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# Environmental Monitoring Report

## For 2023

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Pilgrim and Seabrook  
Nuclear Power Stations

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## EXECUTIVE SUMMARY

The Massachusetts Department of Public Health (MDPH) Bureau of Climate and Environmental Health's (MDPH/BCEH) Environmental Toxicology, Hazard Assessment and Prevention Division and Radiation Control Division collaborate to conduct routine environmental monitoring for Massachusetts communities within a 10-mile radius of nuclear power stations that are currently operating, or undergoing decommissioning. This monitoring provides a system of watchfulness over environmental radiation in Massachusetts communities surrounding nuclear power plants. The monitoring areas include Massachusetts communities located within a 10-mile radius of Pilgrim Nuclear Power Station (Pilgrim) in Plymouth, MA and Seabrook Nuclear Power Station (Seabrook) in Seabrook, NH. The 10-mile radius surrounding Seabrook corresponds with Seabrook's Emergency Planning Zone (EPZ); as such environmental radiation monitoring is part of the MDPH's regulatory responsibility. Pilgrim ceased operations on May 31, 2019 and is undergoing decommissioning<sup>1</sup>. Although the 10-mile EPZ for Pilgrim has been eliminated<sup>2</sup>, MDPH continues to conduct environmental monitoring while the power plant is being decommissioned. This report summarizes the 2023 monitoring activities and results for the Pilgrim and Seabrook nuclear plants.

### Report Highlights

- Overall, no radiation indicators or radionuclides were detected at a level of health concern.
- Radiation monitoring results in 2023 for areas surrounding the two nuclear power stations -- Pilgrim and Seabrook -- have been either non-detect, naturally occurring, or at levels expected to be present in the environment from background fallout from historic bomb testing and past nuclear accidents.

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<sup>1</sup>Pilgrim entered Phase I of plant decommissioning on June 11, 2019 when the nuclear fuel from the reactor was safely transferred into the spent fuel pool, and the site was certified by Federal regulators as having permanent cessation of operations and permanent removal of fuel. In August of 2019 Pilgrim was sold by the Entergy Corporation to Holtec International for completion of the remaining decommissioning steps.

<sup>2</sup> <https://www.mass.gov/info-details/pilgrim-nuclear-power-station>

## 1. INTRODUCTION

The MDPH/BCEH radiation environmental monitoring program is designed to monitor radiation levels and to protect residents in the Commonwealth from exposure to radiation. Samples of environmental media, collected within and just outside the 10-mile radius surrounding nuclear power plants by MDPH/BCEH or provided by the utilities that operate the nuclear power plants, are analyzed for radiation by the MDPH/BCEH Massachusetts Environmental Radiation Laboratory (MERL). Environmental media analyzed in 2023 include: air, surface water, milk, fish, shellfish, sediment, vegetation and food crops. In addition to the samples analyzed for radiation by MERL, MDPH/BCEH has a network of stationary monitors surrounding Pilgrim that measures gamma radiation in real-time. This network is monitored online by MDPH/BCEH staff. The C-10 Research & Education Foundation, Inc., a non-profit organization under contract to MDPH/BCEH, conducts direct radiation monitoring in Massachusetts communities within the Seabrook EPZ and provides summary reports to MDPH/BCEH.

The radiation environmental monitoring of the areas around the Pilgrim and Seabrook plants has been in place since the 1980s. Focused monitoring of tritium in groundwater on the Pilgrim Nuclear Power Plant property is ongoing and not part of this report. Updates on this monitoring effort are posted on the MDPH website: [Tritium investigation update reports](#).

The NRC requires specific environmental monitoring and annual reporting by operating nuclear power plants. The NRC reports summarizing Seabrook's environmental monitoring can be found on its website: [Seabrook's 2023 Radiological Environmental Operating Report](#).

This report contains background information regarding environmental radiation and laboratory methods used to analyze samples for radiation; sample location and analyses for the areas around the Pilgrim and Seabrook plants; and a summary of the monitoring results.

## A. ENVIRONMENTAL RADIATION

Background radiation in the environment comes from three general sources: naturally occurring radiation, radioactive fallout from past weapons testing or nuclear accidents, and man-made sources.

Naturally occurring radionuclides, such as Potassium-40 and Beryllium-7, are present in most environmental media. Potassium-40 is a radioactive form of potassium, which is an essential nutrient. Beryllium-7 is produced when cosmic energy collides with nitrogen and oxygen in the atmosphere (Delaygue et al., 2015). Additional natural sources of radiation, including cosmic radiation, radon, and carbon-14, contribute to an annual background radiation dose of approximately 310 mrems/year (US NRC, 2017a, b). Man-made sources include medical procedures (e.g., diagnostic x-rays) and various consumer products (e.g., certain construction material, combustible fuels, televisions, smoke detectors) (US NRC 2017c). Background and man-made sources contribute to the estimated 620 mrem annual dose of environmental radiation for average U.S. residents (US NRC, 2017b).

**Table 1.** Background Radiation Dose for Average U.S. Resident

Source	Millirems/year
Natural background radiation	310
Man-made sources	310
Total of all sources	620

Source: US NRC, 2017c

Background radiation includes fallout radiation from historical weapons testing, which occurred primarily in the 1950s and 1960s, and from nuclear power plant accidents such as Chernobyl and Fukushima. This fallout includes radioisotopes such as Cesium-137 (Cs-137) and Strontium-90 (Sr-90), which persist in the environment due to their 28-30 year half-lives.

During active operation, nuclear power plants emit direct gamma radiation from nuclear reactor systems; noble gases, tritium, Iodine-131, Carbon-14, and particulates from the station's air stack; and discharge water containing tritium as well as other radionuclides that emit alpha, beta and gamma radiation (Luykx and Fraser, 1983; UNSCEAR, 2008). Noble gases are chemically inert, have short half-lives, disperse quickly in the environment, and do not bioconcentrate or easily incorporate into biological tissue. Tritium is created when water passes through the reactor core; the hydrogen atoms in the water molecules and other trace elements like boron absorb neutrons from the fission of the reactor fuel. Tritium is lighter and more mobile in water than other radionuclides and is a sentinel indicator of radionuclides in water bodies. Both Iodine-131 and particulates (notably Cesium-137, Cobalt-60, Iron-59, Magnesium-54, Strontium-90 and Zinc-65) have environmental and public health significance: their half-lives range from weeks to years, they are readily incorporated into biological tissue, and they will bioconcentrate. Iodine-131 is usually the first radioactive element detected in the event of an accidental release of power plant radiation (ATSDR, 2002). Carbon-14 is a naturally occurring radionuclide, which can also be released in relatively small amounts from nuclear power plants, primarily due to its formation in the coolant system (Yim and Caron, 2006).

Exposure to radiation from nuclear power plants may occur from permitted air or liquid discharges or from unmonitored releases or leaks. MDPH/BCEH evaluates possible routes of exposure for radionuclides, particularly those that accumulate in the food chain, and samples environmental media along these routes to measure potential exposure to radiation.

## B. LABORATORY METHODS

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The MDPH/BCEH Radiation Control Program's Massachusetts Environmental Radiation Laboratory (MERL) analyzes samples for a suite of more than 30 radioactive isotopes (e.g., radioisotopes, or radionuclides). Gamma spectroscopy is used to identify and detect environmentally significant and naturally occurring radioisotopes; gas proportion counters measure gross beta and alpha radiation; and liquid scintillation counters measure tritium. Environmental media sample results are compared to typical background levels. In the event that gamma emitters are present above typical background, the MERL protocol calls for additional testing at an outside laboratory for alpha emitters, such as transuranic (high atomic number) elements, and beta emitters, such as Strontium-90. MERL maintains its standard of excellence in analytical capability through participation with several federal agencies in inter-laboratory quality assurance measures.

Analysis methods by media are summarized below:

### AIR

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Air filters are collected weekly and analyzed for gross alpha and gross beta radioactivity using a gas proportion counter. Gross alpha and beta analysis is a screening-level tool that does not identify individual radionuclides; therefore, air filters are also analyzed quarterly for gamma emitting radionuclides using gamma spectroscopy. Results are compared to results from a background monitor located in Boston.

Air cartridges are analyzed weekly for iodine-131 using gamma spectroscopy.

Direct gamma radiation in air is measured with thermoluminescent dosimeters (TLDs) and analyzed using gamma spectroscopy.

### WATER

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Surface water samples are tested for total alpha and beta radioactivity with a gas proportional counter, and for gamma-emitting radionuclides with a gamma spectrometer. Water samples are also tested for tritium with a liquid scintillation counter.

### MILK

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Milk is a good indicator media for radioactive elements, particularly iodine-131, which can be detected in milk soon after cows graze on contaminated pastures or feed. Hence, cow's milk is tested for gamma radionuclides, including iodine-131, using gamma spectroscopy.

## SEAFOOD, SEDIMENT, VEGETATION, AND FOOD CROPS

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Seafood, sediment, vegetation and food crops were chosen to represent various stages of the food chain where radionuclides may be identified. Mollusks (such as clams and mussels) filter-feed sediment and sand where heavy and sediment-bound radionuclides may accumulate; lobsters eat clams, mussels and small fish; and radionuclides biomagnify from smaller to larger surface-dwelling fish.

Analyses of vegetation and crop samples aim to identify radionuclides that may settle on surfaces or be absorbed through the roots. Samples are tested for gamma-emitting radionuclides using a gamma spectrometer.

## IRISH MOSS

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Irish moss (i.e., *Chondrus*) is a type of seaweed that readily absorbs iodine and is thus a good reference indicator of iodine-131 in the environment.

## QUALITY ASSURANCE

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Laboratory sample detection levels are affected by sample size, time between collection and analysis, and equipment processing and counting time. Where detection levels fall outside our analytic sensitivity guidelines they are noted in the tables as “NR” (Result is not reported for quality control reason).

## 2. ENVIRONMENTAL MONITORING AND SAMPLING

This section summarizes the environmental samples collected and analyzed in 2023 for the Pilgrim and Seabrook nuclear power stations.

### A. PILGRIM NUCLEAR POWER STATION

The Pilgrim Nuclear Power Station (Pilgrim) is located in Plymouth, MA. There are five Massachusetts communities within a 10-mile radius of Pilgrim: Carver, Duxbury, Kingston, Marshfield, and Plymouth, all shown below in Figure 1.

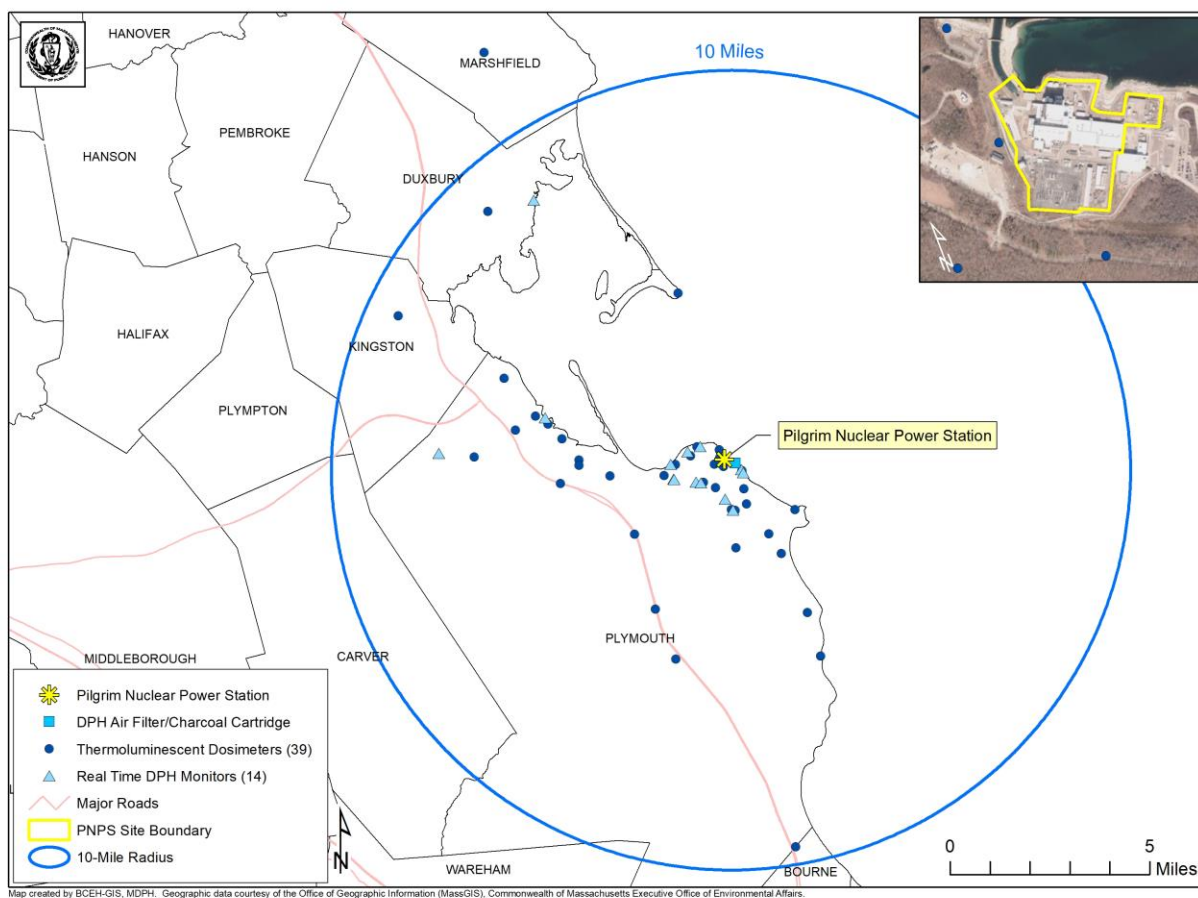


Figure 1. The MDPH/BCEH Radiation -monitoring network at Pilgrim

In 2023, MDPH/BCEH's radiation monitoring conducted in the areas surrounding Pilgrim included a combination of independent direct monitoring of airborne radiation; air and cranberry sampling; and analysis of split samples provided by the current owner of the Pilgrim site (Holtec). Holtec provided samples of water, fish, shellfish, sediment, food crops, and mixed grasses. Figure 1 shows locations of the air monitors for Pilgrim. Sample locations for water, fish, shellfish, sediment, food crops, and mixed grasses are shown in Figure 2.



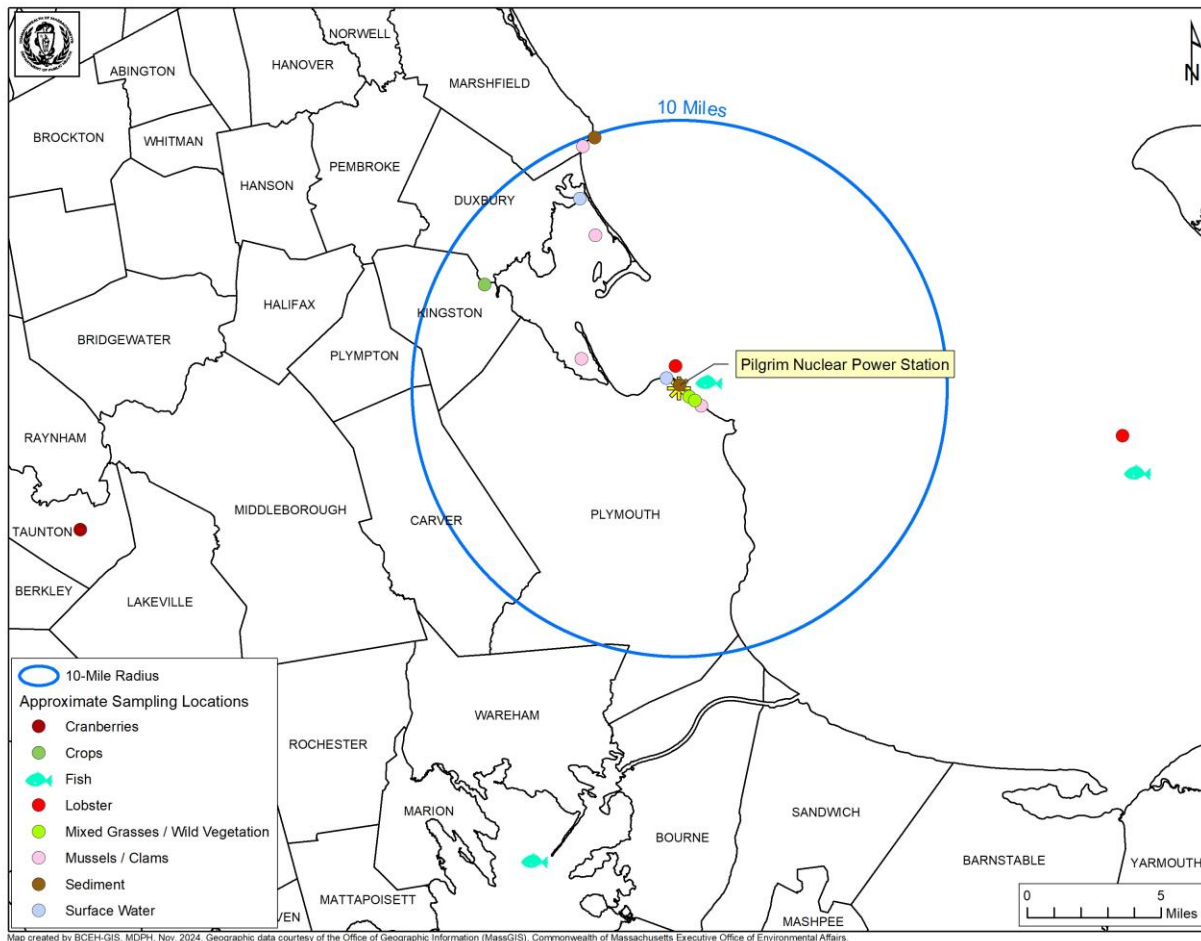


Figure 2. Pilgrim 10-mile radius and sampling locations

### Air/Direct Radiation

MDPH/BCEH's direct radiation monitoring at Pilgrim is comprised of three systems operating on real-time, weekly, and quarterly bases. The redundant systems are designed to independently monitor the land areas surrounding Pilgrim and to verify the utility's radiation monitoring.

In 2023, MDPH/BCEH maintained a network of 14 stationary radiation monitoring stations that detects gamma radiation in real-time and transmits data to a computer which is remotely accessed by staff. Emergency alerts are sent to MDPH and Massachusetts Emergency Management Agency (MEMA) officials if radiation is detected at levels greater than three times the typical background level. In 2016, MDPH/BCEH completely replaced the older system with new monitors and servers and installed an internet-based communication system.

MDPH/BCEH analyzes samples collected from an air particulate filter and a charcoal air cartridge located just outside the Pilgrim utility's fence. Filters are analyzed for gross beta and gross alpha radioactivity and cartridges are analyzed for iodine-131. A filter composite sample is also analyzed quarterly for additional gamma-emitting radionuclides. The same analyses are done for an air particulate filter and charcoal cartridge collected from a background location in Boston.

MDPH/BCEH also has a network of 39 TLDs placed throughout the Pilgrim 10-mile radius and surrounding communities, which measure total gamma radiation in milliroentgen (mR). The majority of the TLDs are located in the inner region of the 10-mile radius, and three are near the plant border. These TLDs are collected and analyzed quarterly, and the results are compared to those of a background location in Boston.

#### Surface Water

Holtec collects seawater on a weekly basis from the Pilgrim discharge canal and the Powder Point Bridge in Duxbury and provides split samples of monthly composites to MDPH/BCEH for analysis of gamma-emitting radionuclides. MERL also analyzes monthly composites of weekly surface water samples from both locations for tritium.

#### Fish and Shellfish

Holtec provides annual split samples of fish and lobster collected from the Pilgrim discharge canal to MERL for analysis. In 2023 Holtec also provided MERL with split samples of background fish and lobster from Buzzards Bay.

In 2023, Holtec collected *Mytilus* (i.e., blue or common mussels) from Green Harbor in Marshfield and the Pilgrim discharge canal; and collected soft shell clams from Duxbury Bay and Plymouth Harbor. Duxbury Bay, Green Harbor, and Plymouth Harbor are reported to be background locations by Holtec for federal reporting requirements but are considered to be “indicator” locations by MDPH/BCEH because they fall within 10 miles of the plant. MERL analyzed the split samples for gamma-emitting radionuclides.

#### Sediment

In 2023 Holtec collected sediment samples from Green Harbor in Marshfield and the Pilgrim discharge canal; MERL analyzed the split samples.

#### Crops

MDPH/BCEH routinely collects and analyzes background cranberry samples from a bog in East Taunton annually.

In 2023 MDPH collected samples of strawberries, tomatoes, and zucchini during the growing season, from a farm in Kingston, which is within the 10-mile perimeter surrounding the Pilgrim plant.

#### Mixed Grasses

In 2023 MERL analyzed split samples of mixed grasses, collected by Holtec from the beach area at Pilgrim.

## B. SEABROOK NUCLEAR POWER STATION

The Seabrook Nuclear Power Station (Seabrook) is located in Seabrook, New Hampshire, approximately two miles north of the Massachusetts border. Six Massachusetts communities are included within 10 miles of Seabrook: Amesbury, Merrimac, Newbury, Newburyport, Salisbury, and West Newbury as shown in Figure 3. Because the Seabrook plant is still operating, areas within the 10-mile radius are referred to as an Emergency Planning Zone (EPZ).

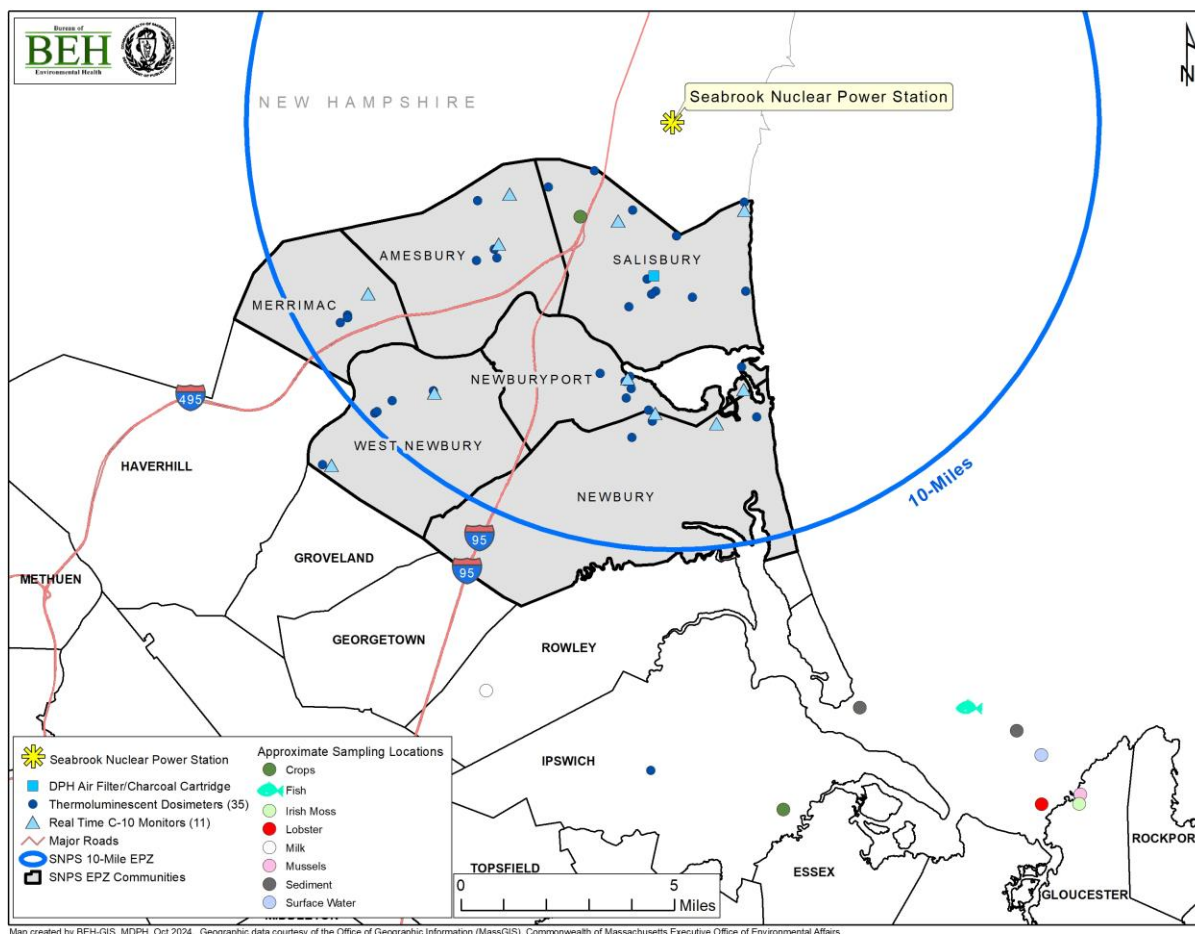


Figure 3. Seabrook EPZ and sampling locations within Massachusetts

Radiation monitoring conducted within and outside the Seabrook EPZ includes the following environmental media: air, surface water, fish, shellfish, sediment, Irish moss, crops, and milk. MDPH/BCEH receives split samples from Nextera, the utility that owns Seabrook, for all media except milk and air. Sampling locations and activities within Massachusetts are described below. Sampling locations are shown in Figure 3.

### Air/Direct Radiation

MDPH/BCEH collects air particulate filters and charcoal cartridges weekly at the Salisbury Fire Station. Filters are analyzed for gross beta and alpha radioactivity, and cartridges for iodine-131. Additionally, a

filter composite is analyzed quarterly for gamma-emitting radionuclides. The same analyses are done for air particulate filters and charcoal cartridges collected at the background location in Boston.

MDPH/BCEH measures total ambient gamma radiation using a network of 34 TLDs placed at locations throughout the Seabrook EPZ in Massachusetts. These are collected and analyzed quarterly and results are compared to those of a background location in Boston.

MDPH/BCEH contracts with the C-10 Research & Education Foundation, Inc. to conduct radiation monitoring in Massachusetts communities located in the Seabrook EPZ. The C-10 system consists of a network of 11 real-time radiation sensors and weather probes located in Massachusetts within a 10-mile radius of Seabrook station. Beta, gamma, and weather data are collected and uploaded every 15 minutes to a secure web-based central repository. C-10 compiles and graphs the data monthly and sends reports to MDPH/BCEH. The 10 Massachusetts monitoring sites within the Seabrook 10-mile EPZ are located at private homes, schools, and businesses. MDPH and MEMA officials receive text alerts from C-10 if levels are greater than three times the typical background readings.

#### Surface Water

Seawater samples are typically collected monthly by Nextera from a background location in Ipswich Bay. MERL analyzes split samples for gamma-emitting radionuclides. MERL also analyzes surface water samples for tritium.

#### Milk

MDPH/BCEH collects samples of cow's milk monthly from a farm located in Rowley and MERL analyzes the samples for gamma-emitting radionuclides, including iodine-131.

#### Fish and Shellfish

Nextera semi-annually collects samples of fish and shellfish, including lobster, *Modiolus* (i.e., Atlantic ribbed mussels) and *Mytilus* (i.e., blue or common mussels), from Ipswich Bay, which is considered a background location; MERL analyzes the split samples for gamma-emitting radionuclides.

#### Sediment

Nextera semi-annually collects sediment samples from Ipswich Bay and the tidal flats on Plum Island, both background locations; MERL analyzes the split samples for gamma-emitting radionuclides.

#### Irish moss

As noted earlier, Irish moss readily absorbs iodine and is a sentinel indicator of environmental iodine-131. Nextera collects samples of Irish moss semiannually from a background location in Ipswich Bay, and split samples are analyzed by MERL for gamma-emitting radionuclides.

#### Crops

In 2023 MDPH collected strawberries, tomatoes, and zucchini, from a farm located within the Seabrook EPZ in Salisbury; and also collected strawberries, tomatoes, and zucchini from a farm in Ipswich, which is outside the Seabrook EPZ.

### 3. 2023 ENVIRONMENTAL MONITORING RESULTS

Results of environmental monitoring conducted by MDPH/BCEH in the Massachusetts communities in the vicinity of the Pilgrim and Seabrook nuclear power stations are discussed below and presented in Tables 2-7. The tables are organized by nuclear power station and by sample media.

#### A. PILGRIM NUCLEAR POWER STATION

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Sampling results for Pilgrim are provided in Tables 2, 3 and 4. Only two radionuclides – Beryllium-7 and Potassium-40, both of which are naturally occurring, were detected in samples collected either within or outside the former EPZ (i.e., the 10-mile radius from Pilgrim). Levels of Beryllium-7 and Potassium-40 detected within the former EPZ are generally consistent with levels detected in background samples. Naturally occurring Potassium-40 was detected in all samples of environmental media. Naturally occurring Beryllium-7 was detected in: 1) all quarterly composite air samples; 2) cranberries; and 3) mixed grasses.<sup>3</sup> Except for the cranberries, all samples in which Beryllium-7 was detected were collected within 10-miles of Pilgrim; the cranberries were collected in Taunton, which is more than 10 miles from Pilgrim.

In addition to naturally occurring Beryllium-7 and Potassium-40, which were detected at levels consistent with background levels, air filter and cartridge analyses indicated low levels of gross alpha and gross beta radiation. Levels of gross alpha and beta radiation ranged from 0.0002 – 0.007 and 0.008 – 0.054 pico curies (pCi)/m<sup>3</sup>, respectively. These levels are consistent with historical levels measured at the background location in Boston. No gamma-emitting radionuclides of concern were detected in quarterly composite air samples.

Real-time monitoring did not detect radiation greater than typical background levels of approximately 0.007 - 0.009 mRoentgen/hour with the exception of brief increases up to approximately 0.02 mRoentgen/hour. Brief increases are expected due to rainfall washout from naturally occurring radionuclides such as airborne radon daughters and cosmic radiation events. No alerts at three times background were recorded.

TLD total gamma exposure results ranged from 11.9 to 24.3 mRoentgen/quarter (i.e., 0.005 – 0.011 mRoentgen/hour) with an average of 15.8 mRoentgen/quarter (0.007 mRoentgen/hour). These levels are consistent with historical levels measured at the background location in Boston.

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<sup>3</sup> Surface water is not evaluated for Beryllium-7.

## B. SEABROOK NUCLEAR POWER STATION

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Seabrook sampling results are provided in Tables 5, 6 and 7. As with Pilgrim, the only radionuclides detected either within or outside the Seabrook EPZ were Potassium-40 and Beryllium-7.

Naturally occurring Potassium-40 was detected in all samples of environmental media from both within and outside the Seabrook EPZ. Naturally occurring Beryllium-7 was detected in Irish moss (i.e., chondrus), mytilus mussels collected in May, and modiolus mussels collected in November; all of these samples were collected from the background sampling location in Ipswich Bay. Beryllium-7 was also detected in the composite air samples collected at the Salisbury Fire Station for all four quarters. As with Pilgrim, levels of Potassium-40 and Beryllium-7 detected within the Seabrook EPZ are consistent with background levels.

In addition to naturally occurring Beryllium-7 and Potassium-40, detected at levels consistent with background, analyses of air filter and cartridge samples found low levels of gross alpha (0.0001 – 0.006 pCi/m<sup>3</sup>) and gross beta (0.009 – 0.122 pCi/m<sup>3</sup>) radiation. These levels are consistent with historical levels measured at the background location in Boston. No gamma radionuclides of concern were detected in quarterly composite air samples.

In 2023, real-time monitoring for the Seabrook EPZ did not show gamma radiation levels above typical background levels at most stations (approximately 0.010 mRoentgen/hour) with the exception of brief increases (typically up to approximately 0.02 mRoentgen/hour). Brief increases are expected due to rainfall washout from naturally occurring radionuclides such as airborne radon daughters and cosmic radiation events. Beta readings ranged from approximately 35 to 55 counts per minute with the exception of brief increases similar to the gamma results. These beta levels are comparable to levels from previous years, and also to levels from the background location in Somerville, MA.

TLD results for total gamma exposure ranged from 11.3 to 22.0 mRoentgen/quarter (0.005 – 0.010 mRoentgen/hour) with an average exposure of 17.3 mRoentgen/quarter (0.008 mRoentgen/hour). These levels are consistent with historical levels measured at the background location in Boston.

## C. SUMMARY

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Radiation monitoring results in 2023 for Massachusetts have been either non-detect or naturally occurring (i.e., Potassium-40, Beryllium-7). No detectable radionuclides were at levels of health concern or were indicative of an unintentional release of radiation at Pilgrim or Seabrook.

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## D. RESULTS TABLES



Table 2. Pilgrim Nuclear Power Station 2023 Environmental Monitoring Data - Air Samples

Sample Type	Location	Date	I-131* (pCi/m <sup>3</sup> )	Be-7* (pCi/m <sup>3</sup> )	K-40* (pCi/m <sup>3</sup> )	Mn-54* (pCi/m <sup>3</sup> )	Fe-59* (pCi/m <sup>3</sup> )	Co-60* (pCi/m <sup>3</sup> )	Zn-65* (pCi/m <sup>3</sup> )	Cs-137* (pCi/m <sup>3</sup> )	Gross Alpha (pCi/m <sup>3</sup> )	Gross Beta (pCi/m <sup>3</sup> )
Air	Pilgrim Station	01/04/2023	<0.0276	-	-	-	-	-	-	-	0.0071	0.0365
Air	Pilgrim Station	01/11/2023	<0.0227	-	-	-	-	-	-	-	<0.0035	0.0168
Air	Pilgrim Station	01/18/2023	<0.0154	-	-	-	-	-	-	-	0.0002	0.0133
Air	Pilgrim Station	01/25/2023	<0.0167	-	-	-	-	-	-	-	<0.0036	0.0124
Air	Pilgrim Station	02/01/2023	<0.0165	-	-	-	-	-	-	-	0.0027	0.0246
Air	Pilgrim Station	02/09/2023	<0.0123	-	-	-	-	-	-	-	0.0024	0.0299
Air	Pilgrim Station Quarterly Composite	2/15/2023	-	0.084	0.152	<0.001	<0.004	<0.001	<0.002	<0.001	-	-
Air	Pilgrim Station	02/15/2023	<0.0166	-	-	-	-	-	-	-	0.0007	0.0238
Air	Pilgrim Station	02/22/2023	<0.0132	-	-	-	-	-	-	-	0.0070	0.0230
Air	Pilgrim Station	03/01/2023	<0.0179	-	-	-	-	-	-	-	<0.0035	0.0179
Air	Pilgrim Station	03/08/2023	<0.0154	-	-	-	-	-	-	-	0.0011	0.0203
Air	Pilgrim Station	03/15/2023	<0.0165	-	-	-	-	-	-	-	<0.0035	0.0139
Air	Pilgrim Station	03/22/2023	<0.0147	-	-	-	-	-	-	-	0.0016	0.0271
Air	Pilgrim Station	03/29/2023	<0.0148	-	-	-	-	-	-	-	0.0013	0.0225
Air	Pilgrim Station	04/05/2023	<0.0140	-	-	-	-	-	-	-	0.0037	0.0232
Air	Pilgrim Station	04/12/2023	<0.0147	-	-	-	-	-	-	-	0.0045	0.0268
Air	Pilgrim Station	04/19/2023	<0.0147	-	-	-	-	-	-	-	0.0006	0.0199
Air	Pilgrim Station	04/27/2023	<0.0116	-	-	-	-	-	-	-	<0.0031	0.0117
Air	Pilgrim Station	05/03/2023	<0.0194	-	-	-	-	-	-	-	<0.0042	0.0165
Air	Pilgrim Station	05/10/2023	<0.0157	-	-	-	-	-	-	-	<0.0035	0.0084
Air	Pilgrim Station Quarterly Composite	5/15/2023	-	0.084	0.162	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
Air	Pilgrim Station	05/16/2023	<0.0184	-	-	-	-	-	-	-	<0.0042	0.0175
Air	Pilgrim Station	05/24/2023	<0.0135	-	-	-	-	-	-	-	<0.0031	0.0114
Air	Pilgrim Station	06/01/2023	<0.0182	-	-	-	-	-	-	-	<0.0031	0.0105
Air	Pilgrim Station	06/08/2023	<0.0273	-	-	-	-	-	-	-	<0.0036	0.0123
Air	Pilgrim Station	06/15/2023	<0.0146	-	-	-	-	-	-	-	<0.0355	0.0170
Air	Pilgrim Station	06/21/2023	<0.0250	-	-	-	-	-	-	-	<0.0041	0.0125
Air	Pilgrim Station	06/29/2023	<0.0175	-	-	-	-	-	-	-	<0.0031	0.0131
Air	Pilgrim Station	07/06/2023	<0.0239	-	-	-	-	-	-	-	0.0011	0.0219
Air	Pilgrim Station	07/13/2023	<0.0213	-	-	-	-	-	-	-	0.0029	0.0223
Air	Pilgrim Station	07/18/2023	<0.0225	-	-	-	-	-	-	-	<0.0049	0.0242

- " = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"<" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.

Sample Type	Location	Date	I-131* (pCi/m <sup>3</sup> )	Be-7* (pCi/m <sup>3</sup> )	K-40* (pCi/m <sup>3</sup> )	Mn-54* (pCi/m <sup>3</sup> )	Fe-59* (pCi/m <sup>3</sup> )	Co-60* (pCi/m <sup>3</sup> )	Zn-65* (pCi/m <sup>3</sup> )	Cs-137* (pCi/m <sup>3</sup> )	Gross Alpha (pCi/m <sup>3</sup> )	Gross Beta (pCi/m <sup>3</sup> )
Air	Pilgrim Station	07/28/2023	<0.0112	-	-	-	-	-	-	-	0.0038	0.0209
Air	Pilgrim Station	08/03/2023	<0.0549	-	-	-	-	-	-	-	<0.0075	0.0178
Air	Pilgrim Station	08/12/2023	<0.0135	-	-	-	-	-	-	-	0.0007	0.0166
Air	Pilgrim Station Quarterly Composite	08/15/2023	-	0.111	0.196	<0.001	<0.005	<0.001	<0.002	<0.001	-	-
Air	Pilgrim Station	08/18/2023	<0.0214	-	-	-	-	-	-	-	<0.0040	0.0234
Air	Pilgrim Station	08/24/2023	<0.0253	-	-	-	-	-	-	-	<0.0043	0.0160
Air	Pilgrim Station	09/02/2023	<0.0144	-	-	-	-	-	-	-	<0.0027	0.0132
Air	Pilgrim Station	09/07/2023	<0.0325	-	-	-	-	-	-	-	0.0021	0.0535
Air	Pilgrim Station	09/14/2023	<0.0205	-	-	-	-	-	-	-	0.0002	0.0356
Air	Pilgrim Station	09/21/2023	<0.0138	-	-	-	-	-	-	-	<0.0036	0.0165
Air	Pilgrim Station	09/27/2023	<0.0913	-	-	-	-	-	-	-	<0.0041	0.0182
Air	Pilgrim Station	10/05/2023	<0.0384	-	-	-	-	-	-	-	0.0030	0.0300
Air	Pilgrim Station	10/11/2023	<0.0458	-	-	-	-	-	-	-	0.0007	0.0201
Air	Pilgrim Station	10/19/2023	<0.0206	-	-	-	-	-	-	-	<0.0031	0.0144
Air	Pilgrim Station	10/27/2023	<0.0159	-	-	-	-	-	-	-	0.0004	0.0223
Air	Pilgrim Station	11/02/2023	<0.0183	-	-	-	-	-	-	-	<0.0042	0.0110
Air	Pilgrim Station	11/10/2023	<0.0419	-	-	-	-	-	-	-	0.0032	0.0368
Air	Pilgrim Station Quarterly Composite	11/15/2023	-	0.067	0.220	<0.001	<0.004	<0.001	<0.002	<0.001	-	-
Air	Pilgrim Station	11/16/2023	<0.0287	-	-	-	-	-	-	-	<0.0038	0.0156
Air	Pilgrim Station	11/24/2023	<0.0179	-	-	-	-	-	-	-	0.0003	0.0188
Air	Pilgrim Station	11/30/2023	<0.0219	-	-	-	-	-	-	-	<0.0043	0.0205
Air	Pilgrim Station	12/08/2023	<0.0405	-	-	-	-	-	-	-	<0.0031	0.0143
Air	Pilgrim Station	12/14/2023 <sup>a</sup>	<0.0240	-	-	-	-	-	-	-	0.00134	0.0521
Air	Pilgrim Station	12/28/2023 <sup>b</sup>	<0.1800	-	-	-	-	-	-	-	<0.0206	0.0277
Air	Background	01/04/2023	<0.0247	-	-	-	-	-	-	-	0.0052	0.0339
Air	Background	01/11/2023	<0.0163	-	-	-	-	-	-	-	0.0010	0.0191
Air	Background	01/18/2023	<0.0168	-	-	-	-	-	-	-	0.0015	0.0174
Air	Background	01/25/2023	<0.0163	-	-	-	-	-	-	-	<0.0042	0.0148
Air	Background	02/02/2023	<0.0157	-	-	-	-	-	-	-	0.0031	0.0282
Air	Background	02/08/2023	<0.0210	-	-	-	-	-	-	-	0.0031	0.0312
Air	Background	02/14/2023	<0.0192	-	-	-	-	-	-	-	0.0027	0.0310

- = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"<" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.

Sample Type	Location	Date	I-131* (pCi/m <sup>3</sup> )	Be-7* (pCi/m <sup>3</sup> )	K-40* (pCi/m <sup>3</sup> )	Mn-54* (pCi/m <sup>3</sup> )	Fe-59* (pCi/m <sup>3</sup> )	Co-60* (pCi/m <sup>3</sup> )	Zn-65* (pCi/m <sup>3</sup> )	Cs-137* (pCi/m <sup>3</sup> )	Gross Alpha (pCi/m <sup>3</sup> )	Gross Beta (pCi/m <sup>3</sup> )
Air	Background Quarterly Composite	02/15/2023	-	0.099	0.181	<0.001	<0.005	<0.001	<0.002	<0.001	-	-
Air	Background	02/21/2023	<0.0199	-	-	-	-	-	-	-	0.0018	0.0268
Air	Background	03/01/2023	<0.0150	-	-	-	-	-	-	-	0.0011	0.0194
Air	Background	03/07/2023	<0.0218	-	-	-	-	-	-	-	0.0017	0.0226
Air	Background	03/13/2023	<0.0236	-	-	-	-	-	-	-	0.0011	0.0180
Air	Background	03/21/2023	<0.0140	-	-	-	-	-	-	-	0.0004	0.0168
Air	Background	03/29/2023	<0.0170	-	-	-	-	-	-	-	<0.0037	0.0258
Air	Background	04/04/2023	<0.0187	-	-	-	-	-	-	-	0.0034	0.0298
Air	Background	04/13/2023	<0.0128	-	-	-	-	-	-	-	0.0023	0.0248
Air	Background	04/18/2023	<0.0224	-	-	-	-	-	-	-	<0.0057	0.0222
Air	Background	04/25/2023	<0.0169	-	-	-	-	-	-	-	<0.0042	0.0096
Air	Background	05/02/2023	<0.0182	-	-	-	-	-	-	-	0.0043	0.0173
Air	Background	05/09/2023	<0.0155	-	-	-	-	-	-	-	<0.0041	0.0108
Air	Background Quarterly Composite	5/15/2023	-	0.087	0.123	<0.001	<0.007	<0.001	<0.002	<0.001	-	-
Air	Background	05/16/2023	<0.0158	-	-	-	-	-	-	-	0.0016	0.0182
Air	Background	05/23/2023	<0.0162	-	-	-	-	-	-	-	<0.0041	0.0119
Air	Background	05/30/2023	<0.0156	-	-	-	-	-	-	-	<0.0041	0.0143
Air	Background	06/06/2023	<0.0165	-	-	-	-	-	-	-	<0.0042	0.0122
Air	Background	06/13/2023	<0.0177	-	-	-	-	-	-	-	<0.0041	0.0118
Air	Background	06/20/2023	<0.0155	-	-	-	-	-	-	-	<0.0041	0.0089
Air	Background	06/27/2023	<0.0170	-	-	-	-	-	-	-	<0.0041	0.0136
Air	Background	07/03/2023	<0.0204	-	-	-	-	-	-	-	0.0016	0.0227
Air	Background	07/12/2023	<0.0144	-	-	-	-	-	-	-	0.0011	0.0150
Air	Background	07/18/2023	<0.0211	-	-	-	-	-	-	-	0.0021	0.0268
Air	Background	07/25/2023	<0.0173	-	-	-	-	-	-	-	0.0007	0.0232
Air	Background	08/03/2023	<0.0121	-	-	-	-	-	-	-	0.0024	0.0228
Air	Background	08/09/2023	<0.0212	-	-	-	-	-	-	-	<0.0048	0.0166
Air	Background Quarterly Composite	08/15/2023	-	0.083	0.225	<0.001	<0.006	<0.001	<0.002	<0.001	-	-
Air	Background	08/16/2023	<0.0179	-	-	-	-	-	-	-	0.0004	0.0241
Air	Background	08/22/2023	<0.0183	-	-	-	-	-	-	-	<0.0048	0.0190
Air	Background	08/29/2023	<0.0169	-	-	-	-	-	-	-	<0.0041	0.0158

- = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

< = value is less than the listed MDA (Minimum Detectable Activity) value

“NR”= result not reported for quality control reasons.

Sample Type	Location	Date	I-131* (pCi/m <sup>3</sup> )	Be-7* (pCi/m <sup>3</sup> )	K-40* (pCi/m <sup>3</sup> )	Mn-54* (pCi/m <sup>3</sup> )	Fe-59* (pCi/m <sup>3</sup> )	Co-60* (pCi/m <sup>3</sup> )	Zn-65* (pCi/m <sup>3</sup> )	Cs-137* (pCi/m <sup>3</sup> )	Gross Alpha (pCi/m <sup>3</sup> )	Gross Beta (pCi/m <sup>3</sup> )
Air	Background	09/05/2023	<0.0159	-	-	-	-	-	-	-	<0.0041	0.0245
Air	Background	09/12/2023	<0.0156	-	-	-	-	-	-	-	<0.0040	<0.0042
Air	Background	09/19/2023	<0.0163	-	-	-	-	-	-	-	<0.0041	0.0179
Air	Background	09/26/2023	<0.0162	-	-	-	-	-	-	-	<0.0041	0.0176
Air	Background	10/03/2023	<0.1090 <sup>a</sup>	-	-	-	-	-	-	-	0.0006	0.0267
Air	Background	10/11/2023	<0.0279	-	-	-	-	-	-	-	0.0019	0.0286
Air	Background	10/17/2023	<0.0346	-	-	-	-	-	-	-	<0.0048	0.0185
Air	Background	10/24/2023	<0.0199	-	-	-	-	-	-	-	<0.0041	0.0102
Air	Background	10/31/2023	<0.0164	-	-	-	-	-	-	-	0.0002	0.0239
Air	Background	11/07/2023	<0.0605	-	-	-	-	-	-	-	0.0043	0.0350
Air	Background Quarterly Composite	11/15/2023	-	0.083	<0.028	<0.001	<0.004	<0.001	<0.002	<0.001	-	-
Air	Background	11/15/2023	<0.0285	-	-	-	-	-	-	-	<0.0036	0.0197
Air	Background	11/21/2023	<0.0252	-	-	-	-	-	-	-	<0.0049	0.0269
Air	Background	11/28/2023	<0.0199	-	-	-	-	-	-	-	<0.0042	0.2060
Air	Background	12/05/2023	<0.0203	-	-	-	-	-	-	-	<0.0042	0.0313
Air	Background	12/12/2023	<0.0204	-	-	-	-	-	-	-	<0.0042	0.0100
Air	Background	12/19/2023	<0.0249	-	-	-	-	-	-	-	<0.0042	0.0232
Air	Background	12/26/2023	<0.0193	-	-	-	-	-	-	-	<0.0042	0.0191

[a] Low volume sample due to power supply issue

[b] Low volume, two-week sample due to power supply issue

- " = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"<" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.

Table 3. Pilgrim Nuclear Power Station 2023 Environmental Monitoring Data – Liquid Matrices

Sample Type	Location	Date	K-40* (pCi/L)	Mn-54* (pCi/L)	Fe-59* (pCi/L)	Co-60* (pCi/L)	Zn-65* (pCi/L)	I-131* (pCi/L)	Cs-137* (pCi/L)	H-3* (pCi/L)
Surface water	Discharge Canal	01/15/2023	965	<2.84	<8.60	<2.73	<5.98	NR	<2.76	<300
Surface water	Discharge Canal	02/15/2023	1000	<2.64	<6.45	<2.52	<5.93	<20.2	<2.61	<300
Surface water	Discharge Canal	03/15/2023	1000	<2.38	<8.07	<2.60	<5.93	NR	<2.67	<300
Surface water	Discharge Canal	04/15/2023	976	<2.70	<6.32	<2.55	<5.53	<18.2	<2.53	<300
Surface water	Discharge Canal	05/15/2023	969	<2.63	<6.88	<2.57	<6.00	<28.3	<2.51	<300
Surface water	Discharge Canal	06/15/2023	1000	<2.70	<8.13	<2.64	<6.14	NR	<2.70	<300
Surface water	Discharge Canal	07/15/2023	975	<2.70	<6.99	<2.47	<5.70	NR	<2.62	<300
Surface water	Discharge Canal	08/15/2023	781	<2.75	<6.57	<2.82	<5.71	<12.1	<2.76	<300
Surface water	Discharge Canal	09/15/2023	966	<2.69	<7.01	<2.44	<5.81	<20.4	<2.41	<300
Surface water	Discharge Canal	10/15/2023	1120	<2.91	<8.32	<2.55	<5.78	NR	<2.71	<300
Surface water	Discharge Canal	11/15/2023	1100	<2.71	<6.70	<2.59	<6.06	<11.3	<2.73	<300
Surface water	Discharge Canal	12/15/2023	586	<2.77	<6.16	<2.98	<6.42	<6.65	<3.01	<300
Surface water	Powder Point Bridge <sup>1</sup>	01/15/2023	1310	<3.26	<10.20	<3.22	<7.24	NR	<3.56	<300
Surface water	Powder Point Bridge <sup>1</sup>	02/15/2023	658	<2.86	<7.07	<2.89	<6.01	<18.9	<3.05	<300
Surface water	Powder Point Bridge <sup>1</sup>	03/15/2023	781	<2.94	<8.35	<3.11	<6.38	<30.4	<3.10	<300
Surface water	Powder Point Bridge <sup>1</sup>	04/15/2023	554	<2.92	<7.31	<2.87	<5.9	<17.1	<3.36	<300
Surface water	Powder Point Bridge <sup>1</sup>	05/15/2023	678	<2.83	<9.86	<2.98	<6.38	NR	<3.52	<300
Surface water	Powder Point Bridge <sup>1</sup>	06/15/2023	973	<2.60	<7.78	<2.46	<5.47	NR	<2.64	<300
Surface water	Powder Point Bridge <sup>1</sup>	07/15/2023	1030	<2.60	<7.58	<2.22	<6.05	NR	<2.54	<300
Surface water	Powder Point Bridge <sup>1</sup>	08/15/2023	988	<2.73	<5.98	<2.65	<5.73	<15.0	<2.66	<300
Surface water	Powder Point Bridge <sup>1</sup>	09/15/2023	954	<2.70	<7.16	<2.51	<5.52	<27.4	<2.50	<300
Surface water	Powder Point Bridge <sup>1</sup>	10/15/2023	1080	<2.87	<8.35	<2.66	<6.39	NR	<2.63	<300
Surface water	Powder Point Bridge <sup>1</sup>	11/15/2023	551	<3.10	<7.50	<3.28	<6.77	<18.8	<3.02	<300
Surface water	Powder Point Bridge <sup>1</sup>	12/15/2023	1160	<2.66	<5.57	<2.65	<6.06	<6.69	<2.68	<300

<sup>1</sup>Sample considered “background” for the purpose of NRC regulations, but considered “indicator” by MDPH because it falls within 10-miles of the PNPS plant.

- = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

“<” = value is less than the listed MDA (Minimum Detectable Activity) value

“NR”= result not reported for quality control reasons.

Table 4. Pilgrim Nuclear Power Station 2023 Environmental Monitoring Data – Solid matrices

Sample	Location	Date	Be-7* (pCi/kg)	K-40* (pCi/kg)	Mn-54* (pCi/kg)	Fe-59* (pCi/kg)	Co-60* (pCi/kg)	Zn-65* (pCi/kg)	Cs-137* (pCi/kg)	I-131* (pCi/kg)
Atlantic Cod	Cape Cod Bay (background)	12/22/2023	<160	486	<12.4	<42.7	<11.2	<26.8	<11.6	-
Flounder	PNPS Discharge Canal	7/5/2023	NR	1930	<34.9	NR	<22.1	<85.7	<21.8	-
Menhaden	Buzzards Bay (background)	12/22/2023	<60.1	2940	<5.14	<19.5	<4.65	<12.2	<4.43	-
Striped Bass	Buzzards Bay (background)	12/5/2023	<232	1750	<13.7	<62.4	<12.2	<30.5	<11.9	-
Lobster	Cape Cod Bay (background)	8/29/2023	<149	6110	<14.3	<41.5	<12.2	<32.1	<13.5	-
Lobster	PNPS Discharge Canal	7/30/2023	<63.7	1940	<4.42	<21.1	<4.23	<10.6	<4.13	-
Mytilus <sup>1</sup>	Green Harbor, Marshfield <sup>2</sup>	05/08/2023	<154	2240	<4.01	<51.6	<3.16	<10.9	<3.00	-
Mytilus <sup>1</sup>	Green Harbor, Marshfield <sup>2</sup>	11/26/2023	<71.3	942	<5.35	<19.9	<4.62	<11.7	<4.59	-
Mytilus <sup>1</sup>	PNPS Discharge Canal	06/06/2023	<120	2880	<5.32	<41.4	<4.41	<12.8	<4.09	-
Mytilus <sup>1</sup>	PNPS Discharge Canal	11/26/2023	<63.3	816	<3.98	<18.3	<3.54	<9.17	<3.35	-
Softshell Clams	Duxbury <sup>2</sup>	05/09/2023	<142	194	<4.28	<27.9	<0.71	<6.43	<2.55	-
Softshell Clams	Duxbury <sup>2</sup>	12/23/2023	<71.8	1180	<6.06	<19.5	<5.6	<13.4	<5.30	-
Softshell Clams	Plymouth Harbor	04/22/2023	<162	2360	<4.31	<64.5	<3.35	<10.5	<2.84	-
Softshell Clams	Plymouth Harbor	11/27/2023	<63.9	1450	<4.20	<16.9	<3.8	<9.25	<3.93	-
Sediment	Green Harbor, Marshfield <sup>2</sup>	05/08/2023	-	10900	-	-	<17.3	-	<17.3	-
Sediment	Green Harbor, Marshfield <sup>2</sup>	11/26/2023	-	7520	-	-	<17.9	-	<18.4	-
Sediment	PNPS Discharge Canal	06/06/2023	-	16300	-	-	<16.1	-	<15.0	-
Sediment	PNPS Discharge Canal	11/26/2023	-	14300	-	-	<22.3	-	<23.5	-
Cranberries	E. Taunton (background)	10/10/2023	53.9	156	<3.01	<6.61	<2.88	<6.86	<2.82	-
Strawberries	Cretinon's Farm, Kingston	06/15/2023	<28.5	1580	<3.22	<6.93	<3.61	<7.53	<3.65	-
Tomatoes	Cretinon's Farm, Kingston	08/18/2023	<25.4	1010	<3.3	<7.19	<3.61	<7.42	<3.01	-
Zucchini	Cretinon's Farm, Kingston	07/18/2023	<26.9	2350	<3.28	<6.65	<3.75	<7.29	<3.53	-
Mixed Grasses	Pilgrim Beach <sup>3</sup>	10/11/2023	4450	940	<15.3	<30.8	<14.7	<29.5	<14.3	-
Mixed Grasses	Pilgrim Beach <sup>4</sup>	10/11/2023	15000	5170	<43.5	<140	<37.2	<87.9	<38.9	-

<sup>1</sup>Blue, or common mussel<sup>2</sup>Sample considered "background" for the purpose of NRC regulations, but considered "indicator" by MDPH because it falls within 10-miles of the plant<sup>3</sup>Sample collected near doghouse<sup>4</sup>Sample collected near TLD 21

-" = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"&lt;" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.

Table 5. Seabrook Nuclear Power Station 2023 Environmental Monitoring Data - Air Samples

Sample Type	Location	Date	I-131* (pCi/m <sup>3</sup> )	Be-7* (pCi/m <sup>3</sup> )	K-40* (pCi/m <sup>3</sup> )	Mn-54* (pCi/m <sup>3</sup> )	Fe-59* (pCi/m <sup>3</sup> )	Co-60* (pCi/m <sup>3</sup> )	Zn-65* (pCi/m <sup>3</sup> )	Cs-137* (pCi/m <sup>3</sup> )	Gross Alpha (pCi/m <sup>3</sup> )	Gross Beta (pCi/m <sup>3</sup> )
Air	Salisbury Fire Station	01/03/2023	<0.0354	-	-	-	-	-	-	-	0.0041	0.0368
Air	Salisbury Fire Station	01/11/2023	<0.0249	-	-	-	-	-	-	-	0.0014	0.0246
Air	Salisbury Fire Station	01/19/2023	<0.0178	-	-	-	-	-	-	-	0.0010	0.0145
Air	Salisbury Fire Station	01/27/2023	<0.0274	-	-	-	-	-	-	-	0.0010	0.0108
Air	Salisbury Fire Station	02/01/2023	<0.0238	-	-	-	-	-	-	-	0.0023	0.0339
Air	Salisbury Fire Station	02/12/2023	<0.0242	-	-	-	-	-	-	-	0.0032	0.0331
Air	Salisbury Fire Station Quarterly Composite	02/15/2023	-	0.093	0.095	<0.001	<0.005	<0.001	<0.002	<0.001	-	-
Air	Salisbury Fire Station	02/16/2023	<0.0268	-	-	-	-	-	-	-	0.0008	0.0212
Air	Salisbury Fire Station	02/22/2023	<0.0214	-	-	-	-	-	-	-	0.0038	0.0316
Air	Salisbury Fire Station	03/02/2023	<0.0203	-	-	-	-	-	-	-	0.0031	0.0204
Air	Salisbury Fire Station	03/08/2023	<0.0704	-	-	-	-	-	-	-	0.0013	0.0241
Air	Salisbury Fire Station	03/15/2023	<0.0338	-	-	-	-	-	-	-	0.0007	0.0151
Air	Salisbury Fire Station	03/22/2023	<0.0273	-	-	-	-	-	-	-	0.0018	0.0322
Air	Salisbury Fire Station	03/28/2023	<0.0357	-	-	-	-	-	-	-	0.0016	0.0260
Air	Salisbury Fire Station	04/06/2023	<0.0134	-	-	-	-	-	-	-	0.0030	0.0262
Air	Salisbury Fire Station	04/11/2023	<0.0273	-	-	-	-	-	-	-	0.0030	0.0333
Air	Salisbury Fire Station	04/21/2023	<0.0174	-	-	-	-	-	-	-	0.0002	0.0183
Air	Salisbury Fire Station	04/27/2023	<0.0222	-	-	-	-	-	-	-	<0.0047	0.0120
Air	Salisbury Fire Station	05/04/2023	<0.0343	-	-	-	-	-	-	-	<0.0039	0.0118
Air	Salisbury Fire Station	05/10/2023	<0.0212	-	-	-	-	-	-	-	<0.0050	0.0120
Air	Salisbury Fire Station Quarterly Composite	05/15/2023	-	0.086	0.163	<0.001	<0.008	<0.001	<0.002	<0.001	-	-
Air	Salisbury Fire Station	05/18/2023	<0.0226	-	-	-	-	-	-	-	0.0001	0.0178
Air	Salisbury Fire Station	05/24/2023	<0.1410	-	-	-	-	-	-	-	<0.0127	0.0213
Air	Salisbury Fire Station	05/30/2023	<0.0204	-	-	-	-	-	-	-	<0.0045	0.0148
Air	Salisbury Fire Station	06/07/2023	<0.0242	-	-	-	-	-	-	-	<0.0038	0.0157
Air	Salisbury Fire Station	06/13/2023	<0.0181	-	-	-	-	-	-	-	<0.0046	0.0147
Air	Salisbury Fire Station	6/20/2023 <sup>a</sup>	<0.1020	-	-	-	-	-	-	-	<0.0214 <sup>a</sup>	0.0782 <sup>a</sup>
Air	Salisbury Fire Station	06/27/2023	<0.0236	-	-	-	-	-	-	-	<0.0042	0.0120
Air	Salisbury Fire Station	7/14/2023 <sup>b</sup>	<0.0121	-	-	-	-	-	-	-	0.0036	0.0161
Air	Salisbury Fire Station	07/19/2023	<0.0253	-	-	-	-	-	-	-	0.0011	0.0249
Air	Salisbury Fire Station	07/26/2023	<0.0183	-	-	-	-	-	-	-	<0.0042	0.0187

- " = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"<" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.

Sample Type	Location	Date	I-131* (pCi/m <sup>3</sup> )	Be-7* (pCi/m <sup>3</sup> )	K-40* (pCi/m <sup>3</sup> )	Mn-54* (pCi/m <sup>3</sup> )	Fe-59* (pCi/m <sup>3</sup> )	Co-60* (pCi/m <sup>3</sup> )	Zn-65* (pCi/m <sup>3</sup> )	Cs-137* (pCi/m <sup>3</sup> )	Gross Alpha (pCi/m <sup>3</sup> )	Gross Beta (pCi/m <sup>3</sup> )
Air	Salisbury Fire Station	08/02/2023	<0.0181	-	-	-	-	-	-	-	0.0003	0.0230
Air	Salisbury Fire Station	08/08/2023	<0.0332	-	-	-	-	-	-	-	<0.0048	0.0162
Air	Salisbury Fire Station Quarterly Composite	08/15/2023	-	0.088	0.087	<0.001	<0.008	<0.001	<0.002	<0.001	-	-
Air	Salisbury Fire Station	08/16/2023	<0.0243	-	-	-	-	-	-	-	<0.0036	0.0170
Air	Salisbury Fire Station	08/23/2023	<0.0206	-	-	-	-	-	-	-	<0.0049	0.0189
Air	Salisbury Fire Station	08/31/2023	<0.0154	-	-	-	-	-	-	-	<0.0035	0.0131
Air	Salisbury Fire Station	09/07/2023	<0.0262	-	-	-	-	-	-	-	0.0005	0.0340
Air	Salisbury Fire Station	9/13/2023 <sup>a</sup>	<0.1210	-	-	-	-	-	-	-	<0.0268	0.0842
Air	Salisbury Fire Station	09/19/2023	<0.0579	-	-	-	-	-	-	-	<0.0075	0.0237
Air	Salisbury Fire Station	09/27/2023	<0.0577	-	-	-	-	-	-	-	<0.0035	0.0150
Air	Salisbury Fire Station	10/05/2023	<0.0506	-	-	-	-	-	-	-	0.0064	0.0328
Air	Salisbury Fire Station	10/13/2023	<0.4690	-	-	-	-	-	-	-	0.0009	0.0216
Air	Salisbury Fire Station	10/20/2023	<0.0276	-	-	-	-	-	-	-	<0.0041	0.0099
Air	Salisbury Fire Station	10/25/2023	<0.0413	-	-	-	-	-	-	-	<0.0058	0.0094
Air	Salisbury Fire Station	11/04/2023	<0.0265	-	-	-	-	-	-	-	0.0044	0.0305
Air	Salisbury Fire Station	11/07/2023 <sup>c</sup>	<0.2800	-	-	-	-	-	-	-	<0.0196	0.0539
Air	Salisbury Fire Station Quarterly Composite	11/15/2023	-	0.077	0.271	<0.001	<0.005	<0.001	<0.002	<0.001	-	-
Air	Salisbury Fire Station	11/21/2023 <sup>d</sup>	<0.0184	-	-	-	-	-	-	-	0.0011	0.0183
Air	Salisbury Fire Station	12/05/2023 <sup>e</sup>	<0.0528	-	-	-	-	-	-	-	0.0005	0.1220
Air	Salisbury Fire Station	12/14/2023	<0.0223	-	-	-	-	-	-	-	<0.0032	0.0232
Air	Salisbury Fire Station	12/28/2023 <sup>f</sup>	<0.0511	-	-	-	-	-	-	-	<0.0077	0.0370
Air	Background	01/04/2023	<0.0247	-	-	-	-	-	-	-	0.0052	0.0339
Air	Background	01/11/2023	<0.0163	-	-	-	-	-	-	-	0.0010	0.0191
Air	Background	01/18/2023	<0.0168	-	-	-	-	-	-	-	0.0015	0.0174
Air	Background	01/25/2023	<0.0163	-	-	-	-	-	-	-	<0.0042	0.0148
Air	Background	02/02/2023	<0.0157	-	-	-	-	-	-	-	0.0031	0.0282
Air	Background	02/08/2023	<0.0210	-	-	-	-	-	-	-	0.0031	0.0312
Air	Background	02/14/2023	<0.0192	-	-	-	-	-	-	-	0.0027	0.0310
Air	Background Quarterly Composite	02/15/2023	-	0.099	0.181	<0.001	<0.005	<0.001	<0.002	<0.001	-	-
Air	Background	02/21/2023	<0.0199	-	-	-	-	-	-	-	0.0018	0.0268
Air	Background	03/01/2023	<0.0150	-	-	-	-	-	-	-	0.0011	0.0194

- " = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"<" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.



Sample Type	Location	Date	I-131* (pCi/m <sup>3</sup> )	Be-7* (pCi/m <sup>3</sup> )	K-40* (pCi/m <sup>3</sup> )	Mn-54* (pCi/m <sup>3</sup> )	Fe-59* (pCi/m <sup>3</sup> )	Co-60* (pCi/m <sup>3</sup> )	Zn-65* (pCi/m <sup>3</sup> )	Cs-137* (pCi/m <sup>3</sup> )	Gross Alpha (pCi/m <sup>3</sup> )	Gross Beta (pCi/m <sup>3</sup> )
Air	Background	03/07/2023	<0.0218	-	-	-	-	-	-	-	0.0017	0.0226
Air	Background	03/13/2023	<0.0236	-	-	-	-	-	-	-	0.0011	0.0180
Air	Background	03/21/2023	<0.0140	-	-	-	-	-	-	-	0.0004	0.0168
Air	Background	03/29/2023	<0.0170	-	-	-	-	-	-	-	<0.0037	0.0258
Air	Background	04/04/2023	<0.0187	-	-	-	-	-	-	-	0.0034	0.0298
Air	Background	04/13/2023	<0.0128	-	-	-	-	-	-	-	0.0023	0.0248
Air	Background	04/18/2023	<0.0224	-	-	-	-	-	-	-	<0.0057	0.0222
Air	Background	04/25/2023	<0.0169	-	-	-	-	-	-	-	<0.0042	0.0096
Air	Background	05/02/2023	<0.0182	-	-	-	-	-	-	-	0.0043	0.0173
Air	Background	05/09/2023	<0.0155	-	-	-	-	-	-	-	<0.0041	0.0108
Air	Background Quarterly Composite	5/15/2023	-	0.087	0.123	<0.001	<0.007	<0.001	<0.002	<0.001	-	-
Air	Background	05/16/2023	<0.0158	-	-	-	-	-	-	-	0.0016	0.0182
Air	Background	05/23/2023	<0.0162	-	-	-	-	-	-	-	<0.0041	0.0119
Air	Background	05/30/2023	<0.0156	-	-	-	-	-	-	-	<0.0041	0.0143
Air	Background	06/06/2023	<0.0165	-	-	-	-	-	-	-	<0.0042	0.0122
Air	Background	06/13/2023	<0.0177	-	-	-	-	-	-	-	<0.0041	0.0118
Air	Background	06/20/2023	<0.0155	-	-	-	-	-	-	-	<0.0041	0.0089
Air	Background	06/27/2023	<0.0170	-	-	-	-	-	-	-	<0.0041	0.0136
Air	Background	07/03/2023	<0.0204	-	-	-	-	-	-	-	0.0016	0.0227
Air	Background	07/12/2023	<0.0144	-	-	-	-	-	-	-	0.0011	0.0150
Air	Background	07/18/2023	<0.0211	-	-	-	-	-	-	-	0.0021	0.0268
Air	Background	07/25/2023	<0.0173	-	-	-	-	-	-	-	0.0007	0.0232
Air	Background	08/03/2023	<0.0121	-	-	-	-	-	-	-	0.0024	0.0228
Air	Background	08/09/2023	<0.0212	-	-	-	-	-	-	-	<0.0048	0.0166
Air	Background Quarterly Composite	08/15/2023	-	0.083	0.225	<0.001	<0.006	<0.001	<0.002	<0.001	-	-
Air	Background	08/16/2023	<0.0179	-	-	-	-	-	-	-	0.0004	0.0241
Air	Background	08/22/2023	<0.0183	-	-	-	-	-	-	-	<0.0048	0.0190
Air	Background	08/29/2023	<0.0169	-	-	-	-	-	-	-	<0.0041	0.0158
Air	Background	09/05/2023	<0.0159	-	-	-	-	-	-	-	<0.0041	0.0245
Air	Background	09/12/2023	<0.0156	-	-	-	-	-	-	-	<0.0040	<0.0042
Air	Background	09/19/2023	<0.0163	-	-	-	-	-	-	-	<0.0041	0.0179
Air	Background	09/26/2023	<0.0162	-	-	-	-	-	-	-	<0.0041	0.0176

- " = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"<" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.

Sample Type	Location	Date	I-131* (pCi/m <sup>3</sup> )	Be-7* (pCi/m <sup>3</sup> )	K-40* (pCi/m <sup>3</sup> )	Mn-54* (pCi/m <sup>3</sup> )	Fe-59* (pCi/m <sup>3</sup> )	Co-60* (pCi/m <sup>3</sup> )	Zn-65* (pCi/m <sup>3</sup> )	Cs-137* (pCi/m <sup>3</sup> )	Gross Alpha (pCi/m <sup>3</sup> )	Gross Beta (pCi/m <sup>3</sup> )
Air	Background	10/03/2023	<0.1090 <sup>a</sup>	-	-	-	-	-	-	-	0.0006	0.0267
Air	Background	10/11/2023	<0.0279	-	-	-	-	-	-	-	0.0019	0.0286
Air	Background	10/17/2023	<0.0346	-	-	-	-	-	-	-	<0.0048	0.0185
Air	Background	10/24/2023	<0.0199	-	-	-	-	-	-	-	<0.0041	0.0102
Air	Background	10/31/2023	<0.0164	-	-	-	-	-	-	-	0.0002	0.0239
Air	Background	11/07/2023	<0.0605	-	-	-	-	-	-	-	0.0043	0.0350
Air	Background Quarterly Composite	11/15/2023	-	0.083	<0.028	<0.001	<0.004	<0.001	<0.002	<0.001	-	-
Air	Background	11/15/2023	<0.0285	-	-	-	-	-	-	-	<0.0036	0.0197
Air	Background	11/21/2023	<0.0252	-	-	-	-	-	-	-	<0.0049	0.0269
Air	Background	11/28/2023	<0.0199	-	-	-	-	-	-	-	<0.0042	0.2060
Air	Background	12/05/2023	<0.0203	-	-	-	-	-	-	-	<0.0042	0.0313
Air	Background	12/12/2023	<0.0204	-	-	-	-	-	-	-	<0.0042	0.0100
Air	Background	12/19/2023	<0.0249	-	-	-	-	-	-	-	<0.0042	0.0232
Air	Background	12/26/2023	<0.0193	-	-	-	-	-	-	-	<0.0042	0.0191

[a] Low volume sample due to pump being off

[b] 2-week sample due to holiday staffing

[c] Low volume due to staffing

[d] 2-week sample

[e] Low volume sample due to power supply issues

[f] 2-week, low volume sample due to power supply issues

- " = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"<" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.

Table 6. Seabrook Nuclear Power Station 2023 Environmental Monitoring Data – Liquid Matrices

Sample Type	Location	Date	K-40* (pCi/L)	Mn-54* (pCi/L)	Fe-59* (pCi/L)	Co-60* (pCi/L)	Zn-65* (pCi/L)	I-131* (pCi/L)	Cs-134* (pCi/L)	Cs-137* (pCi/L)	Ba-140* (pCi/L)	H-3* (pCi/L)
Surface water	Ipswich bay <sup>1</sup>	01/18/2023	900	<2.71	<9.45	<2.45	<6.22	NR	-	<2.47	-	<300
Surface water	Ipswich bay <sup>1</sup>	02/21/2023	887	<2.92	<7.38	<2.56	<5.57	NR	-	<2.57	-	<300
Surface water	Ipswich bay <sup>1</sup>	03/14/2023	943	<2.78	<10.4	<2.57	<6.55	NR	-	<2.51	-	<300
Surface water	Ipswich bay <sup>1</sup>	04/10/2023	952	<2.86	<8.79	<2.69	<6.34	NR	-	<2.56	-	<300
Surface water	Ipswich bay <sup>1</sup>	05/09/2023	954	<2.75	<8.67	<2.56	<6.08	NR	-	<2.51	-	<300
Surface water	Ipswich bay <sup>1</sup>	06/14/2023	970	<2.87	<10.7	<2.50	<5.76	NR	-	<2.59	-	<300
Surface water	Ipswich bay <sup>1</sup>	07/12/2023	893	<2.88	<9.29	<2.38	<6.03	NR	-	<2.56	-	<300
Surface water	Ipswich bay <sup>1</sup>	08/23/2023	989	<2.78	<11.2	<2.69	<6.38	NR	-	<2.51	-	<300
Surface water	Ipswich bay <sup>1</sup>	09/12/2023	884	<2.64	<8.70	<2.69	<6.33	NR	-	<2.57	-	<300
Surface water	Ipswich bay <sup>1</sup>	10/17/2023	1110	<2.96	<10.2	<2.61	<6.43	NR	-	<2.69	-	<300
Surface water	Ipswich bay <sup>1</sup>	11/13/2023	525	<2.91	<7.70	<2.97	<6.46	<13.9	-	<3.16	-	<300
Surface water	Ipswich bay <sup>1</sup>	12/13/2023	1110	<2.82	<7.72	<2.50	<5.73	NR	-	<2.60	-	<300
Milk	Rowley	01/27/2023	644	-	-	-	-	<7.08	<2.38	<2.74	<17.4	-
Milk	Rowley	02/16/2023	2080	-	-	-	-	<4.37	<2.34	<2.80	<11.7	-
Milk	Rowley	03/24/2023	884	-	-	-	-	<4.40	<2.45	<2.66	<13.2	-
Milk	Rowley	04/27/2023	2110	-	-	-	-	<4.00	<2.45	<2.62	<11.6	-
Milk	Rowley	05/18/2023	2140	-	-	-	-	<4.12	<2.30	<2.83	<11.2	-
Milk	Rowley	06/21/2023	940	-	-	-	-	<2.87	<2.19	<2.93	<9.43	-
Milk	Rowley	07/26/2023	1700	-	-	-	-	<2.74	<2.78	<3.17	<10.4	-
Milk	Rowley	08/16/2023	2020	-	-	-	-	<2.95	<2.74	<3.21	<11.2	-
Milk	Rowley	09/13/2023	1640	-	-	-	-	<2.73	<2.26	<2.72	<8.85	-
Milk	Rowley	10/20/2023	1010	-	-	-	-	<3.62	<2.28	<2.68	<10.8	-
Milk	Rowley	11/30/2023	1110	-	-	-	-	<4.98	<2.44	<2.87	<13.4	-
Milk	Rowley	12/05/2023	1730	-	-	-	-	<3.11	<2.67	<2.98	<10.5	-

<sup>1</sup>Background sample

- = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

“&lt;” = value is less than the listed MDA (Minimum Detectable Activity) value

“NR”= result not reported for quality control reasons.

Table 7. Seabrook Nuclear Power Station 2023 Environmental Monitoring Data –Solid Matrices

Sample	Location <sup>1</sup>	Date	Be-7* (pCi/kg)	K-40* (pCi/kg)	Mn-54* (pCi/kg)	Fe-59* (pCi/kg)	Co-60* (pCi/kg)	Zn-65* (pCi/kg)	Cs-137* (pCi/kg)	I-131* (pCi/kg)
Cod	Ipswich Bay	2/18/2023	<449	4890	<18.4	<123	<16.0	<43.7	<17.0	-
Winter Flounder	Ipswich Bay	5/30/2023	<284	4460	<18.4	<72.3	<17.3	<38.9	<16.5	-
Winter Flounder	Ipswich Bay	9/12/2023	<86.4	2700	<4.19	<32.3	<3.41	<10.7	<3.15	
Winter Flounder	Ipswich Bay	11/13/2023	<204	4420	<17.2	<58.0	<15.2	<40.3	<16.7	
Lobster	Ipswich Bay	5/31/2023	<34.1	1720	<3.54	<10.6	<3.34	<8.71	<3.18	-
Lobster	Ipswich Bay	11/17/2023	<41.6	1560	<3.69	<12.3	<3.48	<8.30	<3.36	-
Modiolus <sup>2</sup>	Ipswich Bay	5/9/2023	<49.1	598	<4.35	<12.6	<3.97	<9.55	<3.72	-
Modiolus <sup>2</sup>	Ipswich Bay	11/13/2023	43.8	1020	<3.69	<10.4	<3.42	<8.21	<3.32	-
Mytilus <sup>2</sup>	Ipswich Bay	5/11/2023	107	1020	<4.02	<12.2	<3.84	<8.41	<3.49	-
Mytilus <sup>2</sup>	Ipswich Bay	11/17/2023	<63.1	672	<5.82	<15.6	<5.39	<13.2	<5.80	-
Irish Moss <sup>3</sup>	Ipswich Bay	5/9/2023	424	6590	<5.31	<19.0	<5.31	<13.3	<5.12	NR
Irish Moss <sup>3</sup>	Ipswich Bay	11/13/2023	493	7110	<6.86	<22.3	<6.80	<19.0	<6.74	<42.2
Sediment	Ipswich Bay - subtidal	5/9/2023	-	15500	-	-	<22.7	-	<25.2	-
Sediment	Ipswich Bay - subtidal	11/13/2023	-	10300	-	-	<19.8	-	<20.0	-
Sediment	Plum Island - beach	5/11/2023	-	19100	-	-	<17.5	-	<16.1	-
Sediment	Plum Island - beach	11/16/2023	-	12700	-	-	<17.0	-	<17.1	-
Strawberries	Bartlett Farm, Salisbury <sup>4</sup>	6/27/2023	<32.6	1360	<3.12	<6.98	<3.22	<7.11	<3.57	-
Strawberries	Russell Orchards, Ipswich	6/27/2023	<27.5	1330	<2.57	<6.20	<3.01	<6.31	<2.88	-
Tomatoes	Bartlett Farm, Salisbury <sup>4</sup>	8/23/2023	<27.8	1240	<3.84	<7.78	<3.54	<8.56	<3.56	
Tomatoes	Russell Orchards, Ipswich	8/23/2023	<27.4	1560	<3.73	<8.32	<3.60	<9.10	<3.62	-
Zucchini	Bartlett Farm, Salisbury <sup>4</sup>	7/19/2023	<21.5	2140	<2.82	<5.43	<2.71	<6.38	<2.73	
Zucchini	Russell Orchards, Ipswich	7/19/2023	<23.6	2130	<2.82	<5.97	<3.05	<7.11	<3.13	

<sup>1</sup>All samples are background, except for produce samples from Bartlett Farm in Salisbury

<sup>2</sup>Mytilus (i.e., blue or common mussel) samples collected on Plum Island; Modiolus (i.e., Atlantic ribbed mussel) samples collected offshore.

<sup>3</sup>Sample not dried prior to analysis

<sup>4</sup>Indicator sample

- " = Not analyzed

\* I-131 = iodine 131; Ba-140 = Barium 140; Be-7 = Beryllium 7; Co-60 = Cobalt 60; Cs-134 = Cesium 134; Cs-137=Cesium 137; Fe-59=Iron 59; H-3\* = Tritium; K-40 = Potassium-40; Mn-54=Manganese-54; Zn-65=Zinc 65

"<" = value is less than the listed MDA (Minimum Detectable Activity) value

"NR"= result not reported for quality control reasons.