15	Surface	E2	Night	Alosa spp.	Alosa spp.	LL	5	5	1.000	261	0.02	
2	3519	4/25/2013	5:15	Surface	E2	Night	Alewife	A. pseudoharengus	LL	7	7	1.000	261	0.03	
2				Ebb Tide Total							21		454	0.046	Event EbbTide Average Surface Density
2	3516	4/24/2013	20:55	Surface	F1	Night	Alosa spp.	Alosa spp.	LL	3	3	1.000	268	0.01	
2	3516	4/24/2013	20:55	Surface	F1	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	268	0.01	
2	3522	4/25/2013	9:05	Surface	F1	Day	Alosa spp.	Alosa spp.	LL	2	2	1.000	245	0.01	
2	3522	4/25/2013	9:05	Surface	F1	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	245	0.02	
2				Flood Tide Total							12		513	0.023	Event Flood Tide Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	263	0.00	
3	3531	4/30/2013	22:48	Surface	E2	Night	Alewife	A. pseudoharengus	LL	1	1	1.000	264	0.00	
3				Ebb Tide Total							2		527	0.0038	Event EbbTide Average Surface Density
3	3528	4/30/2013	13:30	Surface	F1	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	299	0.00	
3	3534	5/1/2013	1:33	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	191	0.00	
3				Flood Tide Total							1		490	0.0020	Event Flood Tide Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	River Herring	Alosa spp.	LL	0	0	0.125	382	0.00	
4	3543	5/9/2013	16:55	Surface	E2	Day	Alewife	A. pseudoharengus	LL	10	10	1.000	233	0.04	
4				Ebb Tide Total							10		615	0.016	Event EbbTide Average Surface Density
4	3540	5/9/2013	8:21	Surface	F1	Day	Alewife	A. pseudoharengus	LL	8	8	1.000	245	0.03	
4	3546	5/9/2013	21:25	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	0.063	211	0.00	
4				Flood Tide Total							8		457	0.018	Event Flood Tide Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Alewife	A. pseudoharengus	LL	1	16	0.063	278	0.06	
5	3555	5/13/2013	21:10	Surface	E2	Night	Alewife	A. pseudoharengus	LL	2	8	0.250	295	0.03	
5				Ebb Tide Total							24		573	0.042	Event EbbTide Average Surface Density

5	3552	5/13/2013	11:11	Surface	F1	Day	Alewife	A. pseudoharengus	LL	8	8	1.000	316	0.03	
5	3558	5/13/2013	23:10	Surface	F1	Night	Alewife	A. pseudoharengus	LL	2	16	0.125	276	0.06	
5				Flood Tide Total							24		592	0.041	Event Flood Tide Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Alewife	A. pseudoharengus	LL	10	40	0.250	245	0.16	
6	3567	5/20/2013	14:00	Surface	E2	Day	Alewife	A. pseudoharengus	LL	13	52	0.250	268	0.19	
6				Ebb Tide Total							92		513	0.179	Event EbbTide Average Surface Density
6	3564	5/20/2013	5:10	Surface	F1	Night	Alewife	A. pseudoharengus	LL	7	56	0.125	225	0.25	
6	3564	5/20/2013	5:10	Surface	F1	Night	American shad	A. sapidissima	LL	4	32	0.125	225	0.14	
6	3570	5/20/2013	17:10	Surface	F1	Day	American shad	A. sapidissima	LL	1	1	1.000	216	0.00	
6	3570	5/20/2013	17:10	Surface	F1	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	216	0.01	
6				Flood Tide Total							92		441	0.21	Event Flood Tide Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	312	0.01	
7				Ebb Tide Total							2		312	0.006	Event EbbTide Average Surface Density
7	3576	5/30/2013	13:39	Surface	F1	Day	Alewife	A. pseudoharengus	LL	25	50	0.500	290	0.17	
7				Flood Tide Total							50		290	0.173	Event Flood Tide Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	368	0.00	
8	3585	6/6/2013	17:07	Surface	E2	Day	Alewife	A. pseudoharengus	LL	7	7	1.000	260	0.03	
8				Ebb Tide Total							7		627	0.0112	Event EbbTide Average Surface Density
8	3582	6/6/2013	7:54	Surface	F1	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	212	0.01	
8	3588	6/6/2013	21:36	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	165	0.00	
8				Flood Tide Total							2		377	0.0053	Event Flood Tide Average Surface Density
				Spawning Season Ebb Tide Surface Total							**167**		**4120**	**0.041**	**Ebb Tide Surface Average Density**
				Spawning Season Flood Tide Surface Total							**189**		**3602**	**0.052**	**Flood Tide Surface Average Density**
1	3502	4/17/2013	11:14	Mid	E2	Day	River Herring	Alosa spp.	LL	0	0	1.000	240	0.00	
1	3508	4/17/2013	21:38	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	184	0.01	
1				Ebb Tide Total							2		424	0.0047	Event Ebb Tide Average Mid-Depth Density
1	3505	4/17/2013	14:35	Mid	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	175	0.00	
1	3511	4/18/2013	3:10	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	152	0.00	
1				Flood Tide Total							0		326	0.0000	Event Flood Tide Average Mid-Depth Density
2	3514	4/24/2013	17:25	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	142	0.01	
2	3520	4/25/2013	5:15	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	196	0.01	
2	3520	4/25/2013	5:15	Mid	E2	Night	Alosa spp.	Alosa spp.	LL	3	3	1.000	196	0.02	
2				Ebb Tide Total							7		338	0.021	Event Ebb Tide Average Mid-Depth Density
2	3517	4/24/2013	20:55	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	142	0.00	
2	3523	4/25/2013	9:05	Mid	F1	Day	Alewife	A. pseudoharengus	LL	6	6	1.000	182	0.03	
2	3523	4/25/2013	9:05	Mid	F1	Day	Alosa spp.	Alosa spp.	LL	1	1	1.000	182	0.01	
2				Flood Tide Total							7		325	0.022	Event Flood Tide Average Mid-Depth Density

3	3526	4/30/2013	11:12	Mid	E2	Day	Alewife	A. pseudoharengus	LL	5	10	0.500	188	0.05	
3	3532	4/30/2013	22:48	Mid	E2	Night	Alewife	A. pseudoharengus	LL	3	3	1.000	178	0.02	
3				Ebb Tide Total							13		365	0.036	Event Ebb Tide Average Mid-Depth Density
3	3529	4/30/2013	13:30	Mid	F1	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	156	0.02	
3	3535	5/1/2013	1:33	Mid	F1	Night	Alewife	A. pseudoharengus	LL	1	1	1.000	151	0.01	
3	3535	5/1/2013	1:33	Mid	F1	Night	Alosa spp.	Alosa spp.	LL	1	1	1.000	151	0.01	
3				Flood Tide Total							5		308	0.016	Event Flood Tide Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	32	0.063	321	0.10	
4	3544	5/9/2013	16:55	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	8	0.250	176	0.05	
4				Ebb Tide Total							40		497	0.081	Event Ebb Tide Average Mid-Depth Density
4	3541	5/9/2013	8:21	Mid	F1	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	218	0.02	
4	3547	5/9/2013	21:25	Mid	F1	Night	Alewife	A. pseudoharengus	LL	2	8	0.250	199	0.04	
4				Flood Tide Total							13		418	0.031	Event Flood Tide Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	River Herring	Alosa spp.	LL	0	0	0.063	205	0.00	
5	3556	5/13/2013	21:10	Mid	E2	Night	River Herring	Alosa spp.	LL	0	0	0.500	185	0.00	
5				Ebb Tide Total							0		390	0.000	Event Ebb Tide Average Mid-Depth Density
5	3553	5/13/2013	11:11	Mid	F1	Day	Alewife	A. pseudoharengus	LL	11	22	0.500	197	0.11	
5	3559	5/13/2013	23:10	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	0.250	200	0.00	
5				Flood Tide Total							22		398	0.055	Event Flood Tide Average Mid-Depth Density
6	3562	5/20/2013	2:51	Mid	E2	Night	American shad	A. sapidissima	LL	3	12	0.250	194	0.06	
6	3562	5/20/2013	2:51	Mid	E2	Night	Alewife	A. pseudoharengus	LL	28	112	0.250	194	0.58	
6	3568	5/20/2013	14:00	Mid	E2	Day	Alewife	A. pseudoharengus	LL	18	18	1.000	229	0.08	
6	3568	5/20/2013	14:00	Mid	E2	Day	American shad	A. sapidissima	LL	1	1	1.000	229	0.00	
6				Ebb Tide Total							143		424	0.34	Event Ebb Tide Average Mid-Depth Density
6	3565	5/20/2013	5:10	Mid	F1	Night	Alewife	A. pseudoharengus	LL	9	18	0.250	196	0.09	
6	3565	5/20/2013	5:10	Mid	F1	Night	American shad	A. sapidissima	LL	1	2	0.250	196	0.01	
6	3571	5/20/2013	17:10	Mid	F1	Day	American shad	A. sapidissima	LL	4	4	1.000	190	0.02	
6				Flood Tide Total							24		386	0.06	Event Flood Tide Average Mid-Depth Density
7	3574	5/30/2013	11:30	Mid	E2	Day	Alewife	A. pseudoharengus	LL	4	4	1.000	227	0.02	
7				Ebb Tide Total							4		227	0.018	Event Ebb Tide Average Mid-Depth Density
7	3577	5/30/2013	13:39	Mid	F1	Day	Alewife	A. pseudoharengus	LL	4	8	0.500	207	0.04	
7				Flood Tide Total							8		207	0.039	Event Flood Tide Average Mid-Depth Density
8	3580	6/6/2013	4:15	Mid	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	272	0.00	
8	3586	6/6/2013	17:07	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	248	0.01	
8				Ebb Tide Total							2		520	0.0038	Event Ebb Tide Average Mid-Depth Density
8	3583	6/6/2013	7:54	Mid	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	183	0.00	
8	3589	6/6/2013	21:36	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	173	0.00	

8				Flood Tide Total							0		356	0.0000	Event Flood Tide Average Mid-Depth Density	
Spawning Season Ebb Tide Mid-Depth Total											**211**		**3184**	**0.066**	**Mid-Depth Ebb Tide Average Density**	
Spawning Season Flood Tide Mid-Depth Total											**79**		**2724**	**0.029**	**Mid-Depth Flood Tide Average Density**	
1	3503	4/17/2013	11:14	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	249	0.01		
1	3509	4/17/2013	21:38	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	237	0.00		
1				Ebb Tide Total							3		486	0.0062	Event Ebb Tide Average Bottom Density	
1	3506	4/17/2013	14:35	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	205	0.00		
1	3512	4/18/2013	3:10	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	126	0.00		
1				Flood Tide Total							0		332	0.0000	Event Flood Tide Average Bottom Density	
2	3515	4/24/2013	17:25	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	14	14	1.000	181	0.08	PL	
2	3521	4/25/2013	5:15	Bottom	E2	Night	Alosa spp.	Alosa spp.	LL	4	4	1.000	202	0.02		
2				Ebb Tide Total							18		383	0.047	Event Ebb Tide Average Bottom Density	
2	3518	4/24/2013	20:55	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	148	0.00		
2	3524	4/25/2013	9:05	Bottom	F1	Day	Alosa spp.	Alosa spp.	LL	5	5	1.000	223	0.02		
2	3524	4/25/2013	9:05	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	223	0.01		
2				Flood Tide Total							7		371	0.019	Event Flood Tide Average Bottom Density	
3	3527	4/30/2013	11:12	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	0.125	226	0.00		
3	3533	4/30/2013	22:48	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	1	2	0.500	201	0.01		
3				Ebb Tide Total							2		426	0.0047	Event Ebb Tide Average Bottom Density	
3	3530	4/30/2013	13:30	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	1	2	0.500	196	0.01		
3	3536	5/1/2013	1:33	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.500	173	0.00		
3				Flood Tide Total							2		368	0.0054	Event Flood Tide Average Bottom Density	
4	3539	5/9/2013	4:53	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	1	16	0.063	340	0.05		
4	3545	5/9/2013	16:55	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	3	48	0.063	196	0.25		
4				Ebb Tide Total							64		535	0.120	Event Ebb Tide Average Bottom Density	
4	3542	5/9/2013	8:21	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	5	10	0.500	241	0.04		
4	3548	5/9/2013	21:25	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.125	222	0.00		
4				Flood Tide Total							10		463	0.022	Event Flood Tide Average Bottom Density	
5	3551	5/13/2013	8:36	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	4	8	0.500	188	0.04		
5	3557	5/13/2013	21:10	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	0.250	176	0.00		
5				Ebb Tide Total							8		364	0.022	Event Ebb Tide Average Bottom Density	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	3	12	0.250	227	0.05		
5	3560	5/13/2013	23:10	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.250	200	0.00		
5				Flood Tide Total							12		427	0.028	Event Flood Tide Average Bottom Density	
6	3563	5/20/2013	2:51	Bottom	E2	Night	Alosa spp.	Alosa spp.	LL	1	4	0.250	209	0.02		
6	3563	5/20/2013	2:51	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	16	64	0.250	209	0.31		

6	3569	5/20/2013	14:00	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	0.500	245	0.00	
6				Ebb Tide Total							68		455	0.150	Event Ebb Tide Average Bottom Density
6	3566	5/20/2013	5:10	Bottom	F1	Night	American shad	A. sapidissima	LL	8	8	1.000	218	0.04	
6	3572	5/20/2013	17:10	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	10	10	1.000	207	0.05	
6				Flood Tide Total							18		425	0.042	Event Flood Tide Average Bottom Density
7	3575	5/30/2013	11:30	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	1.000	223	0.00	
7				Ebb Tide Total							0		223	0.00	Event Ebb Tide Average Bottom Density
7	3578	5/30/2013	13:39	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	199	0.00	
7				Flood Tide Total							0		199	0.00	Event Flood Tide Average Bottom Density
8	3581	6/6/2013	4:15	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	270	0.00	
8	3587	6/6/2013	17:07	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	228	0.0044	
8				Ebb Tide Total							1		498	0.0020	Event Ebb Tide Average Bottom Density
8	3584	6/6/2013	7:54	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	178	0.00	
8	3590	6/6/2013	21:36	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	179	0.00	
8				Flood Tide Total							0		358	0.0000	Event Flood Tide Average Bottom Density
				Spawning Season Ebb Tide Total							**164**		**3369**	**0.049**	**Ebb Tide Bottom Average Density**
				Spawning Season Flood Tide Total							**49**		**2943**	**0.017**	**Flood Tide Bottom Average Density**

Appendix B
Table B.5 - Striped Bass By Daytime and Nighttime
Entrainment Impact Assessment
[redacted]
Wilmington, Delaware

Event	Tag #	Start Date	Start Time	Depth	Tide	Day/Night	Common name	Scientific Name	Lifestage (fish/eggs)	# Counted	Expanded Total Fish Count	Splits	Sample Volume	Density	Comments
1	3501	4/17/2013	11:14	Surface	E2	Day	Striped bass	M. saxatilis	LL	5	5	1.000	268	0.019	
1	3504	4/17/2013	14:35	Surface	F1	Day	Striped bass	M. saxatilis	LL	8	8	1.000	230	0.035	
1	3504	4/17/2013	14:35	Surface	F1	Day	Morone spp.	Morone spp.	LL	1	1	1.000	230	0.004	chewed up
1				Daytime Total							14		498	0.0281	Event Daytime Average Surface Density
1	3507	4/17/2013	21:38	Surface	E2	Night	Striped bass	M. saxatilis	LL	1	1	1.000	231	0.004	
1	3510	4/18/2013	3:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	2	2	1.000	211	0.009	
1				Nighttime Total							3		441	0.0068	Event Nighttime Average Surface Density
2	3513	4/24/2013	17:25	Surface	E2	Day	Striped bass	M. saxatilis	LL	33	33	1.000	193	0.171	
2	3522	4/25/2013	9:05	Surface	F1	Day	Striped bass	M. saxatilis	LL	6	6	1.000	245	0.024	
2				Daytime Total							39		438	0.0890	Event Daytime Average Surface Density
2	3519	4/25/2013	5:15	Surface	E2	Night	Striped bass	M. saxatilis	LL	28	28	1.000	261	0.107	
2	3516	4/24/2013	20:55	Surface	F1	Night	Striped bass	M. saxatilis	LL	12	12	1.000	268	0.045	
2				Nighttime Total							40		529	0.0756	Event Nighttime Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Morone spp.	Morone spp.	LL	2	2	1.000	263	0.008	
3	3525	4/30/2013	11:12	Surface	E2	Day	Striped bass	M. saxatilis	LL	13	13	1.000	263	0.049	
3	3528	4/30/2013	13:30	Surface	F1	Day	Striped bass	M. saxatilis	LL	14	14	1.000	299	0.047	
3				Daytime Total							29		562	0.0516	Event Daytime Average Surface Density
3	3531	4/30/2013	22:48	Surface	E2	Night	Striped bass	M. saxatilis	LL	32	32	1.000	264	0.121	
3	3531	4/30/2013	22:48	Surface	E2	Night	Morone spp.	Morone spp.	LL	4	4	1.000	264	0.015	
3	3534	5/1/2013	1:33	Surface	F1	Night	Striped bass	M. saxatilis	LL	61	61	1.000	191	0.319	
3				Nighttime Total							97		456	0.2129	Event Nighttime Average Surface Density
4	3540	5/9/2013	8:21	Surface	F1	Day	Striped bass	M. saxatilis	LL	50	50	1.000	245	0.204	
4	3543	5/9/2013	16:55	Surface	E2	Day	Striped bass	M. saxatilis	LL	4	4	1.000	233	0.017	
4				Daytime Total							54		478	0.1129	Event Daytime Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	Morone spp.	Morone spp.	LL	18	144	0.125	382	0.377	
4	3537	5/9/2013	4:53	Surface	E2	Night	Striped bass	M. saxatilis	LL	225	1800	0.125	382	4.707	
4	3546	5/9/2013	21:25	Surface	F1	Night	Morone spp.	Morone spp.	LL	9	144	0.063	211	0.681	
4	3546	5/9/2013	21:25	Surface	F1	Night	Striped bass	M. saxatilis	LL	298	4768	0.063	211	22.555	
4				Nighttime Total							6856		594	11.5463	Event Nighttime Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Striped bass	M.saxatilis	LL	184	2944	0.063	278	10.583	
5	3549	5/13/2013	8:36	Surface	E2	Day	Morone spp.	Morone spp.	LL	5	80	0.063	278	0.288	
5	3552	5/13/2013	11:11	Surface	F1	Day	Morone spp.	Morone spp.	LL	17	17	1.000	316	0.054	
5	3552	5/13/2013	11:11	Surface	F1	Day	Striped bass	M. saxatilis	LL	95	95	1.000	316	0.300	
5				Daytime Total							3136		594	5.2762	Event Daytime Average Surface Density

5	3555	5/13/2013	21:10	Surface	E2	Night	Striped bass	M. saxatilis	LL	237	948	0.250	295	3.217	
5	3555	5/13/2013	21:10	Surface	E2	Night	Morone spp.	Morone spp.	LL	10	40	0.250	295	0.136	
5	3558	5/13/2013	23:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	207	1656	0.125	276	6.003	
5	3558	5/13/2013	23:10	Surface	F1	Night	Morone spp.	Morone spp.	LL	2	16	0.125	276	0.058	
5				Nighttime Total							2660		571	4.6619	Event Nighttime Average Surface Density
6	3567	5/20/2013	14:00	Surface	E2	Day	Striped bass	M. saxatilis	LL	2	8	0.250	268	0.030	
6	3570	5/20/2013	17:10	Surface	F1	Day	Striped bass	M. saxatilis	LL	8	8	1.000	216	0.037	
6				Daytime Total							16		484	0.0330	Event Daytime Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Striped bass	M. saxatilis	LL	20	80	0.250	245	0.327	
6	3564	5/20/2013	5:10	Surface	F1	Night	Striped bass	M. saxatilis	LL	16	128	0.125	225	0.569	
6				Nighttime Total							208		470	0.4429	Event Nighttime Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Striped bass	M. saxatilis	LL	1	1	1.000	312	0.003	
7	3576	5/30/2013	13:39	Surface	F1	Day	Striped bass	M. saxatilis	LL	20	40	0.500	290	0.138	
7				Daytime Total							41		602	0.0681	Event Daytime Average Surface Density
7							No Nighttime Samples Collected								
8	3582	6/6/2013	7:54	Surface	F1	Day	Striped bass	M. saxatilis	LL	4	4	1.000	212	0.019	
8	3585	6/6/2013	17:07	Surface	E2	Day	Striped bass	M. saxatilis	LL	9	9	1.000	260	0.035	
8				Daytime Total							13		472	0.0275	Event Daytime Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	Striped bass	M. saxatilis	LL	59	59	1.000	368	0.161	
8	3579	6/6/2013	4:15	Surface	E2	Night	Morone spp.	Morone spp.	LL	6	6	1.000	368	0.016	
8	3588	6/6/2013	21:36	Surface	F1	Night	Striped bass	M. saxatilis	LL	332	332	1.000	165	2.012	
8	3588	6/6/2013	21:36	Surface	F1	Night	Morone spp.	Morone spp.	LL	7	7	1.000	165	0.042	
8				Nighttime Total							404		533	0.7587	Event Nighttime Average Surface Density
				Spawning Season Daytime Surface Total							**3342**		**4129**	**0.809**	**Daytime Surface Average Density**
				Spawning Season Nighttime Surface Total							**10268**		**3592**	**2.858**	**Nighttime Surface Average Density**
1	3502	4/17/2013	11:14	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	240	0.017	
1	3505	4/17/2013	14:35	Mid	F1	Day	Striped Bass	Larvae	LL	0	0	1.000	175	0.000	
1				Daytime Total							4		415	0.0096	Event Daytime Average Mid-Depth Density
1	3508	4/17/2013	21:38	Mid	E2	Night	Striped bass	M. saxatilis	LL	4	4	1.000	184	0.022	
1	3511	4/18/2013	3:10	Mid	F1	Night	Morone spp.	Morone spp.	LL	1	1	1.000	152	0.007	chewed up
1				Nighttime Total							5		336	0.0149	Event Nighttime Average Mid-Depth Density
2	3514	4/24/2013	17:25	Mid	E2	Day	Striped bass	M. saxatilis	LL	5	5	1.000	142	0.035	
2	3514	4/24/2013	17:25	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	142	0.028	
2	3523	4/25/2013	9:05	Mid	F1	Day	Striped bass	M. saxatilis	LL	5	5	1.000	182	0.027	
2				Daytime Total							14		325	0.0431	Event Daytime Average Mid-Depth Density
2	3517	4/24/2013	20:55	Mid	F1	Night	Striped bass	M. saxatilis	LL	16	16	1.000	142	0.113	
2	3520	4/25/2013	5:15	Mid	E2	Night	Striped bass	M. saxatilis	LL	52	52	1.000	196	0.265	
2				Nighttime Total							68		338	0.2009	Event Nighttime Average Mid-Depth Density

3	3526	4/30/2013	11:12	Mid	E2	Day	Striped bass	M. saxatilis	LL	120	240	0.500	188	1.280	
3	3529	4/30/2013	13:30	Mid	F1	Day	Striped bass	M. saxatilis	LL	28	28	1.000	156	0.179	
3				Daytime Total							268		344	0.7792	Event Daytime Average Mid-Depth Density
3	3532	4/30/2013	22:48	Mid	E2	Night	Striped bass	M. saxatilis	LL	44	44	1.000	178	0.248	
3	3535	5/1/2013	1:33	Mid	F1	Night	Striped bass	M. saxatilis	LL	80	80	1.000	151	0.529	
3				Nighttime Total							124		329	0.3771	Event Nighttime Average Mid-Depth Density
4	3541	5/9/2013	8:21	Mid	F1	Day	Striped bass	M. saxatilis	LL	27	27	1.000	218	0.124	
4	3544	5/9/2013	16:55	Mid	E2	Day	Striped bass	M. saxatilis	LL	225	900	0.250	176	5.113	
4				Daytime Total							927		394	2.3502	Event Daytime Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Striped bass	M. saxatilis	LL	216	3456	0.063	321	10.777	
4	3547	5/9/2013	21:25	Mid	F1	Night	Morone spp.	Morone spp.	LL	6	24	0.250	199	0.121	
4	3547	5/9/2013	21:25	Mid	F1	Night	Striped bass	M. saxatilis	LL	239	956	0.250	199	4.801	
4				Nighttime Total							4436		520	8.5340	Event Nighttime Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	Striped bass	M. saxatilis	LL	230	3680	0.063	205	17.931	
5	3550	5/13/2013	8:36	Mid	E2	Day	Morone spp.	Morone spp.	LL	6	96	0.063	205	0.468	
5	3553	5/13/2013	11:11	Mid	F1	Day	Striped bass	M. saxatilis	LL	132	264	0.500	197	1.337	
5	3553	5/13/2013	11:11	Mid	F1	Day	Morone spp.	Morone spp.	LL	3	6	0.500	197	0.030	
5				Daytime Total							4046		403	10.0471	Event Daytime Average Mid-Depth Density
5	3556	5/13/2013	21:10	Mid	E2	Night	Morone spp.	Morone spp.	LL	15	30	0.500	185	0.162	
5	3556	5/13/2013	21:10	Mid	E2	Night	Striped bass	M.saxatilis	LL	184	368	0.500	185	1.991	
5	3559	5/13/2013	23:10	Mid	F1	Night	Striped bass	M. saxatilis	LL	278	1112	0.250	200	5.549	
5				Nighttime Total							1510		385	3.9199	Event Nighttime Average Mid-Depth Density
6	3568	5/20/2013	14:00	Mid	E2	Day	Striped bass	M. saxatilis	LL	67	67	1.000	229	0.292	
6	3571	5/20/2013	17:10	Mid	F1	Day	Striped bass	M. saxatilis	LL	174	174	1.000	190	0.916	
6				Daytime Total							241		419	0.5748	Event Daytime Average Mid-Depth Density
6	3562	5/20/2013	2:51	Mid	E2	Night	Striped bass	M. saxatilis	LL	62	248	0.250	194	1.277	
6	3565	5/20/2013	5:10	Mid	F1	Night	Striped bass	M. saxatilis	LL	28	56	0.250	196	0.286	
6				Nighttime Total							304		390	0.7790	Event Nighttime Average Mid-Depth Density
7	3574	5/30/2013	11:30	Mid	E2	Day	Morone spp.	Morone spp.	LL	4	4	1.000	227	0.018	
7	3574	5/30/2013	11:30	Mid	E2	Day	Striped bass	M. saxatilis	LL	203	203	1.000	227	0.896	
7	3577	5/30/2013	13:39	Mid	F1	Day	Striped bass	M. saxatilis	LL	119	238	0.500	207	1.148	
7	3577	5/30/2013	13:39	Mid	F1	Day	Morone spp.	Morone spp.	LL	1	2	0.500	207	0.010	
7				Daytime Total							447		434	1.0304	Event Daytime Average Mid-Depth Density
7							No Nighttime Samples Collected								
8	3583	6/6/2013	7:54	Mid	F1	Day	Striped bass	M. saxatilis	LL	210	210	1.000	183	1.148	
8	3583	6/6/2013	7:54	Mid	F1	Day	Morone spp.	Morone spp.	LL	12	12	1.000	183	0.066	
8	3586	6/6/2013	17:07	Mid	E2	Day	Striped bass	M. saxatilis	LL	11	11	1.000	248	0.044	
8				Daytime Total							233		431	0.5406	Event Daytime Average Mid-Depth Density
8	3580	6/6/2013	4:15	Mid	E2	Night	Morone spp.	Morone spp.	LL	30	30	1.000	272	0.110	
8	3580	6/6/2013	4:15	Mid	E2	Night	Striped bass	M. saxatilis	LL	167	167	1.000	272	0.615	

8	3589	6/6/2013	21:36	Mid	F1	Night	Morone spp.	Morone spp.	LL	70	70	1.000	173	0.404	
8	3589	6/6/2013	21:36	Mid	F1	Night	Striped bass	M. saxatilis	LL	46	46	1.000	173	0.265	
8				Nighttime Total							313		445	0.7034	Event Nighttime Average Mid-Depth Density
				Spawning Season Daytime Mid-Depth Total							**6180**		**3165**	**1.953**	**Daytime Mid-Depth Average Density**
				Spawning Season Nighttime Mid-Depth Total							**6760**		**2743**	**2.464**	**Nighttime Mid-Depth Average Density**
1	3503	4/17/2013	11:14	Bottom	E2	Day	Striped bass	M. saxatilis	LL	17	17	1.000	249	0.068	
1	3506	4/17/2013	14:35	Bottom	F1	Day	Morone spp.	Morone spp.	LL	2	2	1.000	205	0.010	
1				Daytime Total							19		454	0.0418	Event Daytime AverageBottom Density
1	3509	4/17/2013	21:38	Bottom	E2	Night	Striped bass	M. saxatilis	LL	1	1	1.000	237	0.004	
1	3512	4/18/2013	3:10	Bottom	F1	Night	Striped Bass	Larvae	LL	0	0	1.000	126	0.000	
1				Nighttime Total							1		364	0.0028	Event Nighttime Average Bottom Density
2	3515	4/24/2013	17:25	Bottom	E2	Day	Striped bass	M. saxatilis	LL	94	94	1.000	181	0.519	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Morone spp.	Morone spp.	LL	27	27	1.000		0.121	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Striped bass	M. saxatilis	LL	35	35	1.000	223	0.157	
2				Daytime Total							156		404	0.3861	Event Daytime AverageBottom Density
2	3518	4/24/2013	20:55	Bottom	F1	Night	Striped bass	M. saxatilis	LL	10	10	1.000	148	0.067	
2	3521	4/25/2013	5:15	Bottom	E2	Night	Striped bass	M. saxatilis	LL	27	27	1.000	202	0.134	
2				Nighttime Total							37		350	0.1057	Event Nighttime Average Bottom Density
3	3527	4/30/2013	11:12	Bottom	E2	Day	Striped bass	M. saxatilis	LL	102	816	0.125	226	3.618	
3	3527	4/30/2013	11:12	Bottom	E2	Day	Morone spp.	Morone spp.	LL	3	24	0.125	226	0.106	
3	3530	4/30/2013	13:30	Bottom	F1	Day	Striped bass	M. saxatilis	LL	29	58	0.500	196	0.296	
3	3530	4/30/2013	13:30	Bottom	F1	Day	Morone spp.	Morone spp.	LL	3	6	0.500	196	0.031	
3				Daytime Total							904		421	2.1463	Event Daytime AverageBottom Density
3	3533	4/30/2013	22:48	Bottom	E2	Night	Striped bass	M. saxatilis	LL	64	128	0.500	201	0.638	
3	3536	5/1/2013	1:33	Bottom	F1	Night	Striped bass	M. saxatilis	LL	87	174	0.500	173	1.008	
3				Nighttime Total							302		373	0.8094	Event Nighttime Average Bottom Density
4	3542	5/9/2013	8:21	Bottom	F1	Day	Striped bass	M. saxatilis	LL	102	204	0.500	241	0.845	
4	3545	5/9/2013	16:55	Bottom	E2	Day	Striped bass	M. saxatilis	LL	275	4400	0.063	196	22.496	
4				Daytime Total							4604		437	10.5338	Event Daytime AverageBottom Density
4	3539	5/9/2013	4:53	Bottom	E2	Night	Striped bass	M. saxatilis	LL	127	2032	0.063	340	5.983	
4	3548	5/9/2013	21:25	Bottom	F1	Night	Striped bass	M. saxatilis	LL	188	1504	0.125	222	6.778	
4				Nighttime Total							3536		562	6.2973	Event Nighttime Average Bottom Density
5	3551	5/13/2013	8:36	Bottom	E2	Day	Morone spp.	Morone spp.	LL	25	50	0.500	188	0.266	
5	3551	5/13/2013	8:36	Bottom	E2	Day	Striped bass	M. saxatilis	LL	132	264	0.500	188	1.405	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Morone spp.	Morone spp.	LL	2	8	0.250	227	0.035	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Striped bass	M. saxatilis	LL	188	752	0.250	227	3.314	
5				Daytime Total							1074		415	2.5893	Event Daytime AverageBottom Density
5	3557	5/13/2013	21:10	Bottom	E2	Night	Striped bass	M. saxatilis	LL	201	804	0.250	176	4.566	
5	3557	5/13/2013	21:10	Bottom	E2	Night	Morone spp.	Morone spp.	LL	27	108	0.250	176	0.613	

5	3560	5/13/2013	23:10	Bottom	F1	Night	Striped bass	M. saxatilis	LL	303	1212	0.250	200	6.065		
5	3560	5/13/2013	23:10	Bottom	F1	Night	Morone spp.	Morone spp.	LL	2	8	0.250	200	0.040		
5				Nighttime Total							2132		376	5.6712	Event Nighttime Average Bottom Density	
6	3569	5/20/2013	14:00	Bottom	E2	Day	Striped bass	M. saxatilis	LL	150	300	0.500	245	1.223		
6	3572	5/20/2013	17:10	Bottom	F1	Day	Striped bass	M. saxatilis	LL	105	105	1.000	207	0.508		
6	3572	5/20/2013	17:10	Bottom	F1	Day	Morone spp.	Morone spp.	LL	3	3	1.000	207	0.015		
6				Daytime Total							408		452	0.9029	Event Daytime AverageBottom Density	
6	3563	5/20/2013	2:51	Bottom	E2	Night	Striped bass	M. saxatilis	LL	84	336	0.250	209	1.605		
6	3566	5/20/2013	5:10	Bottom	F1	Night	Striped bass	M. saxatilis	LL	44	44	1.000	218	0.201		
6				Nighttime Total							380		428	0.8884	Event Nighttime Average Bottom Density	
7	3575	5/30/2013	11:30	Bottom	E2	Day	Striped bass	M. saxatilis	LL	111	111	1.000	223	0.498		
7	3575	5/30/2013	11:30	Bottom	E2	Day	Morone spp.	Morone spp.	LL	8	8	1.000	223	0.036		
7	3578	5/30/2013	13:39	Bottom	F1	Day	Striped bass	M. saxatilis	LL	117	117	1.000	199	0.589		
7	3578	5/30/2013	13:39	Bottom	F1	Day	Morone spp.	Morone spp.	LL	31	31	1.000	199	0.156		
7				Daytime Total							267		422	0.6330	Event Daytime AverageBottom Density	
7							No Nighttime Samples Collected									
8	3584	6/6/2013	7:54	Bottom	F1	Day	Striped bass	M. saxatilis	LL	32	32	1.000	178	0.179		
8	3584	6/6/2013	7:54	Bottom	F1	Day	Morone spp.	Morone spp.	LL	9	9	1.000	178	0.050	Chewed up	
8	3587	6/6/2013	17:07	Bottom	E2	Day	Striped bass	M. saxatilis	LL	260	260	1.000	228	1.142		
8				Daytime Total							301		406	0.7410	Event Daytime AverageBottom Density	
8	3581	6/6/2013	4:15	Bottom	E2	Night	Morone spp.	Morone spp.	LL	78	78	1.000	270	0.289		
8	3581	6/6/2013	4:15	Bottom	E2	Night	Striped bass	M. saxatilis	LL	57	57	1.000	270	0.211		
8	3590	6/6/2013	21:36	Bottom	F1	Night	Morone spp.	Morone spp.	LL	29	29	1.000	179	0.162		
8	3590	6/6/2013	21:36	Bottom	F1	Night	Striped bass	M. saxatilis	LL	86	86	1.000	179	0.479		
8				Nighttime Total							250		449	0.5563	Event Nighttime Average Bottom Density	
				Spawning Season Daytime Bottom Total							**7733**		**3411**	**2.267**	**Daytime Bottom Average Density**	
				Spawning Season Nighttime Bottom Total							**6638**		**2901**	**2.288**	**Nighttime Bottom Average Density**	
EGGS																
1	3501	4/17/2013	11:14	Surface	E2	Day	Striped bass	M. saxatilis	EE	20	20	1.000	268	0.075		
1	3504	4/17/2013	14:35	Surface	F1	Day	Striped bass	M. saxatilis	EE	19	19	1.000	230	0.083		
1				Daytime Total							39		498	0.0783	Event Daytime Average Surface Density	
1	3507	4/17/2013	21:38	Surface	E2	Night	Striped bass	M. saxatilis	EE	1	1	1.000	231	0.004		
1	3510	4/18/2013	3:10	Surface	F1	Night	Striped bass	M. saxatilis	EE	43	43	1.000	211	0.204		
1				Nighttime Total							44		441	0.0997	Event Nighttime Average Surface Density	
2	3513	4/24/2013	17:25	Surface	E2	Day	Striped bass	M. saxatilis	EE	21	21	1.000	193	0.109		
2	3522	4/25/2013	9:05	Surface	F1	Day	Striped bass	M. saxatilis	EE	1	1	1.000	245	0.004		
2				Daytime Total							22		438	0.0502	Event Daytime Average Surface Density	
2	3516	4/24/2013	20:55	Surface	F1	Night	Striped bass	M. saxatilis	EE	54	54	1.000	268	0.201		
2	3519	4/25/2013	5:15	Surface	E2	Night	Striped bass	M. saxatilis	EE	19	19	1.000	261	0.073		

2				Nighttime Total							73		529	0.1380	Event Nighttime Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Striped bass	M. saxatilis	EE	63	63	1.000	263	0.239	
3	3528	4/30/2013	13:30	Surface	F1	Day	Striped bass	M. saxatilis	EE	158	158	1.000	299	0.528	
3				Daytime Total							221		562	0.3932	Event Daytime Average Surface Density
3	3531	4/30/2013	22:48	Surface	E2	Night	Striped bass	M. saxatilis	EE	20	20	1.000	264	0.076	
3	3534	5/1/2013	1:33	Surface	F1	Night	Striped bass	M. saxatilis	EE	62	62	1.000	191	0.324	
3				Nighttime Total							82		456	0.1800	Event Nighttime Average Surface Density
4	3540	5/9/2013	8:21	Surface	F1	Day	Striped bass	M. saxatilis	EE	50	50	1.000	245	0.204	
4	3543	5/9/2013	16:55	Surface	E2	Day	Striped bass	M. saxatilis	EE	7	7	1.000	233	0.030	
4				Daytime Total							57		478	0.1191	Event Daytime Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	Striped bass	M. saxatilis	EE	43	344	0.125	382	0.900	
4	3546	5/9/2013	21:25	Surface	F1	Night	Striped bass	M. saxatilis	EE	15	240	0.625	211	1.135	
4				Nighttime Total							584		594	0.9835	Event Nighttime Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	278	0.000	
5	3552	5/13/2013	11:11	Surface	F1	Day	Striped bass	M. saxatilis	EE	5	5	1.000	316	0.016	
5				Daytime Total							5		594	0.0084	Event Daytime Average Surface Density
5	3555	5/13/2013	21:10	Surface	E2	Night	Striped bass	Eggs	EE	0	0	1.000	295	0.000	
5	3558	5/13/2013	23:10	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	276	0.000	
5				Nighttime Total							0		571	0.0000	Event Nighttime Average Surface Density
6	3567	5/20/2013	14:00	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	268	0.000	
6	3570	5/20/2013	17:10	Surface	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	216	0.014	
6				Daytime Total							3		484	0.0062	Event Daytime Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Striped bass	M. saxatilis	EE	3	12	0.250	245	0.049	
6	3564	5/20/2013	5:10	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	225	0.000	
6				Nighttime Total							12		470	0.0256	Event Nighttime Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	312	0.000	
7	3576	5/30/2013	13:39	Surface	F1	Day	Striped bass	M. saxatilis	EE	4	8	0.500	290	0.028	
7				Daytime Total							8		602	0.0133	Event Daytime Average Surface Density
7							No Nighttime Samples Collected								
8	3582	6/6/2013	7:54	Surface	F1	Day	Striped bass	M. saxatilis	EE	2	2	1.000	212	0.009	
8	3585	6/6/2013	17:07	Surface	E2	Day	Striped bass	Eggs	EE	0	0	1.000	260	0.000	
8				Daytime Total							2		472	0.0042	Event Daytime Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	Striped bass	Eggs	EE	0	0	1.000	368	0.000	
8	3588	6/6/2013	21:36	Surface	F1	Night	Striped bass	Eggs	EE	0	0	1.000	165	0.000	
8				Nighttime Total							0		533	0.0000	Event Nighttime Average Surface Density
				Spawning Season Daytime Surface Total							**357**		**4129**	**0.086**	**Daytime Surface Average Density**
				Spawning Season Nighttime Surface Total							**795**		**3592**	**0.221**	**Nighttime Surface Average Density**

1	3502	4/17/2013	11:14	Mid	E2	Day	Striped bass	M. saxatilis	EE	14	14	1.000	240	0.058	
1	3505	4/17/2013	14:35	Mid	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	175	0.017	
1				Daytime Total							17		415	0.0410	Event Daytime Average Mid-Depth Density
1	3508	4/17/2013	21:38	Mid	E2	Night	Striped bass	M. saxatilis	EE	4	4	1.000	184	0.022	
1	3511	4/18/2013	3:10	Mid	F1	Night	Striped bass	M. saxatilis	EE	62	62	1.000	152	0.408	
1				Nighttime Total							66		336	0.1967	Event Nighttime Average Mid-Depth Density
2	3523	4/25/2013	9:05	Mid	F1	Day	Striped bass	M. saxatilis	EE	5	5	1.000	182	0.027	
2	3514	4/24/2013	17:25	Mid	E2	Day	Striped bass	M. saxatilis	EE	5	5	1.000	142	0.035	
2				Daytime Total							10		325	0.0308	Event Daytime Average Mid-Depth Density
2	3520	4/25/2013	5:15	Mid	E2	Night	Striped bass	M. saxatilis	EE	7	7	1.000	196	0.036	
2	3517	4/24/2013	20:55	Mid	F1	Night	Striped bass	M. saxatilis	EE	24	24	1.000	142	0.169	
2				Nighttime Total							31		338	0.0916	Event Nighttime Average Mid-Depth Density
3	3526	4/30/2013	11:12	Mid	E2	Day	Striped bass	M. saxatilis	EE	148	296	0.500	188	1.579	
3	3529	4/30/2013	13:30	Mid	F1	Day	Striped bass	M. saxatilis	EE	92	92	1.000	156	0.588	
3				Daytime Total							388		344	1.1281	Event Daytime Average Mid-Depth Density
3	3532	4/30/2013	22:48	Mid	E2	Night	Striped bass	M. saxatilis	EE	125	125	1.000	178	0.704	
3	3535	5/1/2013	1:33	Mid	F1	Night	Striped bass	M. saxatilis	EE	200	200	1.000	151	1.323	
3				Nighttime Total							325		329	0.9885	Event Nighttime Average Mid-Depth Density
4	3541	5/9/2013	8:21	Mid	F1	Day	Striped bass	M. saxatilis	EE	50	50	1.000	218	0.229	
4	3544	5/9/2013	16:55	Mid	E2	Day	Striped bass	M. saxatilis	EE	7	28	0.250	176	0.159	
4				Daytime Total							78		394	0.1978	Event Daytime Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Striped bass	M. saxatilis	EE	90	1440	0.063	321	4.490	
4	3547	5/9/2013	21:25	Mid	F1	Night	Striped bass	M. saxatilis	EE	8	32	0.250	199	0.161	
4				Nighttime Total							1472		520	2.8318	Event Nighttime Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	205	0.000	
5	3553	5/13/2013	11:11	Mid	F1	Day	Striped bass	M. saxatilis	EE	4	8	0.500	197	0.041	
5				Daytime Total							8		403	0.0199	Event Daytime Average Mid-Depth Density
5	3556	5/13/2013	21:10	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	185	0.000	
5	3559	5/13/2013	23:10	Mid	F1	Night	Striped bass	Eggs	EE	0	0	1.000	200	0.000	
5				Nighttime Total							0		385	0.0000	Event Nighttime Average Mid-Depth Density
6	3568	5/20/2013	14:00	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	229	0.000	
6	3571	5/20/2013	17:10	Mid	F1	Day	Striped bass	M. saxatilis	EE	3	3	1.000	190	0.016	
6				Daytime Total							3		419	0.0072	Event Daytime Average Mid-Depth Density
6	3562	5/20/2013	2:51	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	194	0.000	
6	3565	5/20/2013	5:10	Mid	F1	Night	Striped bass	M. saxatilis	EE	1	2	0.250	196	0.010	
6				Nighttime Total							2		390	0.0051	Event Nighttime Average Mid-Depth Density
7	3574	5/30/2013	11:30	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	227	0.000	
7	3577	5/30/2013	13:39	Mid	F1	Day	Striped bass	M. saxatilis	EE	1	2	0.500	207	0.010	

7				Daytime Total							2		434	0.0046	Event Daytime Average Mid-Depth Density
7							No Nighttime Samples Collected								
8	3583	6/6/2013	7:54	Mid	F1	Day	Striped bass	Eggs	EE	0	0	1.000	183	0.000	
8	3586	6/6/2013	17:07	Mid	E2	Day	Striped bass	Eggs	EE	0	0	1.000	248	0.000	
8				Daytime Total							0		431	0.0000	Event Daytime Average Mid-Depth Density
8	3580	6/6/2013	4:15	Mid	E2	Night	Striped bass	Eggs	EE	0	0	1.000	272	0.000	
8	3589	6/6/2013	21:36	Mid	F1	Night	Striped bass	Eggs	EE	0	0	1.000	173	0.000	
8				Nighttime Total							0		445	0.0000	Event Nighttime Average Mid-Depth Density
				Spawning Season Daytime Mid-Depth Total							**506**		**3165**	**0.160**	**Daytime Mid-Depth Average Density**
				Spawning Season Nighttime Mid-Depth Total							**1896**		**2743**	**0.691**	**Nighttime Mid-Depth Average Density**
1	3503	4/17/2013	11:14	Bottom	E2	Day	Striped bass	M. saxatilis	EE	56	56	1.000	249	0.225	
1	3506	4/17/2013	14:35	Bottom	F1	Day	Striped bass	M. saxatilis	EE	16	16	1.000	205	0.078	
1				Daytime Total							72		454	0.1585	Event Daytime Average Bottom Density
1	3512	4/18/2013	3:10	Bottom	F1	Night	Striped bass	M. saxatilis	EE	75	75	1.000	126	0.593	
1	3509	4/17/2013	21:38	Bottom	E2	Night	Striped bass	M. saxatilis	EE	12	12	1.000	237	0.051	
1				Nighttime Total							87		364	0.2393	Event Nighttime Average Bottom Density
2	3515	4/24/2013	17:25	Bottom	E2	Day	Striped bass	M. saxatilis	EE	150	150	1.000	181	0.828	
2	3524	4/25/2013	9:05	Bottom	F1	Day	Striped bass	M. saxatilis	EE	20	20	1.000	223	0.090	
2				Daytime Total							170		404	0.4207	Event Daytime Average Bottom Density
2	3518	4/24/2013	20:55	Bottom	F1	Night	Striped bass	M. saxatilis	EE	26	26	1.000	148	0.175	
2	3521	4/25/2013	5:15	Bottom	E2	Night	Striped bass	M. saxatilis	EE	40	40	1.000	202	0.198	
2				Nighttime Total							66		350	0.1886	Event Nighttime Average Bottom Density
3	3527	4/30/2013	11:12	Bottom	E2	Day	Striped bass	M. saxatilis	EE	106	848	0.125	226	3.760	
3	3530	4/30/2013	13:30	Bottom	F1	Day	Striped bass	M. saxatilis	EE	217	434	0.500	196	2.218	
3				Daytime Total							1282		421	3.0438	Event Daytime Average Bottom Density
3	3533	4/30/2013	22:48	Bottom	E2	Night	Striped bass	M. saxatilis	EE	131	262	0.500	201	1.307	
3	3536	5/1/2013	1:33	Bottom	F1	Night	Striped bass	M. saxatilis	EE	132	264	0.500	173	1.530	
3				Nighttime Total							526		373	1.4097	Event Nighttime Average Bottom Density
4	3542	5/9/2013	8:21	Bottom	F1	Day	Striped bass	M. saxatilis	EE	181	362	0.500	241	1.499	
4	3545	5/9/2013	16:55	Bottom	E2	Day	Striped bass	M. saxatilis	EE	95	1520	0.063	196	7.771	
4				Daytime Total							1882		437	4.3060	Event Daytime Average Bottom Density
4	3539	5/9/2013	4:53	Bottom	E2	Night	Striped bass	M. saxatilis	EE	82	1312	0.063	340	3.863	
4	3548	5/9/2013	21:25	Bottom	F1	Night	Striped bass	M. saxatilis	EE	23	184	0.125	222	0.829	
4				Nighttime Total							1496		562	2.6643	Event Nighttime Average Bottom Density
5	3551	5/13/2013	8:36	Bottom	E2	Day	Striped bass	M. saxatilis	EE	6	12	0.500	188	0.064	
5	3554	5/13/2013	11:11	Bottom	F1	Day	Striped bass	M. saxatilis	EE	8	32	0.250	227	0.141	
5				Daytime Total							44		415	0.1061	Event Daytime Average Bottom Density

Appendix B
Table B.6 - River Herring By Daytime and Nighttime
Entrainment Impact Assessment
[redacted]
Wilmington, Delaware

Event	Tag #	Start Date	Start Time	Depth	Tide	Day/Night	Common name	Scientific Name	Lifestage (fish/eggs)	# Counted	Expanded Total Fish Count	Splits	Sample Volume	Density (Count/m^3)	Comments
1	3501	4/17/2013	11:14	Surface	E2	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	268	0.02	
1	3504	4/17/2013	14:35	Surface	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	230	0.00	
1				Daytime Total							5		498	0.0100	Event Daytime Average Surface Density
1	3507	4/17/2013	21:38	Surface	E2	Night	Alewife	A. pseudoharengus	LL	4	4	1.000	231	0.02	
1	3510	4/18/2013	3:10	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	211	0.00	
1				Nighttime Total							4		441	0.0091	Event Nighttime Average Surface Density
2	3513	4/24/2013	17:25	Surface	E2	Day	Alosa spp.	Alosa spp.	LL	4	4	1.000	193	0.02	
2	3513	4/24/2013	17:25	Surface	E2	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	193	0.03	
2	3522	4/25/2013	9:05	Surface	F1	Day	Alosa spp.	Alosa spp.	LL	2	2	1.000	245	0.01	
2	3522	4/25/2013	9:05	Surface	F1	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	245	0.02	
2				Daytime Total							16		438	0.037	Event Daytime Average Surface Density
2	3516	4/24/2013	20:55	Surface	F1	Night	Alosa spp.	Alosa spp.	LL	3	3	1.000	268	0.01	
2	3516	4/24/2013	20:55	Surface	F1	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	268	0.01	
2	3519	4/25/2013	5:15	Surface	E2	Night	Alosa spp.	Alosa spp.	LL	5	5	1.000	261	0.02	
2	3519	4/25/2013	5:15	Surface	E2	Night	Alewife	A. pseudoharengus	LL	7	7	1.000	261	0.03	
2				Nighttime Total							17		529	0.032	Event Nighttime Average Surface Density
3	3525	4/30/2013	11:12	Surface	E2	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	263	0.00	
3	3528	4/30/2013	13:30	Surface	F1	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	299	0.00	
3				Daytime Total							2		562	0.0036	Event Daytime Average Surface Density
3	3531	4/30/2013	22:48	Surface	E2	Night	Alewife	A. pseudoharengus	LL	1	1	1.000	264	0.00	
3	3534	5/1/2013	1:33	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	191	0.00	
3				Nighttime Total							1		456	0.0022	Event Nighttime Average Surface Density
4	3540	5/9/2013	8:21	Surface	F1	Day	Alewife	A. pseudoharengus	LL	8	8	1.000	245	0.03	
4	3543	5/9/2013	16:55	Surface	E2	Day	Alewife	A. pseudoharengus	LL	10	10	1.000	233	0.04	
4				Daytime Total							18		478	0.038	Event Daytime Average Surface Density
4	3537	5/9/2013	4:53	Surface	E2	Night	River Herring	Alosa spp.	LL	0	0	0.125	382	0.00	
4	3546	5/9/2013	21:25	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	0.063	211	0.00	
4				Nighttime Total							0		594	0.000	Event Nighttime Average Surface Density
5	3549	5/13/2013	8:36	Surface	E2	Day	Alewife	A. pseudoharengus	LL	1	16	0.063	278	0.06	
5	3552	5/13/2013	11:11	Surface	F1	Day	Alewife	A. pseudoharengus	LL	8	8	1.000	316	0.03	
5				Daytime Total							24		594	0.040	Event Daytime Average Surface Density
5	3555	5/13/2013	21:10	Surface	E2	Night	Alewife	A. pseudoharengus	LL	2	8	0.250	295	0.03	
5	3558	5/13/2013	23:10	Surface	F1	Night	Alewife	A. pseudoharengus	LL	2	16	0.125	276	0.06	
5				Nighttime Total							24		571	0.042	Event Nighttime Average Surface Density

6	3567	5/20/2013	14:00	Surface	E2	Day	Alewife	A. pseudoharengus	LL	13	52	0.250	268	0.19	
6	3570	5/20/2013	17:10	Surface	F1	Day	American shad	A. sapidissima	LL	1	1	1.000	216	0.00	
6	3570	5/20/2013	17:10	Surface	F1	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	216	0.01	
6				Daytime Total							56		484	0.116	Event Daytime Average Surface Density
6	3561	5/20/2013	2:51	Surface	E2	Night	Alewife	A. pseudoharengus	LL	10	40	0.250	245	0.16	
6	3564	5/20/2013	5:10	Surface	F1	Night	Alewife	A. pseudoharengus	LL	7	56	0.125	225	0.25	
6	3564	5/20/2013	5:10	Surface	F1	Night	American shad	A. sapidissima	LL	4	32	0.125	225	0.14	
6				Nighttime Total							128		470	0.27	Event Nighttime Average Surface Density
7	3573	5/30/2013	11:30	Surface	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	312	0.01	
7	3576	5/30/2013	13:39	Surface	F1	Day	Alewife	A. pseudoharengus	LL	25	50	0.500	290	0.17	
7				Daytime Total							52		602	0.086	Event Daytime Average Surface Density
7							No Nighttime Samples								
8	3582	6/6/2013	7:54	Surface	F1	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	212	0.01	
8	3585	6/6/2013	17:07	Surface	E2	Day	Alewife	A. pseudoharengus	LL	7	7	1.000	260	0.03	
8				Daytime Total							9		472	0.0191	Event Daytime Average Surface Density
8	3579	6/6/2013	4:15	Surface	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	368	0.00	
8	3588	6/6/2013	21:36	Surface	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	165	0.00	
8				Nighttime Total							0		533	0.0000	Event Nighttime Average Surface Density
				Spawning Season Daytime Surface Total							**182**		**4129**	**0.044**	**Daytime Surface Average Density**
				Spawning Season Nighttime Surface Total							**174**		**3592**	**0.048**	**Nighttime Surface Average Density**
1	3502	4/17/2013	11:14	Mid	E2	Day	River Herring	Alosa spp.	LL	0	0	1.000	240	0.00	
1	3505	4/17/2013	14:35	Mid	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	175	0.00	
1				Daytime Total							0		415	0.0000	Event Daytime Average Mid-Depth Density
1	3508	4/17/2013	21:38	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	184	0.01	
1	3511	4/18/2013	3:10	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	152	0.00	
1				Nighttime Total							2		336	0.0060	Event Nighttime Average Mid-Depth Density
2	3514	4/24/2013	17:25	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	142	0.01	
2	3523	4/25/2013	9:05	Mid	F1	Day	Alewife	A. pseudoharengus	LL	6	6	1.000	182	0.03	
2	3523	4/25/2013	9:05	Mid	F1	Day	Alosa spp.	Alosa spp.	LL	1	1	1.000	182	0.01	
2				Daytime Total							9		325	0.028	Event Daytime Average Mid-Depth Density
2	3517	4/24/2013	20:55	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	142	0.00	
2	3520	4/25/2013	5:15	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	2	1.000	196	0.01	
2	3520	4/25/2013	5:15	Mid	E2	Night	Alosa spp.	Alosa spp.	LL	3	3	1.000	196	0.02	
2				Nighttime Total							5		338	0.015	Event Nighttime Average Mid-Depth Density
3	3526	4/30/2013	11:12	Mid	E2	Day	Alewife	A. pseudoharengus	LL	5	10	0.500	188	0.05	
3	3529	4/30/2013	13:30	Mid	F1	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	156	0.02	
3				Daytime Total							13		344	0.038	Event Daytime Average Mid-Depth Density
3	3532	4/30/2013	22:48	Mid	E2	Night	Alewife	A. pseudoharengus	LL	3	3	1.000	178	0.02	

3	3535	5/1/2013	1:33	Mid	F1	Night	Alewife	A. pseudoharengus	LL	1	1	1.000	151	0.01	
3	3535	5/1/2013	1:33	Mid	F1	Night	Alosa spp.	Alosa spp.	LL	1	1	1.000	151	0.01	
3				Nighttime Total							5		329	0.015	Event Nighttime Average Mid-Depth Density
4	3541	5/9/2013	8:21	Mid	F1	Day	Alewife	A. pseudoharengus	LL	5	5	1.000	218	0.02	
4	3544	5/9/2013	16:55	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	8	0.250	176	0.05	
4				Daytime Total							13		394	0.033	Event Daytime Average Mid-Depth Density
4	3538	5/9/2013	4:53	Mid	E2	Night	Alewife	A. pseudoharengus	LL	2	32	0.063	321	0.10	
4	3547	5/9/2013	21:25	Mid	F1	Night	Alewife	A. pseudoharengus	LL	2	8	0.250	199	0.04	
4				Nighttime Total							40		520	0.077	Event Nighttime Average Mid-Depth Density
5	3550	5/13/2013	8:36	Mid	E2	Day	River Herring	Alosa spp.	LL	0	0	0.063	205	0.00	
5	3553	5/13/2013	11:11	Mid	F1	Day	Alewife	A. pseudoharengus	LL	11	22	0.500	197	0.11	
5				Daytime Total							22		403	0.055	Event Daytime Average Mid-Depth Density
5	3556	5/13/2013	21:10	Mid	E2	Night	River Herring	Alosa spp.	LL	0	0	0.500	185	0.00	
5	3559	5/13/2013	23:10	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	0.250	200	0.00	
5				Nighttime Total							0		385	0.000	Event Nighttime Average Mid-Depth Density
6	3568	5/20/2013	14:00	Mid	E2	Day	Alewife	A. pseudoharengus	LL	18	18	1.000	229	0.08	
6	3568	5/20/2013	14:00	Mid	E2	Day	American shad	A. sapidissima	LL	1	1	1.000	229	0.00	
6	3571	5/20/2013	17:10	Mid	F1	Day	American shad	A. sapidissima	LL	4	4	1.000	190	0.02	
6				Daytime Total							23		419	0.05	Event Daytime Average Mid-Depth Density
6	3562	5/20/2013	2:51	Mid	E2	Night	American shad	A. sapidissima	LL	3	12	0.250	194	0.06	
6	3562	5/20/2013	2:51	Mid	E2	Night	Alewife	A. pseudoharengus	LL	28	112	0.250	194	0.58	
6	3565	5/20/2013	5:10	Mid	F1	Night	Alewife	A. pseudoharengus	LL	9	18	0.250	196	0.09	
6	3565	5/20/2013	5:10	Mid	F1	Night	American shad	A. sapidissima	LL	1	2	0.250	196	0.01	
6				Nighttime Total							144		390	0.37	Event Nighttime Average Mid-Depth Density
7	3574	5/30/2013	11:30	Mid	E2	Day	Alewife	A. pseudoharengus	LL	4	4	1.000	227	0.02	
7	3577	5/30/2013	13:39	Mid	F1	Day	Alewife	A. pseudoharengus	LL	4	8	0.500	207	0.04	
7				Daytime Total							12		434	0.028	Event Daytime Average Mid-Depth Density
7							No Nighttime Samples								
8	3583	6/6/2013	7:54	Mid	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	183	0.00	
8	3586	6/6/2013	17:07	Mid	E2	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	248	0.01	
8				Daytime Total							2		431	0.0046	Event Daytime Average Mid-Depth Density
8	3580	6/6/2013	4:15	Mid	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	272	0.00	
8	3589	6/6/2013	21:36	Mid	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	173	0.00	
8				Nighttime Total							0		445	0.0000	Event Nighttime Average Mid-Depth Density
				Spawning Season Daytime Mid-Depth Total							**94**		**3165**	**0.030**	**Mid-Depth Daytime Average Density**
				Spawning Season Nighttime Mid-Depth Total							**196**		**2743**	**0.071**	**Mid-Depth Nighttime Average Density**
1	3503	4/17/2013	11:14	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	3	3	1.000	249	0.01	
1	3506	4/17/2013	14:35	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	205	0.00	
1				Daytime Total							3		454	0.0066	Event Daytime Average Bottom Density

1	3509	4/17/2013	21:38	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	237	0.00		
1	3512	4/18/2013	3:10	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	126	0.00		
1				Nighttime	Total						0		364	0.0000	Event Nighttime Average Bottom Density	
2	3515	4/24/2013	17:25	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	14	14	1.000	181	0.08		PL
2	3524	4/25/2013	9:05	Bottom	F1	Day	Alosa spp.	Alosa spp.	LL	5	5	1.000	223	0.02		
2	3524	4/25/2013	9:05	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	2	2	1.000	223	0.01		
2				Daytime	Total						21		404	0.052	Event Daytime Average Bottom Density	
2	3518	4/24/2013	20:55	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	148	0.00		
2	3521	4/25/2013	5:15	Bottom	E2	Night	Alosa spp.	Alosa spp.	LL	4	4	1.000	202	0.02		
2				Nighttime	Total						4		350	0.011	Event Nighttime Average Bottom Density	
3	3527	4/30/2013	11:12	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	0.125	226	0.00		
3	3530	4/30/2013	13:30	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	1	2	0.500	196	0.01		
3				Daytime	Total						2		421	0.0047	Event Daytime Average Bottom Density	
3	3533	4/30/2013	22:48	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	1	2	0.500	201	0.01		
3	3536	5/1/2013	1:33	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.500	173	0.00		
3				Nighttime	Total						2		373	0.0054	Event Nighttime Average Bottom Density	
4	3542	5/9/2013	8:21	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	5	10	0.500	241	0.04		
4	3545	5/9/2013	16:55	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	3	48	0.063	196	0.25		
4				Daytime	Total						58		437	0.133	Event Daytime Average Bottom Density	
4	3539	5/9/2013	4:53	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	1	16	0.063	340	0.05		
4	3548	5/9/2013	21:25	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.125	222	0.00		
4				Nighttime	Total						16		562	0.028	Event Nighttime Average Bottom Density	
5	3551	5/13/2013	8:36	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	4	8	0.500	188	0.04		
5	3554	5/13/2013	11:11	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	3	12	0.250	227	0.05		
5				Daytime	Total						20		415	0.048	Event Daytime Average Bottom Density	
5	3557	5/13/2013	21:10	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	0.250	176	0.00		
5	3560	5/13/2013	23:10	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	0.250	200	0.00		
5				Nighttime	Total						0		376	0.000	Event Nighttime Average Bottom Density	
6	3569	5/20/2013	14:00	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	0.500	245	0.00		
6	3572	5/20/2013	17:10	Bottom	F1	Day	Alewife	A. pseudoharengus	LL	10	10	1.000	207	0.05		
6				Daytime	Total						10		452	0.022	Event Daytime Average Bottom Density	
6	3563	5/20/2013	2:51	Bottom	E2	Night	Alosa spp.	Alosa spp.	LL	1	4	0.250	209	0.02		
6	3563	5/20/2013	2:51	Bottom	E2	Night	Alewife	A. pseudoharengus	LL	16	64	0.250	209	0.31		
6	3566	5/20/2013	5:10	Bottom	F1	Night	American shad	A. sapidissima	LL	8	8	1.000	218	0.04		
6				Nighttime	Total						76		428	0.178	Event Nighttime Average Bottom Density	
7	3575	5/30/2013	11:30	Bottom	E2	Day	River Herring	Alosa spp.	LL	0	0	1.000	223	0.00		
7	3578	5/30/2013	13:39	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	199	0.00		
7				Daytime	Total						0		422	0.00	Event Daytime Average Bottom Density	
7							No Nighttime Samples									

8	3584	6/6/2013	7:54	Bottom	F1	Day	River Herring	Alosa spp.	LL	0	0	1.000	178	0.00	
8	3587	6/6/2013	17:07	Bottom	E2	Day	Alewife	A. pseudoharengus	LL	1	1	1.000	228	0.0044	
8				Daytime Total							1		406	0.0025	Event Daytime Average Bottom Density
8	3581	6/6/2013	4:15	Bottom	E2	Night	River Herring	Alosa spp.	LL	0	0	1.000	270	0.00	
8	3590	6/6/2013	21:36	Bottom	F1	Night	River Herring	Alosa spp.	LL	0	0	1.000	179	0.00	
8				Nighttime Total							0		449	0.0000	Event Nighttime Average Bottom Density
				Spawning Season Daytime Total							**115**		**3411**	**0.034**	**Daytime Bottom Average Density**
				Spawning Season Nighttime Total							**98**		**2901**	**0.034**	**Nighttime Bottom Average Density**

APPENDIX C

[redacted] TIDES AND FLOW INFORMATION

TABLE C.1
NOAA PREDICTIONS FOR [redacted]
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Month	Day	Slack Water	Maximum Current			Average Current	Current	Slack Water	Maximum Current			Average Current	Current	Slack Water	Maximum Current			Average Current	Current	Slack Water	Maximum Current			Average Current	Current	Slack Water
		Time (h:m)	Time (h:m)	Velocity (knots)	Velocity (m/s)	Velocity (m/s)	Direction	Time (h:m)	Time (h:m)	Velocity (knots)	Velocity (m/s)	Velocity (m/s)	Direction	Time (h:m)	Time (h:m)	Velocity (knots)	Velocity (m/s)	Velocity (m/s)	Direction	Time (h:m)	Time (h:m)	Velocity (knots)	Velocity (m/s)	Velocity (m/s)	Direction	Time (h:m)
April	17	3:09	6:44	-1	0.51	0.15	Flood	9:42	12:45	0.9	0.46	0.14	Ebb	15:36	18:46	-0.9	0.46	0.14	Flood	21:23	---	---	---	---	---	---
	18	---	0:47	1.1	0.57	0.17	Ebb	4:02	7:37	-1	0.51	0.15	Flood	10:34	13:35	0.8	0.41	0.12	Ebb	16:31	19:45	-0.9	0.46	0.14	Flood	22:20
	19	---	1:41	1.1	0.57	0.17	Ebb	4:59	8:33	-1	0.51	0.15	Flood	11:27	14:27	0.9	0.46	0.14	Ebb	17:29	20:48	-0.9	0.46	0.14	Flood	23:22
	20	---	2:37	1.1	0.57	0.17	Ebb	5:55	9:30	-1.1	0.57	0.17	Flood	12:18	15:20	1	0.51	0.15	Ebb	18:25	21:50	-1.1	0.57	0.17	Flood	---
	21	0:25	3:36	1.2	0.62	0.18	Ebb	6:50	10:23	-1.2	0.62	0.18	Flood	13:06	16:11	1.2	0.62	0.18	Ebb	19:18	22:46	-1.2	0.62	0.18	Flood	---
	22	1:25	4:31	1.3	0.67	0.20	Ebb	7:43	11:13	-1.3	0.67	0.20	Flood	13:53	16:59	1.4	0.72	0.21	Ebb	20:10	23:38	-1.4	0.72	0.21	Flood	---
	23	2:24	5:23	1.4	0.72	0.21	Ebb	8:34	12:01	-1.4	0.72	0.21	Flood	14:41	17:45	1.6	0.82	0.24	Ebb	21:00	---	---	---	---	---	---
	24	---	0:30	-1.6	0.82	0.24	Flood	3:20	6:13	1.5	0.77	0.23	Ebb	9:24	12:49	-1.5	0.77	0.23	Flood	15:28	18:32	1.8	0.93	0.27	Ebb	21:48
	25	---	1:21	-1.7	0.87	0.26	Flood	4:13	7:04	1.6	0.82	0.24	Ebb	10:12	13:38	-1.5	0.77	0.23	Flood	16:15	19:20	1.9	0.98	0.29	Ebb	22:36
	26	---	2:12	-1.8	0.93	0.27	Flood	5:06	7:55	1.7	0.87	0.26	Ebb	11:00	14:27	-1.6	0.82	0.24	Flood	17:02	20:09	2	1.03	0.30	Ebb	23:24
	27	---	3:02	-1.9	0.98	0.29	Flood	5:58	8:45	1.7	0.87	0.26	Ebb	11:50	15:16	-1.6	0.82	0.24	Flood	17:52	20:59	2	1.03	0.30	Ebb	---
	28	0:15	3:53	-1.9	0.98	0.29	Flood	6:50	9:36	1.6	0.82	0.24	Ebb	12:42	16:08	-1.5	0.77	0.23	Flood	18:46	21:50	1.9	0.98	0.29	Ebb	---
	29	1:08	4:47	-1.8	0.93	0.27	Flood	7:45	10:29	1.6	0.82	0.24	Ebb	13:37	17:05	-1.4	0.72	0.21	Flood	19:41	22:45	1.8	0.93	0.27	Ebb	---
	30	2:04	5:46	-1.6	0.82	0.24	Flood	8:42	11:27	1.5	0.77	0.23	Ebb	14:35	18:06	-1.3	0.67	0.20	Flood	20:41	23:45	1.7	0.87	0.26	Ebb	---
May	1	3:04	6:46	-1.5	0.77	0.23	Flood	9:43	12:28	1.4	0.72	0.21	Ebb	15:38	19:09	-1.3	0.67	0.20	Flood	21:47	---	---	---	---	---	---
	2	---	0:48	1.5	0.77	0.23	Ebb	4:09	7:47	-1.5	0.77	0.23	Flood	10:48	13:31	1.3	0.67	0.20	Ebb	16:47	20:13	-1.3	0.67	0.20	Flood	22:57
	3	---	1:52	1.4	0.72	0.21	Ebb	5:16	8:48	-1.4	0.72	0.21	Flood	11:50	14:33	1.3	0.67	0.20	Ebb	17:55	21:16	-1.3	0.67	0.20	Flood	---
	4	0:07	2:57	1.4	0.72	0.21	Ebb	6:19	9:47	-1.4	0.72	0.21	Flood	12:47	15:35	1.4	0.72	0.21	Ebb	18:57	22:16	-1.3	0.67	0.20	Flood	---
	5	1:10	4:00	1.4	0.72	0.21	Ebb	7:17	10:41	-1.4	0.72	0.21	Flood	13:39	16:31	1.5	0.77	0.23	Ebb	19:52	23:11	-1.4	0.72	0.21	Flood	---
	6	2:09	4:56	1.4	0.72	0.21	Ebb	8:10	11:30	-1.4	0.72	0.21	Flood	14:27	17:19	1.5	0.77	0.23	Ebb	20:41	---	---	---	---	---	---
	7	---	0:00	-1.5	0.77	0.23	Flood	3:03	5:46	1.4	0.72	0.21	Ebb	8:57	12:14	-1.4	0.72	0.21	Flood	15:10	18:04	1.6	0.82	0.24	Ebb	21:25
	8	---	0:47	-1.5	0.77	0.23	Flood	3:51	6:33	1.4	0.72	0.21	Ebb	9:40	12:56	-1.4	0.72	0.21	Flood	15:49	18:47	1.6	0.82	0.24	Ebb	22:04
	9	---	1:31	-1.5	0.77	0.23	Flood	4:36	7:18	1.4	0.72	0.21	Ebb	10:20	13:37	-1.3	0.67	0.20	Flood	16:25	19:28	1.6	0.82	0.24	Ebb	22:42
	10	---	2:12	-1.5	0.77	0.23	Flood	5:17	8:02	1.4	0.72	0.21	Ebb	10:59	14:15	-1.3	0.67	0.20	Flood	16:58	20:07	1.6	0.82	0.24	Ebb	23:19
	11	---	2:50	-1.5	0.77	0.23	Flood	5:56	8:42	1.3	0.67	0.20	Ebb	11:38	14:52	-1.2	0.62	0.18	Flood	17:31	20:45	1.5	0.77	0.23	Ebb	23:56
	12	---	3:27	-1.4	0.72	0.21	Flood	6:33	9:21	1.3	0.67	0.20	Ebb	12:17	15:27	-1.2	0.62	0.18	Flood	18:05	21:21	1.5	0.77	0.23	Ebb	---
	13	0:32	4:03	-1.4	0.72	0.21	Flood	7:09	10:00	1.2	0.62	0.18	Ebb	12:56	16:01	-1.1	0.57	0.17	Flood	18:41	21:58	1.4	0.72	0.21	Ebb	---
	14	1:11	4:41	-1.3	0.67	0.20	Flood	7:46	10:39	1.1	0.57	0.17	Ebb	13:37	16:39	-1	0.51	0.15	Flood	19:20	22:37	1.3	0.67	0.20	Ebb	---
	15	1:51	5:22	-1.2	0.62	0.18	Flood	8:23	11:22	1	0.51	0.15	Ebb	14:19	17:23	-1	0.51	0.15	Flood	20:03	23:20	1.2	0.62	0.18	Ebb	---
	16	2:33	6:07	-1.1	0.57	0.17	Flood	9:04	12:07	1	0.51	0.15	Ebb	15:04	18:16	-0.9	0.46	0.14	Flood	20:52	---	---	---	---	---	---
	17	---	0:09	1.1	0.57	0.17	Ebb	3:20	6:56	-1.1	0.57	0.17	Flood	9:50	12:54	1	0.51	0.15	Ebb	15:56	19:12	-0.9	0.46	0.14	Flood	21:49
	18	---	1:02	1.1	0.57	0.17	Ebb	4:12	7:46	-1.1	0.57	0.17	Flood	10:39	13:43	1.1	0.57	0.17	Ebb	16:51	20:12	-1	0.51	0.15	Flood	22:50
	19	---	1:57	1.1	0.57	0.17	Ebb	5:08	8:41	-1.1	0.57	0.17	Flood	11:29	14:34	1.2	0.62	0.18	Ebb	17:46	21:14	-1.1	0.57	0.17	Flood	23:54
	20	---	2:56	1.2	0.62	0.18	Ebb	6:04	9:38	-1.2	0.62	0.18	Flood	12:19	15:28	1.4	0.72	0.21	Ebb	18:40	22:13	-1.3	0.67	0.20	Flood	---
	21	0:58	3:55	1.2	0.62	0.18	Ebb	7:00	10:33	-1.3	0.67	0.20	Flood	13:10	16:20	1.6	0.82	0.24	Ebb	19:34	23:09	-1.5	0.77	0.23	Flood	---
	22	1:59	4:52	1.4	0.72	0.21	Ebb	7:57	11:26	-1.3	0.67	0.20	Flood	14:01	17:12	1.7	0.87	0.26	Ebb	20:28	---	---	---	---	---	---
	23	---	0:04	-1.7	0.87	0.26	Flood	2:59	5:46	1.5	0.77	0.23	Ebb	8:52	12:18	-1.4	0.72	0.21	Flood	14:55	18:03	1.9	0.98	0.29	Ebb	21:21
	24	---	0:58	-1.8	0.93	0.27	Flood	3:56	6:40	1.6	0.82	0.24	Ebb	9:47	13:12	-1.5	0.77	0.23	Flood	15:48	18:55	2	1.03	0.30	Ebb	22:14
	25	---	1:52	-1.9	0.98	0.29	Flood	4:50	7:35	1.7	0.87	0.26	Ebb	10:40	14:07	-1.6	0.82	0.24	Flood	16:41	19:49	2.1	1.08	0.32	Ebb	23:06
	26	---	2:46	-2	1.03	0.30	Flood	5:43	8:28	1.7	0.87	0.26	Ebb	11:34	15:00	-1.6	0.82	0.24	Flood	17:36	20:42	2.1	1.08	0.32	Ebb	---
	27	0:00	3:38	-1.9	0.98	0.29	Flood	6:38	9:21	1.7	0.87	0.26	Ebb	12:29	15:54	-1.6	0.82	0.24	Flood	18:31	21:35	2	1.03	0.30	Ebb	---
	28	0:55	4:32	-1.9	0.98	0.29	Flood	7:32	10:15	1.6	0.82	0.24	Ebb	13:26	16:51	-1.5	0.77	0.23	Flood	19:30	22:31	1.9	0.98	0.29	Ebb	---
	29	1:51	5:29	-1.7	0.87	0.26	Flood	8:28	11:11	1.5	0.77	0.23	Ebb	14:23	17:51	-1.4	0.72	0.21	Flood	20:30	23:30	1.7	0.87	0.26	Ebb	---
	30	2:48	6:27	-1.6	0.82	0.24	Flood	9:25	12:11	1.4	0.72	0.21	Ebb	15:25	18:52	-1.3	0.67	0.20	Flood	21:34	---	---	---	---	---	---
	31	---	0:31	1.5	0.77	0.23	Ebb	3:48	7:24	-1.5	0.77	0.23	Flood	10:24	13:11	1.4	0.72	0.21	Ebb	16:30	19:52	-1.3	0.67	0.20	Flood	22:42
June	1	---	1:33	1.4	0.72	0.21	Ebb	4:50	8:20	-1.4	0.72	0.21	Flood	11:21	14:09	1.4	0.72	0.21	Ebb	17:35	20:53	-1.3	0.67	0.20	Flood	23:50
	2	---	2:35	1.3	0.67	0.20	Ebb	5:50	9:16	-1.3	0.67	0.20	Flood	12:15	15:07	1.4	0.72	0.21	Ebb	18:33	21:53	-1.3	0.67	0.20	Flood	---
	3	0:53	3:36	1.2	0.62	0.18	Ebb	6:44	10:08	-1.3	0.67	0.20	Flood	13:05	16:02	1.4	0.72	0.21	Ebb	19:26	22:47	-1.3	0.67	0.20	Flood	---
	4	1:51	4:33	1.2	0.62	0.18	Ebb	7:36	10:57	-1.2	0.62	0.18	Flood	13:50	16:51	1.5	0.77	0.23	Ebb	20:14	23:36	-1.4	0.72	0.21	Flood	---
	5	2:45	5:23	1.2	0.62	0.18	Ebb	8:24	11:41	-1.2	0.62	0.18	Flood	14:33	17:35	1.5	0.77	0.23	Ebb	20:58	---	---	---	---	---	---

TABLE C.1
NOAA PREDICTIONS FOR [redacted]
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Month	Day	Slack Water	Maximum Current			Average Current	Current	Slack Water	Maximum Current			Average Current	Current	Slack Water	Maximum Current			Average Current	Current	Slack Water	Maximum Current			Average Current	Current	Slack Water
		Time (h:m)	Time (h:m)	Velocity (knots)	Velocity (m/s)	Velocity (m/s)	Direction	Time (h:m)	Time (h:m)	Velocity (knots)	Velocity (m/s)	Velocity (m/s)	Direction	Time (h:m)	Time (h:m)	Velocity (knots)	Velocity (m/s)	Velocity (m/s)	Direction	Time (h:m)	Time (h:m)	Velocity (knots)	Velocity (m/s)	Velocity (m/s)	Direction	Time (h:m)
	6	---	0:21	-1.4	0.72	0.21	Flood	3:33	6:09	1.2	0.62	0.18	Ebb	9:09	12:23	-1.2	0.62	0.18	Flood	15:12	18:17	1.5	0.77	0.23	Ebb	21:38

This table is part of Duffield Associates' July 2014 "Entrainment Impact Assessment Regarding the Proposed Sedcon® Turbo System Installation For [redacted] Wilmington, Delaware" and should only be viewed in that context.

TABLE C.2
CALCULATION OF AVERAGE EBB AND FLOOD TIDE CURRENTS
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Month	Day	Maximum Current		Average Current Velocity (m/s)	Current Direction	Maximum Current		Average Current Velocity (m/s)	Current Direction
		Velocity (knots)	Velocity (m/s)			Velocity (knots)	Velocity (m/s)		
April	17	-1	0.51	0.15	Flood	0.9	0.46	0.14	Ebb
	17	-0.9	0.46	0.14	Flood	---	---	---	---
	18	-1	0.51	0.15	Flood	1.1	0.57	0.17	Ebb
	18	-0.9	0.46	0.14	Flood	0.8	0.41	0.12	Ebb
	19	-1	0.51	0.15	Flood	1.1	0.57	0.17	Ebb
	19	-0.9	0.46	0.14	Flood	0.9	0.46	0.14	Ebb
	20	-1.1	0.57	0.17	Flood	1.1	0.57	0.17	Ebb
	20	-1.1	0.57	0.17	Flood	1	0.51	0.15	Ebb
	21	-1.2	0.62	0.18	Flood	1.2	0.62	0.18	Ebb
	21	-1.2	0.62	0.18	Flood	1.2	0.62	0.18	Ebb
	22	-1.3	0.67	0.20	Flood	1.3	0.67	0.20	Ebb
	22	-1.4	0.72	0.21	Flood	1.4	0.72	0.21	Ebb
	23	-1.4	0.72	0.21	Flood	1.4	0.72	0.21	Ebb
	23	---	---	---	---	1.6	0.82	0.24	Ebb
	24	-1.6	0.82	0.24	Flood	1.5	0.77	0.23	Ebb
	24	-1.5	0.77	0.23	Flood	1.8	0.93	0.27	Ebb
	25	-1.7	0.87	0.26	Flood	1.6	0.82	0.24	Ebb
	25	-1.5	0.77	0.23	Flood	1.9	0.98	0.29	Ebb
	26	-1.8	0.93	0.27	Flood	1.7	0.87	0.26	Ebb
	26	-1.6	0.82	0.24	Flood	2	1.03	0.30	Ebb
	27	-1.9	0.98	0.29	Flood	1.7	0.87	0.26	Ebb
	27	-1.6	0.82	0.24	Flood	2	1.03	0.30	Ebb
	28	-1.9	0.98	0.29	Flood	1.6	0.82	0.24	Ebb
	28	-1.5	0.77	0.23	Flood	1.9	0.98	0.29	Ebb
	29	-1.8	0.93	0.27	Flood	1.6	0.82	0.24	Ebb
	29	-1.4	0.72	0.21	Flood	1.8	0.93	0.27	Ebb
	30	-1.6	0.82	0.24	Flood	1.5	0.77	0.23	Ebb
	30	-1.3	0.67	0.20	Flood	1.7	0.87	0.26	Ebb
	1	-1.5	0.77	0.23	Flood	1.4	0.72	0.21	Ebb
	1	-1.3	0.67	0.20	Flood	---	---	---	---
	2	-1.5	0.77	0.23	Flood	1.5	0.77	0.23	Ebb
	2	-1.3	0.67	0.20	Flood	1.3	0.67	0.20	Ebb
	3	-1.4	0.72	0.21	Flood	1.4	0.72	0.21	Ebb
	3	-1.3	0.67	0.20	Flood	1.3	0.67	0.20	Ebb
	4	-1.4	0.72	0.21	Flood	1.4	0.72	0.21	Ebb
	4	-1.3	0.67	0.20	Flood	1.4	0.72	0.21	Ebb
	5	-1.4	0.72	0.21	Flood	1.4	0.72	0.21	Ebb
	5	-1.4	0.72	0.21	Flood	1.5	0.77	0.23	Ebb
	6	-1.4	0.72	0.21	Flood	1.4	0.72	0.21	Ebb
	6	---	---	---	---	1.5	0.77	0.23	Ebb

TABLE C.2
CALCULATION OF AVERAGE EBB AND FLOOD TIDE CURRENTS
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Month	Day	Maximum Current		Average Current Velocity (m/s)	Current Direction	Maximum Current		Average Current Velocity (m/s)	Current Direction
		Velocity (knots)	Velocity (m/s)			Velocity (knots)	Velocity (m/s)		
May	7	-1.5	0.77	0.23	Flood	1.4	0.72	0.21	Ebb
	7	-1.4	0.72	0.21	Flood	1.6	0.82	0.24	Ebb
	8	-1.5	0.77	0.23	Flood	1.4	0.72	0.21	Ebb
	7	-1.4	0.72	0.21	Flood	1.6	0.82	0.24	Ebb
	9	-1.5	0.77	0.23	Flood	1.4	0.72	0.21	Ebb
	9	-1.3	0.67	0.20	Flood	1.6	0.82	0.24	Ebb
	10	-1.5	0.77	0.23	Flood	1.4	0.72	0.21	Ebb
	10	-1.3	0.67	0.20	Flood	1.6	0.82	0.24	Ebb
	11	-1.5	0.77	0.23	Flood	1.3	0.67	0.20	Ebb
	11	-1.2	0.62	0.18	Flood	1.5	0.77	0.23	Ebb
	12	-1.4	0.72	0.21	Flood	1.3	0.67	0.20	Ebb
	12	-1.2	0.62	0.18	Flood	1.5	0.77	0.23	Ebb
	13	-1.4	0.72	0.21	Flood	1.2	0.62	0.18	Ebb
	13	-1.1	0.57	0.17	Flood	1.4	0.72	0.21	Ebb
	14	-1.3	0.67	0.20	Flood	1.1	0.57	0.17	Ebb
	14	-1	0.51	0.15	Flood	1.3	0.67	0.20	Ebb
	15	-1.2	0.62	0.18	Flood	1	0.51	0.15	Ebb
	15	-1	0.51	0.15	Flood	1.2	0.62	0.18	Ebb
	16	-1.1	0.57	0.17	Flood	1	0.51	0.15	Ebb
	16	-0.9	0.46	0.14	Flood	---	---	---	---
	17	-1.1	0.57	0.17	Flood	1.1	0.57	0.17	Ebb
	17	-0.9	0.46	0.14	Flood	1	0.51	0.15	Ebb
	18	-1.1	0.57	0.17	Flood	1.1	0.57	0.17	Ebb
	18	-1	0.51	0.15	Flood	1.1	0.57	0.17	Ebb
	19	-1.1	0.57	0.17	Flood	1.1	0.57	0.17	Ebb
	19	-1.1	0.57	0.17	Flood	1.2	0.62	0.18	Ebb
	20	-1.2	0.62	0.18	Flood	1.2	0.62	0.18	Ebb
	20	-1.3	0.67	0.20	Flood	1.4	0.72	0.21	Ebb
	21	-1.3	0.67	0.20	Flood	1.2	0.62	0.18	Ebb
	21	-1.5	0.77	0.23	Flood	1.6	0.82	0.24	Ebb
	22	-1.3	0.67	0.20	Flood	1.4	0.72	0.21	Ebb
	22	---	---	---	---	1.7	0.87	0.26	Ebb
	23	-1.7	0.87	0.26	Flood	1.5	0.77	0.23	Ebb
	23	-1.4	0.72	0.21	Flood	1.9	0.98	0.29	Ebb
	24	-1.8	0.93	0.27	Flood	1.6	0.82	0.24	Ebb
	24	-1.5	0.77	0.23	Flood	2	1.03	0.30	Ebb
	25	-1.9	0.98	0.29	Flood	1.7	0.87	0.26	Ebb
	25	-1.6	0.82	0.24	Flood	2.1	1.08	0.32	Ebb
	26	-2	1.03	0.30	Flood	1.7	0.87	0.26	Ebb
	26	-1.6	0.82	0.24	Flood	2.1	1.08	0.32	Ebb

TABLE C.2
CALCULATION OF AVERAGE EBB AND FLOOD TIDE CURRENTS
ENTRAINMENT IMPACT ASSESSMENT
[redacted]
WILMINGTON, DELAWARE

Month	Day	Maximum Current		Average Current Velocity (m/s)	Current Direction	Maximum Current		Average Current Velocity (m/s)	Current Direction
		Velocity (knots)	Velocity (m/s)			Velocity (knots)	Velocity (m/s)		
	27	-1.9	0.98	0.29	Flood	1.7	0.87	0.26	Ebb
	27	-1.6	0.82	0.24	Flood	2	1.03	0.30	Ebb
	28	-1.9	0.98	0.29	Flood	1.6	0.82	0.24	Ebb
	28	-1.5	0.77	0.23	Flood	1.9	0.98	0.29	Ebb
	29	-1.7	0.87	0.26	Flood	1.5	0.77	0.23	Ebb
	29	-1.4	0.72	0.21	Flood	1.7	0.87	0.26	Ebb
	30	-1.6	0.82	0.24	Flood	1.4	0.72	0.21	Ebb
	30	-1.3	0.67	0.20	Flood	---	---	---	---
	31	-1.5	0.77	0.23	Flood	1.5	0.77	0.23	Ebb
	31	-1.3	0.67	0.20	Flood	1.4	0.72	0.21	Ebb
June	1	-1.4	0.72	0.21	Flood	1.4	0.72	0.21	Ebb
	1	-1.3	0.67	0.20	Flood	1.4	0.72	0.21	Ebb
	2	-1.3	0.67	0.20	Flood	1.3	0.67	0.20	Ebb
	2	-1.3	0.67	0.20	Flood	1.4	0.72	0.21	Ebb
	3	-1.3	0.67	0.20	Flood	1.2	0.62	0.18	Ebb
	3	-1.3	0.67	0.20	Flood	1.4	0.72	0.21	Ebb
	4	-1.2	0.62	0.18	Flood	1.2	0.62	0.18	Ebb
	4	-1.4	0.72	0.21	Flood	1.5	0.77	0.23	Ebb
	5	-1.2	0.62	0.18	Flood	1.2	0.62	0.18	Ebb
	5	---	---	---	---	1.5	0.77	0.23	Ebb
	6	-1.4	0.72	0.21	Flood	1.2	0.62	0.18	Ebb
	6	-1.2	0.62	0.18	Flood	1.5	0.77	0.23	Ebb
Average Flood and Ebb Current Velocities				0.21	Flood	[redacted]		0.22	Ebb
Number of Tides during Assessment					98				98

Maximum current velocities as predicted by NOAA
Average current velocities are assumed to be 29.29% of maximum current velocities

This table is part of Duffield Associates' "Entrainment Impact Assessment Regarding the Proposed Sedcon® Turbo System Installation For the [redacted] Wilmington, Delaware" and should only be viewed in that context.

TABLE C.3

CALCULATION OF AVERAGE [redacted] TIDE HEIGHT

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

Mean high water lever (MHWL			Mean low water level (MLWL)		
Date	Time	Water level (meters)	Date	Time	Water level (meters)
17-Apr	9:11	1.68	17-Apr	3:35	0.26
17-Apr	22:04	1.52	17-Apr	16:34	0.22
18-Apr	10:05	1.65	18-Apr	4:27	0.27
18-Apr	22:58	1.53	18-Apr	17:24	0.23
19-Apr	11:03	1.63	19-Apr	5:25	0.28
19-Apr	23:52	1.57	19-Apr	18:17	0.23
20-Apr	12:02	1.63	20-Apr	6:26	0.26
21-Apr	0:45	1.63	20-Apr	19:10	0.2
21-Apr	12:59	1.65	21-Apr	7:27	0.22
22-Apr	1:35	1.7	21-Apr	20:03	0.17
22-Apr	13:52	1.67	22-Apr	8:26	0.16
23-Apr	2:22	1.77	22-Apr	20:53	0.12
23-Apr	14:43	1.69	23-Apr	9:23	0.1
24-Apr	3:08	1.85	23-Apr	21:43	0.09
24-Apr	15:31	1.71	24-Apr	10:17	0.04
25-Apr	3:52	1.92	24-Apr	22:31	0.06
25-Apr	16:19	1.72	25-Apr	11:10	-0.01
26-Apr	4:37	1.97	25-Apr	23:19	0.04
26-Apr	17:07	1.72	26-Apr	12:02	-0.04
27-Apr	5:23	1.99	27-Apr	0:07	0.03
27-Apr	17:56	1.7	27-Apr	12:53	-0.05
28-Apr	6:11	1.99	28-Apr	0:57	0.04
28-Apr	18:48	1.68	28-Apr	13:46	-0.04
29-Apr	7:03	1.96	29-Apr	1:48	0.06
29-Apr	19:44	1.66	29-Apr	14:39	-0.02
30-Apr	7:59	1.91	30-Apr	2:43	0.09
30-Apr	20:43	1.64	30-Apr	15:34	0.01
1-May	9:00	1.85	1-May	3:41	0.12
1-May	21:46	1.64	1-May	16:30	0.03
2-May	10:04	1.79	2-May	4:41	0.14
2-May	22:49	1.67	2-May	17:26	0.04
3-May	11:09	1.76	3-May	5:42	0.14
3-May	23:51	1.72	3-May	18:22	0.03
4-May	12:12	1.74	4-May	6:43	0.12
5-May	0:49	1.78	4-May	19:17	0.02
5-May	13:10	1.74	5-May	7:43	0.09
6-May	1:43	1.84	5-May	20:10	0.01

TABLE C.3

CALCULATION OF AVERAGE [redacted] TIDE HEIGHT

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

Mean high water lever (MHWL			Mean low water level (MLWL)		
Date	Time	Water level (meters)	Date	Time	Water level (meters)
6-May	14:04	1.74	6-May	8:39	0.05
7-May	2:33	1.89	6-May	21:00	0.01
7-May	14:54	1.74	7-May	9:32	0.02
8-May	3:19	1.92	7-May	21:47	0.02
8-May	15:42	1.73	8-May	10:22	0
9-May	4:03	1.92	8-May	22:31	0.05
9-May	16:26	1.7	9-May	11:09	0
10-May	4:43	1.91	9-May	23:13	0.1
10-May	17:09	1.68	10-May	11:53	0.03
11-May	5:22	1.88	10-May	23:52	0.15
11-May	17:51	1.64	11-May	12:35	0.06
12-May	5:59	1.86	12-May	0:30	0.19
12-May	18:31	1.61	12-May	13:16	0.1
13-May	6:34	1.83	13-May	1:05	0.23
13-May	19:12	1.58	13-May	13:55	0.14
14-May	7:09	1.8	14-May	1:41	0.26
14-May	19:52	1.56	14-May	14:34	0.18
15-May	7:46	1.77	15-May	2:18	0.27
15-May	20:35	1.56	15-May	15:14	0.2
16-May	8:27	1.75	16-May	3:00	0.28
16-May	21:21	1.57	16-May	15:56	0.21
17-May	9:15	1.72	17-May	3:49	0.29
17-May	22:11	1.59	17-May	16:42	0.21
18-May	10:11	1.69	18-May	4:46	0.3
18-May	23:05	1.63	18-May	17:31	0.2
19-May	11:12	1.66	19-May	5:48	0.29
19-May	23:59	1.69	19-May	18:23	0.19
20-May	12:13	1.65	20-May	6:52	0.27
21-May	0:52	1.77	20-May	19:17	0.16
21-May	13:12	1.66	21-May	7:55	0.22
22-May	1:44	1.85	21-May	20:11	0.13
22-May	14:08	1.67	22-May	8:56	0.15
23-May	2:35	1.93	22-May	21:05	0.1
23-May	15:02	1.68	23-May	9:54	0.08
24-May	3:25	1.99	23-May	21:59	0.07
24-May	15:55	1.69	24-May	10:50	0.02
25-May	4:14	2.03	24-May	22:52	0.04

TABLE C.3

CALCULATION OF AVERAGE [redacted] TIDE HEIGHT

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

Mean high water lever (MHWL			Mean low water level (MLWL)		
Date	Time	Water level (meters)	Date	Time	Water level (meters)
25-May	16:48	1.7	25-May	11:44	-0.03
26-May	5:05	2.05	26-May	23:45	0.03
26-May	17:41	1.7	26-May	12:38	-0.06
27-May	5:57	2.04	27-May	0:39	0.03
27-May	18:35	1.69	27-May	13:30	-0.07
28-May	6:50	2	28-May	1:33	0.04
28-May	19:31	1.69	28-May	14:23	-0.06
29-May	7:47	1.94	29-May	2:28	0.07
29-May	20:29	1.69	29-May	15:15	-0.05
30-May	8:45	1.87	30-May	3:25	0.1
30-May	21:29	1.71	30-May	16:08	-0.03
31-May	9:46	1.81	31-May	4:23	0.12
31-May	22:29	1.74	31-May	17:01	-0.01
1-Jun	10:47	1.76	1-Jun	5:22	0.14
1-Jun	23:28	1.78	1-Jun	17:53	0
2-Jun	11:47	1.73	2-Jun	6:20	0.14
3-Jun	0:24	1.82	2-Jun	18:46	0.02
3-Jun	12:43	1.71	3-Jun	7:18	0.13
4-Jun	1:17	1.87	3-Jun	19:37	0.03
4-Jun	13:37	1.69	4-Jun	8:14	0.1
5-Jun	2:06	1.9	4-Jun	20:26	0.05
5-Jun	14:28	1.68	5-Jun	9:07	0.08
6-Jun	2:53	1.91	5-Jun	21:14	0.07
6-Jun	15:16	1.67	6-Jun	9:57	0.06
			6-Jun	21:59	0.1
Average		1.75	[redacted]		0.10
Average Mid-Depth		0.93			

Water levels as predicted by NOAA

This table is part of Duffield Associates' "Entrainment Impact Assessment Regarding the Proposed Sedcon® Turbo System Installation For the [redacted] Wilmington, Delaware" and should only be viewed in that context.

TABLE C.4

CALCULATION OF [redacted] CROSS-SECTIONAL AREA FLOW VOLUMES

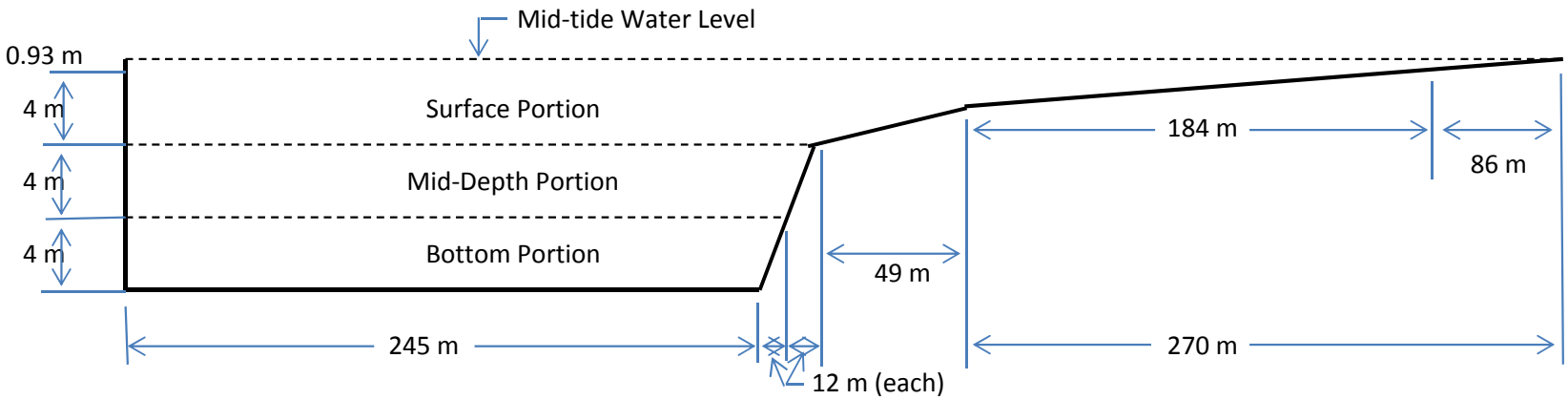
ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

[redacted] Cross-Section

(Estimated From Navigation Chart)



Cross-Sectional Areas of [redacted]

Portion	Sub-Area (m^2)	Sub-Area (m^2)	Sub-Area (m^2)	Sub-Area (m^2)	Sub-Area (m^2)	Sub-Area (m^2)	Total Area (m^2)
Bottom	980	24	---	---	---	---	1000
Mid-Depth	1000	24	---	---	---	---	1000
Surface	1300	140	49	180	170	40	1900

TABLE C.4

CALCULATION OF [redacted] CROSS-SECTIONAL AREA FLOW VOLUMES

ENTRAINMENT IMPACT ASSESSMENT

[redacted]

WILMINGTON, DELAWARE

[redacted] Flow Volumes

Portion	Tide	Average Velocity (m/s)	Total Area (m^2)	Duration (s)	Flow Volume (m^3)
Bottom	Flood	0.21	1,000	22,392	4,700,000
	Ebb	0.22	1,000	22,392	4,900,000
Mid-Depth	Flood	0.21	1,000	22,392	4,700,000
	Ebb	0.22	1,000	22,392	4,900,000
Surface	Flood	0.21	1,900	22,392	8,900,000
	Ebb	0.22	1,900	22,392	9,400,000

SedCon Turbo System Flow Compared to [redacted] Flow

Tide	SedCon Turbo System					[redacted]				
	Flow Rate	Unit Run Time	No. of Units	System Run Time	Volume of Flow	Surface Volume of Flow	Mid-Depth Volume of Flow	Bottom Volume of Flow	Total Volume of Flow	SedCon Flow as Percent of [redacted]
	(m^3/s)	(s)		(s)	(m^3)	(m^3)	(m^3)	(m^3)	(m^3)	(%)
Ebb	4.98	2,700	7	18,900	94,194	9,400,000	4,900,000	4,900,000	19,200,000	0.49%
Flood	4.98	2,700	7	18,900	94,194	8,900,000	4,700,000	4,700,000	18,300,000	0.51%