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**Dominion**

APR 28 2011

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

| | |
|---|---|
| Serial No. | 11-226 |
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| | NPF-49 |

**DOMINION NUCLEAR CONNECTICUT, INC.**
**MILLSTONE POWER STATION UNITS 1, 2, AND 3**
**2010 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT**

This letter transmits the Annual Radiological Environmental Operating Report for the Millstone Power Station, for the period January 2010 through December 2010. This satisfies the provisions of Section 5.7.2 of Millstone Power Station Unit 1 Permanently Defueled Technical Specifications (PDTS), and Sections 6.9.1.6a and 6.9.1.3 of the Millstone Power Station Units 2 and 3 Technical Specifications, respectively.

If you have any questions or require additional information, please contact Mr. William D. Bartron at (860) 444 4301.

Sincerely,

R. K. MacManus
Director, Nuclear Station Safety and Licensing

IE25
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Attachments: 1

Commitments made in this letter:

1. None.

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50-336
50-423
License Nos. DPR-21
DPR-65
NPF-49

# ATTACHMENT 1

# 2010 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

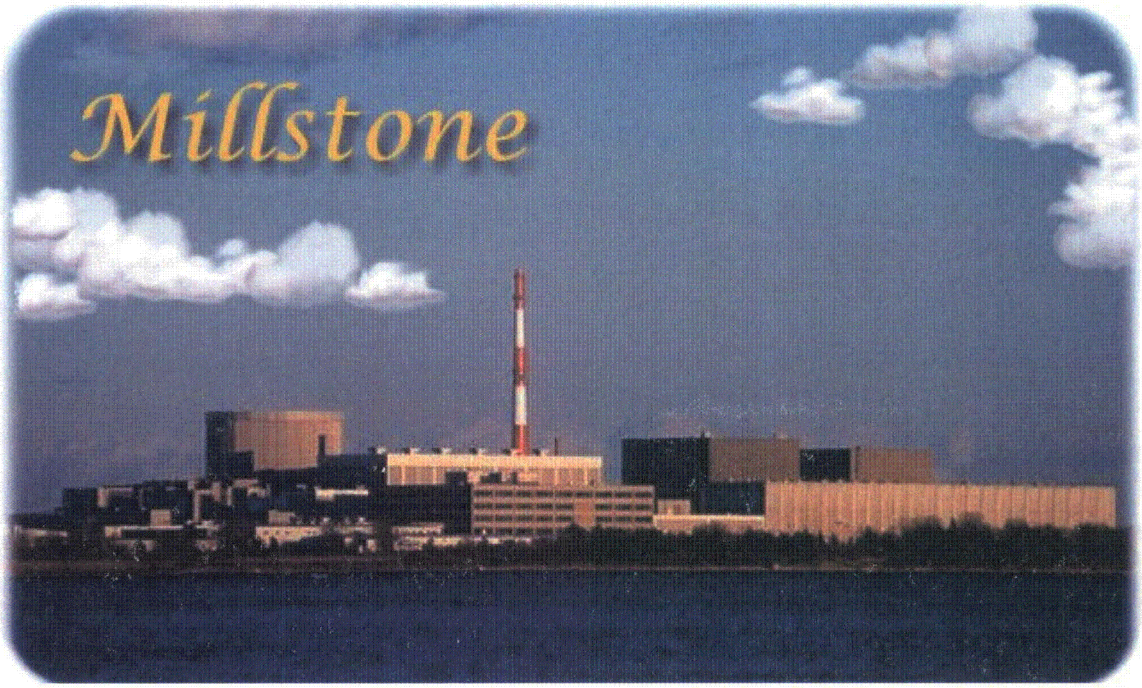
**MILLSTONE POWER STATION UNITS 1, 2, AND 3**
**DOMINION NUCLEAR CONNECTICUT, INC. (DNC)**

# Millstone Power Station

## 2010

## Radiological Environmental Operating Report

**January 1, 2010 – December 31, 2010**




**Dominion Nuclear Connecticut, Inc.**

| Unit | License | Docket |
|---|---|---|
| 1 | DPR-21 | 50-245 |
| 2 | DPR-65 | 50-336 |
| 3 | NPF-49 | 50-423 |

Dominion

# ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

## MILLSTONE POWER STATION

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

2010

MILLSTONE UNIT 1, DOCKET NO. 50-245
MILLSTONE UNIT 2, DOCKET NO. 50-336
MILLSTONE UNIT 3, DOCKET NO. 50-423

By the

Dominion Nuclear Connecticut, Inc.
Waterford, Connecticut

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# EXECUTIVE SUMMARY

## INTRODUCTION

This report summarizes the results of the Radiological Environmental Monitoring Program (REMP) conducted in the vicinity of Millstone Power Station (MPS) during the period from January 1 to December 31, 2010. This document has been prepared in accordance with the requirements of Millstone Unit 1, Unit 2 and 3 Technical Specifications.

The REMP has been established to monitor the radiation and radioactivity released to the environment as a result of Millstone Station's operation. This program, initiated in April 1967, includes the collection, analysis, and evaluation of radiological data in order to assess the impact of Millstone Station on the environment and on the general public.

## SAMPLING AND ANALYSIS

The environmental sampling media collected in the vicinity of MPS and at distant locations included air particulate filters, charcoal cartridges, soil, goat milk, pasture grass, hay, well water, broadleaf vegetation, fruits, vegetables, seawater, bottom sediment, aquatic flora, fish, mussels, oysters, clams and lobster.

During 2010, there were 1094 samples collected from the atmospheric, aquatic, and terrestrial environments. In addition, 175 exposure measurements were obtained using environmental thermoluminescent dosimeters (TLDs).

A small number of inadvertent issues were encountered in 2010 in the collection of environmental samples in accordance with the Millstone Radiological Effluent Monitoring and Offsite Dose Calculation Manual (REMODCM). Equipment failures and electrical outages resulted in a small number of instances in which lower than normal sampling volumes were collected at the airborne monitoring stations. However, in all cases sufficient volume was obtained to perform all the appropriate analyses. Therefore, all 416 air particulate and charcoal cartridges were collected and analyzed as required. A full description of all discrepancies encountered with the environmental monitoring program is presented in the Notes for the Data Tables of this report.

There were 1441 analyses performed on the environmental media samples. The AREVA-NP Environmental Laboratory of Westborough, MA, performed these analyses for the first half of 2010. Teledyne Brown Engineering, Inc. of Knoxville, TN performed the analyses for the second half of 2010. Samples were analyzed as required by the Millstone REMODCM.

## LAND USE CENSUS

The annual land use census in the vicinity of Millstone Station was conducted as required by the Millstone REMODCM between July 15 and December 31, 2010. Although broadleaf sampling may be used in lieu of a garden census, gardens were included in the 2010 census. Only vegetable gardens having an area of more than 500 square feet need to be identified. Due to the difficulty of measuring individual gardens, the nearest garden within each directional sector identified by a drive-by survey is listed in Appendix A. No new dairy animals within 10 miles of the Station were located during the census. Monthly broad leaf sampling was also performed; it may be used in lieu of the garden census.

## RADIOLOGICAL IMPACT TO THE ENVIRONMENT

Most samples collected as part of the Millstone REMP continued to contain detectable amounts of naturally-occurring and man-made radioactive materials. There was no plant related activity detected in any of the terrestrial samples. Offsite ambient radiation measurements using environmental TLDs beyond the site boundary ranged between 55 and 90 milliRoentgens per year. The range of ambient radiation levels observed with the TLDs is consistent with natural background radiation levels for Connecticut.

Monitoring of the aquatic environment in the area of the discharge indicated the presence of the following station related radionuclides: Tritium and silver-110m. These station related nuclides were only found onsite inside the mixing zone of the quarry discharge at levels that were expected from routine plant operation. No plant related activity was detected in any offsite samples. The predominant radioactivity for all samples was from non-plant related sources, such as fallout from nuclear weapons tests and naturally occurring radionuclides.

## RADIOLOGICAL IMPACT TO THE GENERAL PUBLIC

During 2010, radiation doses to the general public as a result of Millstone Station's operation continued to be well below the federal limits and much less than the dose due to other sources of man-made (e.g., X-rays, medical) and naturally-occurring (e.g., cosmic, radon) radiation.

The calculated total body dose to the maximally exposed member of the general public from radioactive effluents and ambient radiation resulting from MPS operations for 2010 was approximately 0.5 mrem for the year. This conservative estimate is well below the Environmental Protection Agency's (EPA) annual dose limit to any member of the general public and is a fraction of a percent of the typical dose received from natural and other sources of man-made radiation.

## CONCLUSIONS

The 2010 Radiological Environmental Monitoring Program for Millstone Station resulted in the collection and analysis of over a thousand environmental samples and measurements. The data obtained were used to determine the impact of Millstone Station's operation on the environment and on the general public.

An evaluation of direct radiation measurements, environmental sample analyses, and dose calculations indicates all applicable federal criteria were met. Furthermore, radiation levels and resulting doses from station operation were a small fraction of those attributed to natural and man-made background radiation.

Based on this information, there is no significant radiological impact on the environment or on the general public due to Millstone Station's operation.

# 1. INTRODUCTION

This section provides an overview of the Millstone Power Station Radiological Environmental Monitoring Program. It also includes background information to allow a reader to have an informed understanding of radiation and nuclear power operation.

## 1.1 Overview

The Radiological Environmental Monitoring Program for 2010 performed by Dominion Nuclear Connecticut for Millstone Nuclear Power Station (MPS) is discussed in this report. Since the operation of a nuclear power plant results in the release of small amounts of radioactivity and low levels of radiation, the Nuclear Regulatory Commission (NRC) requires a program to be established to monitor radiation and radioactivity in the environment (Reference 1). This report, published annually per Millstone Station's Technical Specifications (section 5.7.2 for Unit 1, section 6.9.1.6 for Unit 2 and Section 6.9.1.3 for Unit 3), summarizes the results of measurements of radiation and radioactivity in the environment in the vicinity of the Millstone Station and at distant locations during the period January 1 to December 31, 2010.

The Radiological Environmental Monitoring Program consists of taking radiation measurements and collecting samples from the environment, analyzing them for radioactivity content, and interpreting the results. With emphasis on the critical radiation exposure pathways to humans, samples from the aquatic, atmospheric, and terrestrial environments are collected. These samples include, but are not limited to: air, soil, goat milk, pasture grass, hay, meat, well water, broadleaf vegetation, fruits, vegetables, seawater, bottom sediment, aquatic flora, fish, mussels, oysters, clams and lobster. Thermoluminescent dosimeters (TLDs) are placed in the environment to measure gamma radiation levels. The TLDs are processed and the environmental samples are analyzed to measure the very low levels of radiation and radioactivity present in the environment as a result of MPS operation and other natural and man-made sources. These results are reviewed by MPS's radiological staff and have been reported semiannually or annually to the Nuclear Regulatory Commission and others for over 30 years.

In order to more fully understand how a nuclear power plant impacts humans and the environment, background information on radiation and radioactivity, natural and man-made sources of radiation, reactor operations, radioactive effluent controls, and radiological impact on humans is provided. It is believed that this information will assist the reader in understanding the radiological impact on the environment and humans from the operation of Millstone Station.

## 1.2 Radiation and Radioactivity

All matter is made of atoms. An atom is the smallest component into which matter can be broken down and still maintain all its chemical properties. Nuclear radiation is energy, in the form of waves or particles that is given off from atoms in an excited state (e.g., unstable, radioactive atoms).

Radioactive material exists naturally and has always been a part of our environment. The earth's crust, for example, contains radioactive uranium, radium, thorium, and potassium. Some radioactivity is a result of nuclear weapons testing. Examples of radioactive fallout that is normally present in environmental samples are cesium-137 and strontium-90. Some examples of radioactive materials released from a nuclear power plant are cesium-137, iodine-131, strontium-90, and cobalt-60.

Radiation is measured in units of millirem, much like temperature is measured in degrees. A millirem (mrem) is a measure of the biological effect of the energy deposited in tissue. The natural and man-made radiation dose received in one year by the average American is 300 to 600 mrem (References 2, 3, 4, and 5). The per capita dose has increased substantially since the mid 1980's because of the increased usage of medical procedures involving exposure to radiation (see Reference 3).

Radioactivity is measured in Curies. Levels of radioactivity commonly seen in the environment are typically a small fraction of a Curie, therefore radioactivity in the environment is typically measured in picocuries. One picocurie (pCi) is equal to 0.037 disintegrations per second (2.22 disintegrations per minute).

## 1.3 Sources of Radiation

As mentioned previously, naturally occurring radioactivity has always been a part of our environment. Table 1.3 shows the sources and doses of radiation from natural and man-made sources.

Table 1.3

Radiation Sources and Corresponding Doses (1)

| NATURAL | | MAN-MADE | |
|---|---|---|---|
| Source | Radiation Dose (millirem/year) | Source | Radiation Dose (millirem/year) |
| Internal, inhalation(2) | 228 | Medical(3) | 300 |
| External, space | 33 | Consumer(4) | 13 |
| Internal, ingestion | 29 | Industrial, security, (5) | 0.3 |
| External, terrestrial | 21 | Occupational | 0.5 |
| | | Weapons Fallout | < 1 |
| | | Nuclear Power Plants | < 1 |
| Approximate Total | 311 | Approximate Total | 314 |

(1) information from References 3 and 4
(2) from radon and thoron
(3) includes CT (147 millirem), nuclear medicine (77 mrem), interventional fluoroscopy (43 mrem) and conventional radiography and fluoroscopy (33 mrem)
(4) primarily from cigarette smoking (4.6 mrem), commercial air travel (3.4 mrem), building materials (3.5 mrem) and mining and agriculture (0.8 mrem)
(5) Industrial, security, medical, educational and research

Cosmic radiation (external, space) from the sun and outer space penetrates the earth's atmosphere and continuously bombards us with rays and charged particles. Some of this cosmic radiation interacts with gases and particles in the atmosphere, making them radioactive. These radioactive byproducts from cosmic ray bombardment are referred to as cosmogenic radionuclides. Isotopes such as beryllium-7 and carbon-14 are formed in this way. Exposure to cosmic and cosmogenic sources of radioactivity results in about 30 mrem of radiation dose per year.

Additionally, natural radioactivity is in our body and in the food we eat (about 30 millirem/year), the ground we walk on (about 20 millirem/year) and the air we breathe (about 230 millirem/year). The majority of a person's annual dose results from exposure to radon and thoron in the air we breathe. These gases and their radioactive decay products arise from the decay of naturally occurring uranium, thorium and radium in the soil and building products such as brick, stone, and concrete. Radon and thoron levels vary greatly with location, primarily due to changes in the concentration of uranium and thorium in the soil. Residents at some locations in Colorado, New York, Pennsylvania, New Jersey and even Connecticut have a higher annual dose as a result of higher levels of radon/thoron gases in these areas. In total, these various sources of naturally-occurring radiation and radioactivity contribute to a total dose of about 310 mrem per year.

In addition to natural radiation, we are normally exposed to radiation from a number of man-made sources. The single largest doses from man-made sources result from therapeutic and diagnostic applications of x-rays and radiopharmaceuticals. The annual dose to an individual in the U.S. from medical and dental exposure is approximately 300 millirem. Consumer products/uses, such cigarettes, building materials and commercial air travel contribute about 10 millirem/year. Much smaller doses result from weapons fallout (less than 1 millirem/year) and nuclear power plants (less than 1 mrem/year). Typically, the average person in the United States receives approximately 310 millirem per year from man-made sources.

## 1.4 Nuclear Reactor Operations

Millstone Station generates about 2100 megawatts of electricity at full power, which provides approximately one-half of the power consumed in the State of Connecticut. Unit 2 and Unit 3 are pressurized water reactors (Unit 1, which is permanently shutdown, was a boiling water reactor). The nuclear station is located on an approximate 500-acre site about 5 kilometers (three miles) west of New London, CT. Commercial operation of Unit 2 began in December 1975 and Unit 3 in May 1986.

Millstone Station was operational during most of 2010, with the exception of a refueling outage at Unit 3 and mini-outages at each unit. Unit 3 refueling outage was performed between April 10$^{th}$ and May 18$^{th}$. The resulting monthly capacity factors are presented in Table 1.4.

Nuclear-generated electricity is produced by many of the same techniques used for conventional oil and coal-generated electricity. Both systems use heat to boil water in order to produce steam. The steam turns a turbine, which turns a generator, producing electricity. In both cases, the steam passes through a condenser where it changes back into water and re-circulates back through the system. The cooling water source for Millstone Station is the Niantic Bay.

TABLE 1.4

MPS OPERATING CAPACITY FACTOR DURING 2010
(Based on designed electrical rating)

| Month | Unit 2 Percent Capacity | Unit 3 Percent Capacity |
|---|---|---|
| January | 100.1% | 82.7%* |
| February | 91.1%* | 101.5% |
| March | 98.5% | 101.5% |
| April | 100.0% | 32.7%** |
| May | 90.9%* | 39.1%** |
| June | 99.9% | 101.2% |
| July | 99.6% | 100.5% |
| August | 99.4% | 88.0%* |
| September | 99.5% | 100.1% |
| October | 99.6% | 101.0% |
| November | 84.6%* | 101.3% |
| December | 93.6% | 101.3% |
| Annual Average | 96.4% | 87.5% |

* shutdown for mini-outages these months
** shutdown for refueling during these months

The key difference between nuclear power and conventional power is the source of heat used to boil the water. Conventional plants burn fossil fuels in a boiler, while nuclear plants use uranium fission in a nuclear reactor.

Inside the reactor, a nuclear reaction called fission takes place. Particles, called neutrons, strike the nucleus of a uranium-235 atom, causing it to split into fragments called radioactive fission products. The splitting of the atoms releases both heat and more neutrons. The newly-released neutrons then collide with and split other uranium atoms, thus making more heat and releasing even more neutrons, and on and on until the uranium fuel is depleted or spent. This process is called a chain reaction. When this chain reaction is self sustaining, the reactor is called "critical."

The operation of a nuclear reactor results in the release of small amounts of radioactivity and low levels of radiation. The radioactivity originates from two major sources, radioactive fission products and radioactive activation products. Radioactive fission products, as illustrated in Figure 1.4-1 (Reference 6), originate from the fissioning of the nuclear fuel. These fission products get into the reactor coolant from their release by minute amounts of uranium on the outside surfaces of the fuel cladding, by diffusion through the fuel pellets and cladding and, on occasion, through defects or failures in the fuel cladding. These fission products circulate along with the reactor coolant water and will deposit on the internal surfaces of pipes and equipment. The radioactive fission products on the pipes and equipment emit radiation. Examples of some fission products are krypton-85 (Kr-85), strontium-90 (Sr-90), iodine-131 (I-131), xenon-133 (Xe-133), and cesium-137 (Cs-137).

## Nuclear Fission

Fission is the splitting of atoms (e.g., Uranium-235) by a neutron to release heat and more neutrons, creating a chain reaction. Radiation and fission products are by-products of the process.

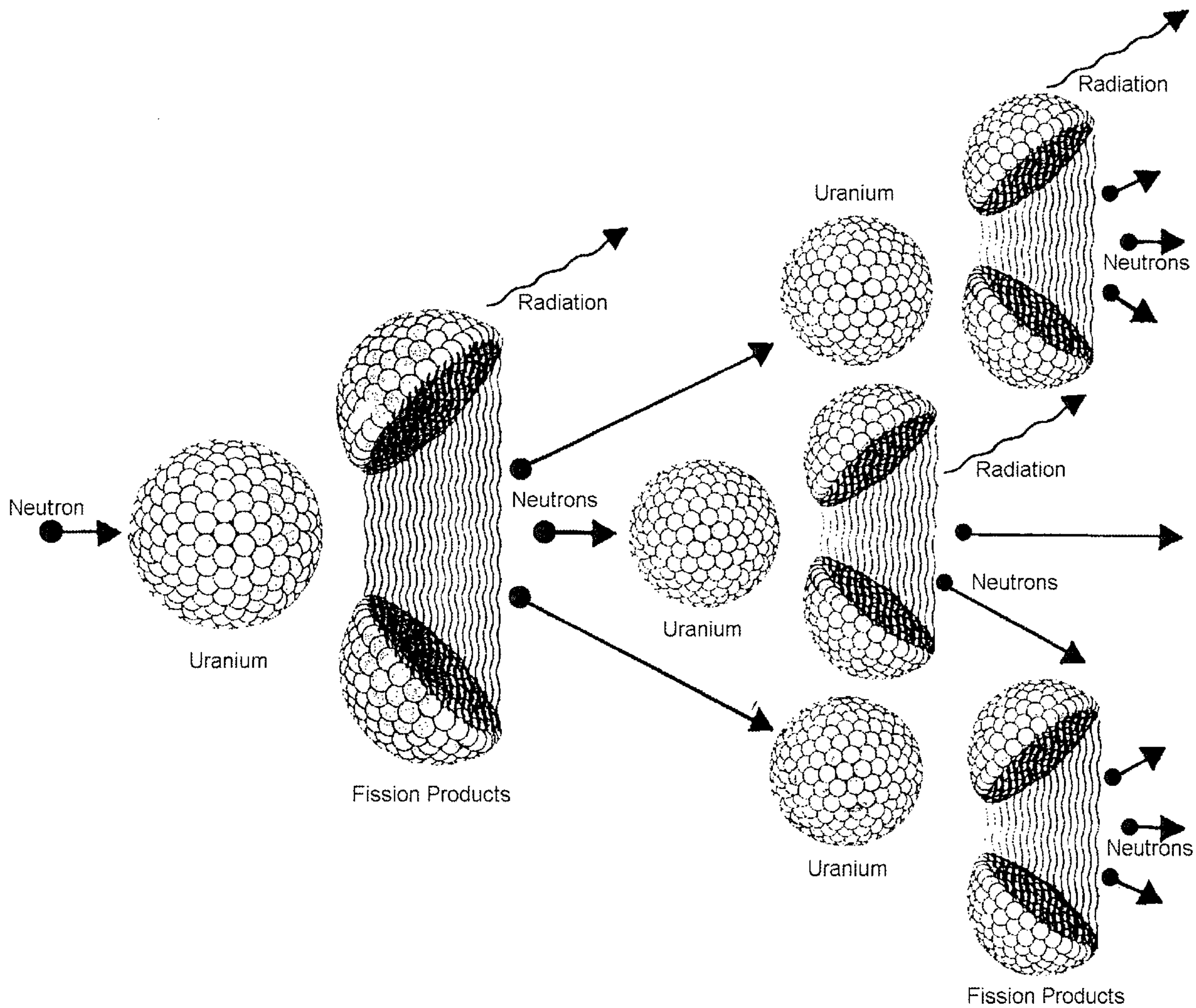



Figure 1.4-1
Radioactive Fission Product Formation

Radioactive activation products (see Figure 1.4-2), on the other hand, originate from two sources. The first is by neutron bombardment of the hydrogen, oxygen and other gas (helium, argon, nitrogen) molecules in the reactor cooling water. The second is a result of the fact that the internals of any piping system or component are subject to minute yet constant corrosion from the reactor cooling water. These minute metallic particles (for example: nickel, iron, cobalt, or magnesium) are transported through the reactor core into the fuel region, where neutrons may react with the nuclei of these particles, producing radioactive products. So, activation products are nothing more than ordinary naturally-occurring atoms that are made unstable or radioactive by neutron bombardment. These activation products circulate along with the reactor coolant water and will deposit on the internal surfaces of pipes and equipment. The radioactive activation products on the pipes and equipment emit radiation. Examples of some activation products are manganese-54 (Mn-54), iron-59 (Fe-59), cobalt-60 (Co-60), and zinc-65 (Zn-65).

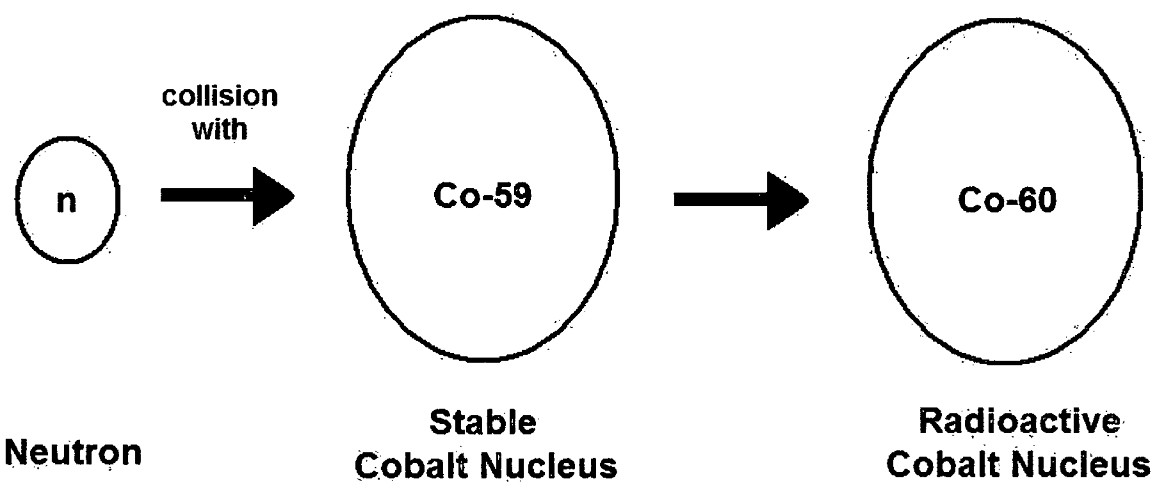



Figure 1.4-2
Radioactive Activation Product Formation

At Millstone Nuclear Power Station there are five independent protective barriers that confine these radioactive materials. These five barriers, which are shown in Figure 1.4-3 (Reference 6), are:

- fuel pellets;
- fuel cladding;
- reactor vessel and associated piping and equipment;
- primary containment and,
- secondary containment (enclosure building).

SIMPLIFIED DIAGRAM OF A PRESSURIZED WATER REACTOR

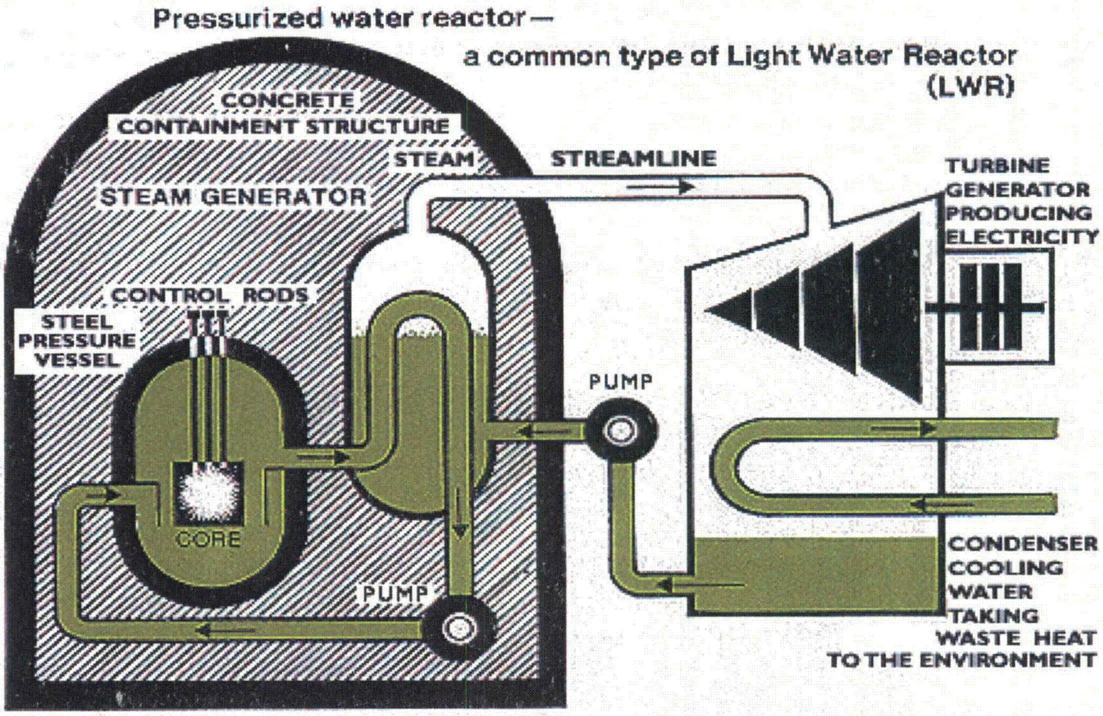



Figure 1.4-3

The ceramic uranium fuel pellets provide the first barrier. Most of the radioactive fission products are either physically trapped or chemically bound between the uranium atoms, where they will remain. However, a few fission products that are volatile or gaseous may diffuse through the fuel pellets into small gaps between the pellets and the fuel cladding.

The second barrier, the fuel cladding, consists of zirconium alloy tubes that confine the fuel pellets. The small gaps between the fuel and the cladding contain the noble gases and volatile iodines that are types of radioactive fission products. This radioactivity can diffuse to a small extent through the fuel cladding into the reactor coolant water.

The third barrier consists of the reactor pressure vessel, steel piping and equipment that confine the reactor cooling water. The reactor pressure vessel, which holds the reactor fuel, is typically a steel tank 40 feet high by 14 feet in diameter with walls about five to nine inches thick. These vessels and associated piping provide containment for radioactivity in the primary coolant and the reactor core. However, during the course of operations and maintenance, small amounts of radioactive fission and activation products can escape through valve leaks or upon breaching of the primary coolant system for maintenance.

The fourth barrier is the primary containment. It is a cylindrical enclosure with approximately five-foot thick steel reinforced concrete walls lined by steel on the inside. Small amounts of radioactivity may be released from primary containment during operation to maintain proper containment pressure and during maintenance and refueling outages.

The fifth barrier is the secondary containment or enclosure building. The enclosure building is a steel building that surrounds the primary containment. This barrier is an additional safety feature at Millstone's reactor units to contain radioactivity that may escape from the primary containment. This enclosure building is equipped with a filtered ventilation system that is used when needed to reduce the radioactivity that escapes from the primary containment.

The five barriers confine most of the radioactive fission and activation products. However, small amounts of radioactivity do escape via mechanical failures and maintenance on valves, piping, and equipment associated with the reactor cooling water system. The small amounts of radioactive liquids and gases that do escape the various containment systems are further controlled by the liquid purification and ventilation filtration systems. Also, prior to a release to the environment, control systems exist to collect and purify the radioactive effluents in order to reduce releases to the environment to as low as is reasonably achievable. The control of radioactive effluents at Millstone Station will be discussed in more detail in the next section.

## 1.5 Radioactive Effluent Control

The small amounts of radioactive liquids and gases that might escape the first two barriers are purified in the liquid and gaseous waste treatment systems, then monitored for radioactivity, and released only if the radioactivity levels are below the federal release limits.

Radioactivity released from the liquid effluent system to the environment is limited, controlled, and monitored by a variety of systems and procedures which include:

- reactor water cleanup system;
- liquid radwaste treatment system;
- sampling and analysis of the liquid radwaste tanks; and,
- liquid waste effluent discharge radioactivity monitor.

The purpose of the reactor water cleanup system is to continuously purify the reactor cooling water by removing radioactive atoms and non-radioactive impurities that may become activated by neutron bombardment. A portion of the reactor coolant water is diverted from the primary coolant system and is directed through ion exchange resins where radioactive elements, dissolved and suspended in the water, are removed through chemical processes. The net effect is a substantial reduction of the radioactive material that is present in the primary coolant water and consequently the amount of radioactive material that might escape from the system.

Reactor cooling water that might escape the primary cooling system and other radioactive water sources are collected in floor and equipment drains. These drains direct this radioactive liquid waste to large holdup tanks. The liquid waste collected in the tanks is purified again using the liquid radwaste treatment system, which consists of a filter and ion exchange resins.

Processing of liquid radioactive waste results in large reductions of radioactive liquids discharged into Niantic Bay. Wastes processed through liquid radwaste treatment can be purified and when necessary the processed liquid is re-used in plant systems.

Prior to release, the radioactivity in the liquid radwaste tank is sampled and analyzed to determine if the level of radioactivity is below the release limits and to quantify the total amount of radioactive liquid effluent that would be released. If the levels are below the federal release limits, the tank is drained to the liquid effluent discharge header.

This liquid waste effluent discharge line is provided with a shielded radioactivity monitor. This detector is connected to a radiation level meter and a recorder in the Control Room. The radiation alarm is set so that the detector will alarm before radioactivity levels exceed the release limits. The liquid effluent discharge header has an isolation valve. If an alarm is received, the liquid effluent discharge valve will automatically close, thereby terminating the release to the Niantic Bay and preventing any liquid radioactivity from being released that may exceed the release limits. An audible alarm notifies the Control Room operator that this has occurred.

Some liquid waste sources, which have a low potential for containing radioactivity, and/or may contain very low levels of contamination, may be discharged directly to the Long Island Sound. One such source of liquid is the turbine building sump. However, periodic representative samples are collected for analysis of radioactivity content to track the amounts of radioactivity being discharged.

Another means for adjusting liquid effluent concentrations to below federal limits is by mixing plant cooling water from the condenser with the liquid effluents in the discharge canal. This larger volume of cooling water further lowers the radioactivity levels to below the release concentration limits.

The preceding discussion illustrates that many controls exist to reduce the radioactive liquid effluents released to the Niantic Bay to as far below the release limits as is reasonably achievable.

Radioactive releases from the radioactive gaseous effluent system to the environment are limited, controlled, and monitored by a variety of systems and procedures which include:

- containment building ventilation system;
- containment building radioactivity monitors;
- sampling and analysis of containment building vent and purge effluents;
- process gas treatment system;
- auxiliary building (and engineered safeguards and fuel building for Unit 3) ventilation system;
- stack and vent effluent radioactivity monitors;
- sampling and analysis of stack and vent effluents;
- process radiation monitors; and
- steam jet air ejector (SJAE) monitor

The primary sources of gaseous radioactive waste are degassing of the primary coolant, gaseous liquid drains, and gaseous vents. Additional sources of gaseous waste activity include ventilation air released from the auxiliary building and purging and venting of the containment building. The radiation level meter and recorders for the effluent radioactivity monitors are located in the Control Room. The plant process computer aids in tracking the monitor readings. To supplement the information continuously provided by the detector, air samples are taken periodically from the containment, stack and vents. These samples are analyzed to quantify the total amount of tritium and radioactive gaseous and particulate effluents released.

Gases from the primary coolant are held up in waste gas decay tanks for decay at Unit 2. Gaseous waste at Unit 3 is purified through a process gas system, consisting of high-efficiency particulate air filters and charcoal adsorber beds. Gases from periodic venting of the Unit 2 containment are released through a similar process system (Enclosure Building Filtration System) while gases from the Unit 3 containment vacuum pumps are released without treatment. If necessary, Unit 3 containment air can be filtered by an internal particulate and charcoal treatment system. Containment purges (purge is the forced ventilation process while containment vents are pressure releases) for Unit 2 are filtered by high-efficiency particulate filters while at Unit 3 these are not normally filtered. If necessary, particulate and charcoal filters can be used for these purges.

The auxiliary building ventilation system provides for ventilation of the auxiliary building and enclosure building (and service building and contiguous areas, waste disposal building, and fuel building for Unit 3, for Unit 2 these are all part of the auxiliary building). Normally, the air from the ventilation of these areas will exhaust through the ventilation vent (which has a particulate filter for Unit 2). If exhaust from these areas reaches a predetermined level, the ventilation flow can be diverted by operator control to a particulate and charcoal filtration system.

Therefore, for both liquid and gaseous releases, radioactive effluent control systems exist to collect and purify the radioactive effluents in order to reduce releases to the environment to as low as is reasonably achievable. The effluents are always monitored, sampled and analyzed to make sure that radioactivity levels are below the release limits. If the release limits are being approached, isolation valves in some of the waste effluent lines will automatically shut to stop the release, or Control Room operators can implement procedures to ensure that federal regulatory limits are always met.

## 1.6 Radiological Impact on Humans

The final step in the effluent control process is the determination of the radiological dose impact to humans and comparison with the federal dose limits to the public. This step is performed in three stages. As mentioned previously, the purpose of continuous radiation monitoring and periodic sampling and analysis is to measure the quantities of radioactivity being released to determine compliance with the radioactivity release limits. This is the first stage for assessing releases to the environment.

The second stage is calculations of the dose impact to the general public from Millstone Station's radioactive effluents are performed. The purpose of these calculations is to periodically assess the doses to the general public resulting from radioactive effluents to ensure that these doses are being maintained as far below the federal dose limits as is reasonably achievable. This is the second stage for assessing releases to the environment.

The types and quantities of radioactive liquid and gaseous effluents released from Millstone Station during each given year are reported to the Nuclear Regulatory Commission annually in the Radiological Effluent Release Report (RERR). Similar to this report, the RERR is submitted annually to the Nuclear Regulatory Commission. Section 5 of this report discusses the detailed dose calculations from the RERR and provides a comparison to REMP dose calculations. The liquid and gaseous effluents were well below the federal release limits and were a small percentage of the MPS REMODCM effluent control limits.

The measurements of the physical and chemical nature of the effluents are used to determine how the radionuclides will interact with the environment and how they can result in radiation exposure to humans. The environmental interaction mechanisms depend upon factors such as the hydrological (water) and meteorological (atmospheric) characteristics in the area. Information on the water flow, wind speed, wind direction, and atmospheric mixing characteristics are used to estimate how radioactivity will distribute and disperse in the ocean and the atmosphere.

The most important type of information that is used to evaluate the radiological impact on humans is data on the use of the environment. Information on fish and shellfish consumption, boating usage, beach usage, locations of cows and goats, locations of residences, locations of gardens, drinking water supplies, and other usage information are utilized to estimate the amount of radiation and radioactivity received by the general public.

The radiation exposure pathway to humans is the path radioactivity takes from its release point at Millstone Station to its effect on man. The movement of radioactivity through the environment and its transport to humans is portrayed in Figure 1.6.

EXAMPLES OF MILLSTONE STATION'S RADIATION EXPOSURE PATHWAYS

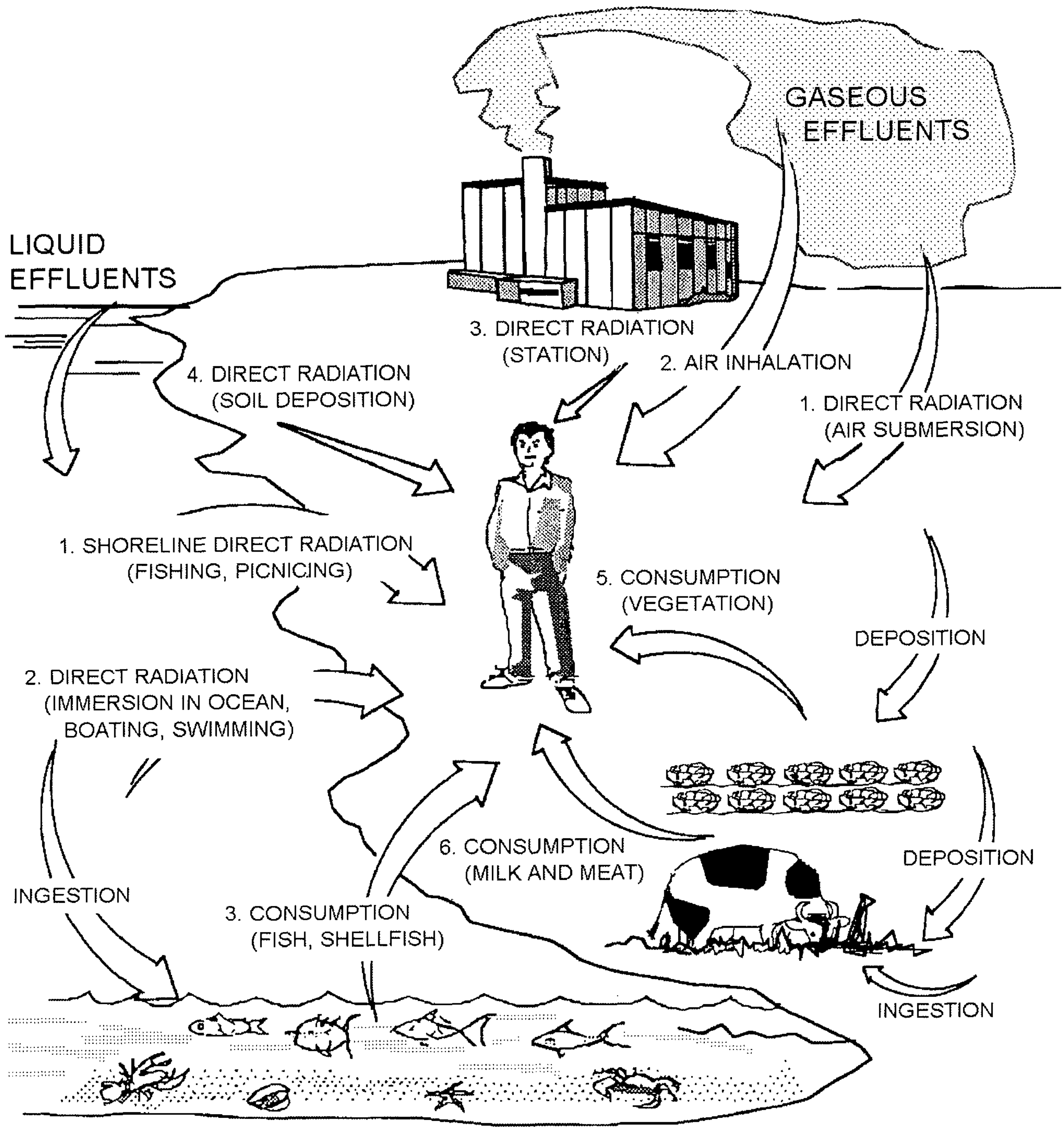



Figure 1.6
Radiation Exposure Pathways

There are three major pathways in which liquid effluents affect humans:

- external radiation from liquid effluents that deposit and accumulate on the shoreline;
- external radiation from immersion in ocean water containing radioactive liquids; and,
- internal radiation from consumption of fish and shellfish containing radioactivity absorbed from the liquid effluents.

There are six major ways in which gaseous effluents affect humans:

- external radiation from an airborne plume of radioactivity;
- internal radiation from inhalation of airborne radioactivity;
- external radiation from deposition of radioactive effluents on soil;
- ambient (direct) radiation from contained sources at the power plant;
- internal radiation from consumption of vegetation containing radioactivity deposited on the vegetation from airborne deposition and absorbed from the soil due to ground deposition of radioactive effluents; and,
- internal radiation from consumption of milk and meat containing radioactivity deposited on forage that is eaten by cattle and other livestock.

In addition, ambient (direct) radiation emitted from contained sources of radioactivity at MPS contributes to radiation exposure in the vicinity of the plant. For example, small amounts of ambient radiation result from low-level radioactive waste being processed and stored at the site prior to shipping and disposal. Also, the operation of the ISFSI (Independent Spent Fuel Storage Installation, operation began in 2005) results in very small amounts of direct radiation at the site boundary.

The radiological dose impact on humans is based both on effluent analyses and modeling and on direct measurements of radiation and radioactivity in the environment. When MPS-related radioactivity is detected in samples that represent a plausible exposure pathway, the resulting dose from such exposure is assessed (see Sections 4 and 5). However, the operation of Millstone Power Station results in releases of only small amounts of radioactivity, and, as a result of dilution in the atmosphere and ocean, even the most sensitive radioactivity measurement and analysis techniques cannot usually detect these tiny amounts of radioactivity above that which is naturally present in the environment. Therefore, radiation doses are calculated using radioactive effluent release data and computerized dose calculations that are based on conservative NRC-recommended models that tend to result in over-estimates of the resulting dose. These computerized dose calculations are performed by Dominion Nuclear personnel. These computer codes use the guidelines and methodology set forth by the NRC in Regulatory Guide 1.109 (Reference 7). The dose calculations are documented and described in detail in the Millstone Nuclear Power Station's Radiological Effluent Monitoring and Offsite Dose Calculation Manual (Reference 8), which has been reviewed by the NRC.

It should be emphasized that because of the conservative assumptions made in the computer code calculations, the maximum hypothetical dose to an individual is considerably higher than the dose that would actually be received by a real individual.

After dose calculations are performed, the results are compared to the federal dose limits for the public. The two federal agencies that are charged with the responsibility of protecting the public from radiation and radioactivity are the United States Nuclear Regulatory Commission (NRC) and the United States Environmental Protection Agency (EPA).

The NRC, in 10CFR 20.1301 (Reference 9) limits the levels of radiation to unrestricted areas resulting from the possession or use of radioactive materials such that they limit any individual to a dose of:

- less than or equal to 100 mrem per year to the total body.

In addition to this dose limit, the NRC has established design objectives for nuclear plant licensees. Conformance to these guidelines ensures that nuclear power reactor effluents are maintained as far below the legal limits as is reasonably achievable.

The NRC, in 10CFR 50 Appendix I (Reference 10) establishes design objectives for the dose to a member of the general public from radioactive material in liquid effluents released to unrestricted areas to be limited to:

- less than or equal to 3 mrem per year to the total body; and,
- less than or equal to 10 mrem per year to any organ.

The air dose due to release of noble gases in gaseous effluents is restricted to:

- less than or equal to 10 mrad per year for gamma radiation; and,
- less than or equal to 20 mrad per year for beta radiation.

The dose to a member of the general public from iodine-131, tritium, and all particulate radionuclides with half-lives greater than 8 days in gaseous effluents is limited to:

- less than or equal to 15 mrem per year to any organ.

The EPA, in 40CFR190.10 Subpart B (Reference 11), sets forth the environmental standards for the uranium fuel cycle. During normal operation, the annual dose to any member of the public, at or beyond the site boundary, from the entire uranium fuel cycle shall be limited to:

- less than or equal to 25 mrem per year to the total body;
- less than or equal to 75 mrem per year to the thyroid; and,
- less than or equal to 25 mrem per year to any other organ.

The summary of the 2010 radiological impact for Millstone Station and comparison with the EPA dose limits and Appendix I guidelines is presented in Section 5 of this report.

The third stage of assessing releases to the environment is the Radiological Environmental Monitoring Program (REMP). The description and results of the REMP at Millstone Power Station during 2010 is discussed in Sections 2 through 4 of this report.

# 2. PROGRAM DESCRIPTION

## 2.1 Sampling Schedule and Locations

The sample locations and the sample types and frequency of analysis are given in Tables 2-1 and 2-2 and Figures 2.1, 2.2 and 2.3. The program as described on Table 2-2 only lists the required samples as specified in the Radiological Effluent Monitoring and Offsite Dose Calculation Manual. However, in order to identify the locations of the extra samples, all locations (both required and extra) are listed in Table 2-1 and shown on the figures.

## Table 2-1 Environmental Monitoring Program Sampling Types and Locations

| Location Number* | Location Name | Direction & Distance From Release Point** | Sample Types |
|---|---|---|---|
| 1-I | On-site - Old Millstone Rd. | 0.6 Mi, NNW | TLD, Air Particulate, Iodine, Vegetation |
| 2-I | On-site - Weather Shack | 0.3 Mi, S | TLD, Air Particulate, Iodine |
| 3-I | On-site - Bird Sanctuary | 0.3 Mi, NE | TLD, Air Particulate, Iodine, Soil |
| 4-I | On-site - Albacore Drive | 1.0 Mi, N | TLD, Air Particulate, Iodine, Soil |
| 5-I | MP3 Discharge | 0.1 Mi, SSE | TLD |
| 6-I | Quarry Discharge | 0.3 Mi, SSE | TLD |
| 7-I | Environmental Lab Dock | 0.3 Mi, SE | TLD |
| 8-I | Environmental Lab | 0.3 Mi, SE | TLD |
| 9-I | Bay Point Beach | 0.4 Mi, W | TLD |
| 10-I | Pleasure Beach | 1.2 Mi, E | TLD, Air Particulate, Iodine, Vegetation |
| 11-I | New London Country Club | 1.6 Mi, ENE | TLD, Air Particulate, Iodine |
| 12-C | Fisher's Island, NY | 8.0 Mi, ESE | TLD |
| 13-C | Mystic, CT | 11.5 Mi, ENE | TLD |
| 14-C | Ledyard, CT | 12.0 Mi, NE | TLD, Soil |
| 15-C | Norwich, CT | 14.0 Mi, N | TLD, Air Particulate, Iodine |
| 16-C | Old Lyme, CT | 8.8 Mi, W | TLD |
| 17-I | Site Boundary | 0.5 Mi, NE | Vegetation |
| 21-I | Goat Location #1 | 2.0 Mi, N | Milk |
| 22-I | Goat Location #2 | 2.7 Mi, NE | Milk |
| 24-C | Goat Location #4 | 29.0 Mi, NNW | Milk |
| 25-I | Within 10 Miles | Within 10 Miles | Fruits & Vegetables |
| 26-C | Beyond 10 Miles | Beyond 10 Miles | Fruits & Vegetables |
| 27-I | Niantic | 1.7 Mi, WNW | TLD, Air Particulate, Iodine |
| 28-I | Two Tree Island | 0.8 Mi, SSE | Mussels |
| 29-I | West Jordan Cove | 0.4 Mi, NNE | Clams |
| 29-X | West Jordan Cove | 0.4 Mi, NNE | Bottom Sediment, Fucus |
| 30-I | Niantic Shoals | 1.5 Mi, NNW | Mussels |
| 31-I | Niantic Shoals | 1.8 Mi, NW | Bottom Sediment, Oysters |
| 31-X | Niantic Shoals | 1.8 Mi, NW | Scallops |
| 32-I | Vicinity of Discharge | < 0.1 Mi | Bottom Sediment, Oysters, Lobster, Fish, Seawater |
| 32-X | Vicinity of Discharge | < 0.1 Mi | Fucus |
| 33-I | Seaside Point | 1.8 Mi, ESE | Bottom Sediment |
| 33-X | Seaside Point | 1.8 Mi, ESE | Fucus |
| 34-I | Thames River Yacht Club | 4.0 Mi, ENE | Bottom Sediment |
| 34-X | Thames River Yacht club | 4.0 Mi, ENE | Oysters |
| 35-I | Niantic Bay | 0.3 Mi, WNW | Lobster, Fish |
| 35-X | Niantic Bay | 0.3 Mi, WNW | Bottom Sediment, Clams, Fucus |
| 36-X | Black Point | 3.0 Mi, WSW | Fucus |
| 37-C | Giant's Neck | 3.5 Mi, WSW | Bottom Sediment, Oysters, Seawater |
| 37-X | Giant's Neck | 3.5 Mi, WSW | Lobster |
| 38-I | Waterford Shellfish Bed #1 | 1.0 Mi, NW | Clams |
| 39-X | Jordan Cove Bar | 0.8 Mi, NE | Bottom Sediment, Clams |

*Key: **I** - Indicator **C** - Control **X** - Extra - sample not required by REMODCM
**The release points are the Site Stack for terrestrial locations and the quarry cut for aquatic locations.

| Location Number* | Location Name | Direction & Distance From Release Point** | Sample Types |
|---|---|---|---|
| 40-X | Quarry | ------------- | Fish |
| 41-I | Myrock Avenue | 3.2 Mi, ENE | TLD |
| 42-I | Billow Road | 2.4 Mi, WSW | TLD |
| 43-I | Black Point | 2.6 Mi, SW | TLD |
| 44-I | Onsite - Schoolhouse | 0.1 Mi, NNE | TLD |
| 45-I | Onsite Access Road | 0.5 Mi, NNW | TLD |
| 46-I | Old Lyme - Hillcrest Ave. | 4.6 Mi, WSW | TLD |
| 47-I | East Lyme - W. Main St. | 4.5 Mi, W | TLD |
| 48-I | East Lyme - Corey Rd. | 3.4 Mi, WNW | TLD |
| 49-I | East Lyme - Society Rd. | 3.6 Mi, NW | TLD |
| 50-I | East Lyme - Manwaring Rd. | 2.1 Mi, W | TLD |
| 51-I | East Lyme - Smith Ave. | 1.5 Mi, NW | TLD |
| 52-I | Waterford - River Rd. | 1.1 Mi, NNW | TLD |
| 53-I | Waterford - Gardiners Wood Rd. | 1.4 Mi, NNE | TLD |
| 55-I | Waterford - Magonk Point | 1.8 Mi, ESE | TLD |
| 56-I | New London - Mott Ave. | 3.7 Mi, E | TLD |
| 57-I | New London - Ocean Ave. | 3.6 Mi, ENE | TLD |
| 59-I | Waterford -Miner Ave. | 3.4 Mi, NNE | TLD |
| 60-I | Waterford - Parkway South | 4.0 Mi, N | TLD |
| 61-I | Waterford - Boston Post Rd. | 4.3 Mi, NNW | TLD |
| 62-I | East Lyme - Columbus Ave. | 1.9 Mi, WNW | TLD |
| 63-I | Waterford - Jordon Cove Rd. | 0.8 Mi, NE | TLD |
| 64-I | Waterford - Shore Rd. | 1.1 Mi, ENE | TLD |
| 65-I | Waterford - Bank St. | 3.2 Mi, NE | TLD |
| 66-X | NAP Parking Lot - Fitness Center | 0.4 Mi, NW | TLD |
| 67-X | Golden Spur | 4.7 Mi, NNW | Bottom Sediment |
| 69-X | Pleasure Beach | 0.8 Mi, E | Bottom Sediment |
| 71-I | 1-MW-XFMR-03 | Onsite | Well Water |
| 72-I | MW-GPI-1 | Onsite | Well Water |
| 73-X | Site Switchyard Fence | 0.3 Mi, N | TLD |
| 74-X | Ball Field Foul Pole | 0.6 Mi, N | TLD |
| 75-X | Waterford – Windward Way & Shotgun | 0.5 Mi, NE | TLD |
| 76-X | ISFSI-1 | Up-gradient of ISFSI | Well Water |
| 77-X | ISFSI-2A | Down-gradient of ISFSI | Well Water |
| 78-X | ISFSI-3 | Down-gradient of ISFSI | Well Water |
| 79-I | M3-MW-1 | Onsite | Well Water |
| 80-I | S12-MW-2 | Onsite | Well Water |
| 80-A | S12-MW-1 | Onsite | Well Water |
| 81-I | S2-MW-1 | Onsite | Well Water |
| 82-I | MW-GPI-2 | Onsite | Well Water |
| 83-X | MW-GPI-3 | Onsite | Well Water |
| 84-X | MW-GPI-4 | Onsite | Well Water |
| 85-X | MW-GPI-5 | Onsite | Well Water |
| 86-X | MW-GPI-6 | Onsite | Well Water |
| 88-I | DEP Dock | Onsite | Oysters |
| 90-C | Thames River | 4 Mi, E | Fucus |
| 91-X | MW-GPI-8 | Onsite | Well Water |
| 92-X | MW-GPI-9 | Onsite | Well Water |
| 93-X | Site Boundary | Site Boundary | Meat |
| 94-X | Site Boundary | Site Boundary | Meat |

*Key: **I** - Indicator **C** - Control **X** - Extra - sample not required by the REMODCM
**The release points are the Site Stack for terrestrial locations and the quarry cut for aquatic locations.

## Table 2-2 Required Sampling Frequency & Type of Analysis

| | Exposure Pathway and/or Sample | No. of Locations | Sampling & Collection Frequency | Type of Analysis |
|---|---|---|---|---|
| 1. | Gamma Dose - Environmental TLD | 40[a] | Quarterly | Gamma Dose - Quarterly |
| 2. | Airborne Particulate | 8 | Continuous sampler - weekly filter change | Gross Beta - Weekly<br>Gamma Spectrum - Quarterly on composite (by location), and on individual sample if gross beta is greater than 10 times the mean of the weekly control station's gross beta results |
| 3. | Airborne Iodine | 8 | Continuous sampler - weekly canister change | I-131 - Weekly |
| 4. | Vegetation | 5 | One sample near middle and one near end of growing season | Gamma Isotopic on each sample |
| 5. | Milk | 2 | Semimonthly when animals are on pasture; monthly at other times. | Gamma Isotopic and I-131 on each sample; Sr-89 and Sr-90 on quarterly composite |
| 5a. | Pasture Grass | 3 | Sample as necessary to substitute for unavailable milk | Gamma Isotopic and I-131 on each sample |
| 6. | Sea Water | 2 | Continuous sampler with a monthly collection at indicator location. Quarterly at control location - Composite of 6 weekly grab samples. | Gamma Isotopic and Tritium on each sample. |
| 6a. | Well Water | 6 | Semiannual | Gamma Isotopic and Tritium on each sample |
| 7. | Bottom Sediment | 5 | Semiannual | Gamma Isotopic on each sample |
| 7a. | Soil | 3 | Annually | Gamma Isotopic on each sample |
| 8. | Fin Fish - Flounder and one other type of edible fin fish | 2 | Quarterly | Gamma Isotopic on each sample |
| 9. | Mussels (edible portion) | 2 | Quarterly | Gamma Isotopic on each sample |
| 10. | Oysters (edible portion) | 4 | Quarterly | Gamma Isotopic on each sample |
| 11. | Clams (edible portion) | 2 | Quarterly | Gamma Isotopic on each sample |
| 12. | Lobster (edible portion) | 2 | Quarterly | Gamma Isotopic on each sample |

(a) Two or more TLDs or TLD with two or more elements per location.

## Figure 2.1 Millstone Sampling Locations

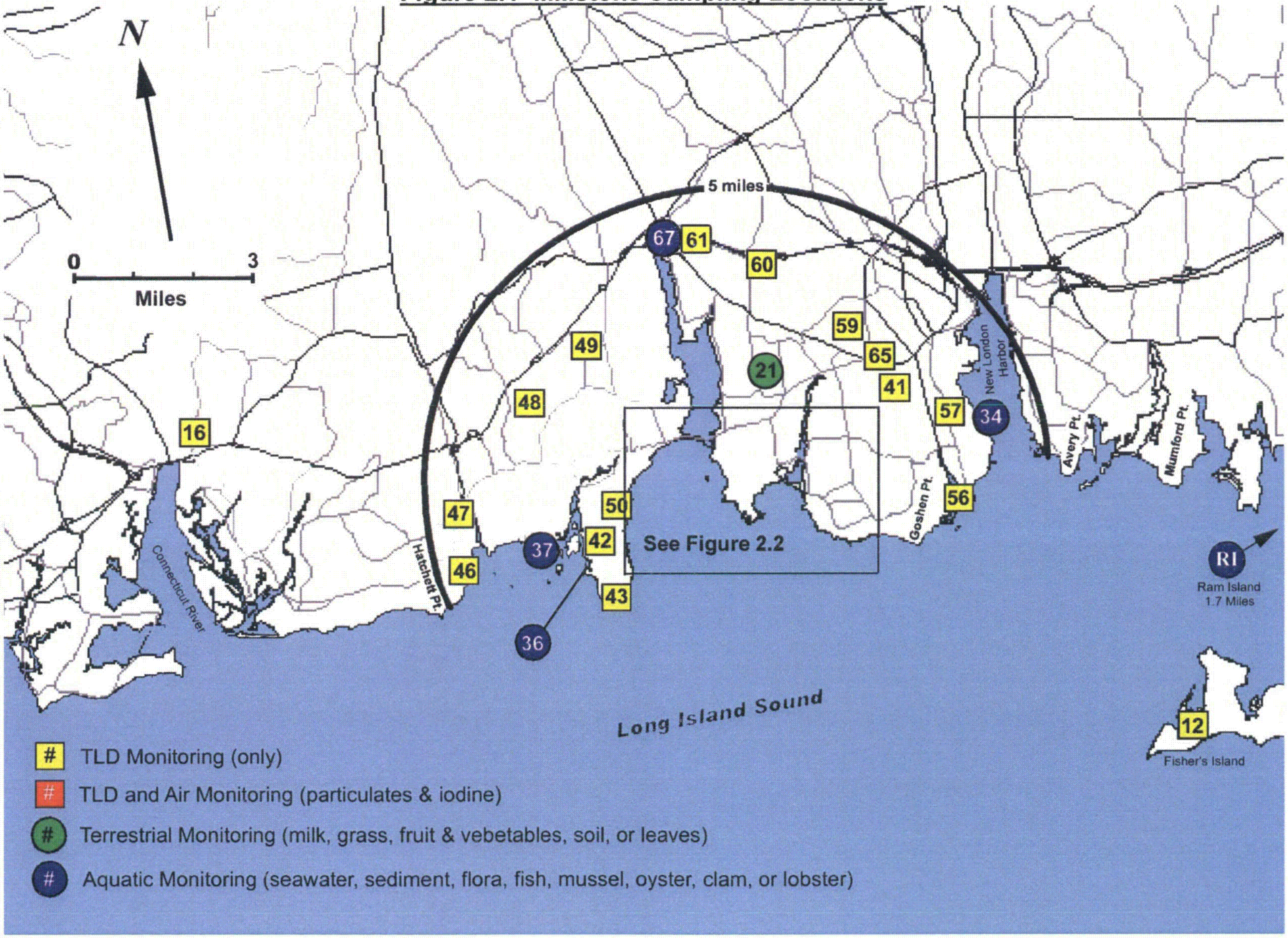


**Figure 2.2 Millstone Sampling Locations (Within 2 miles)**

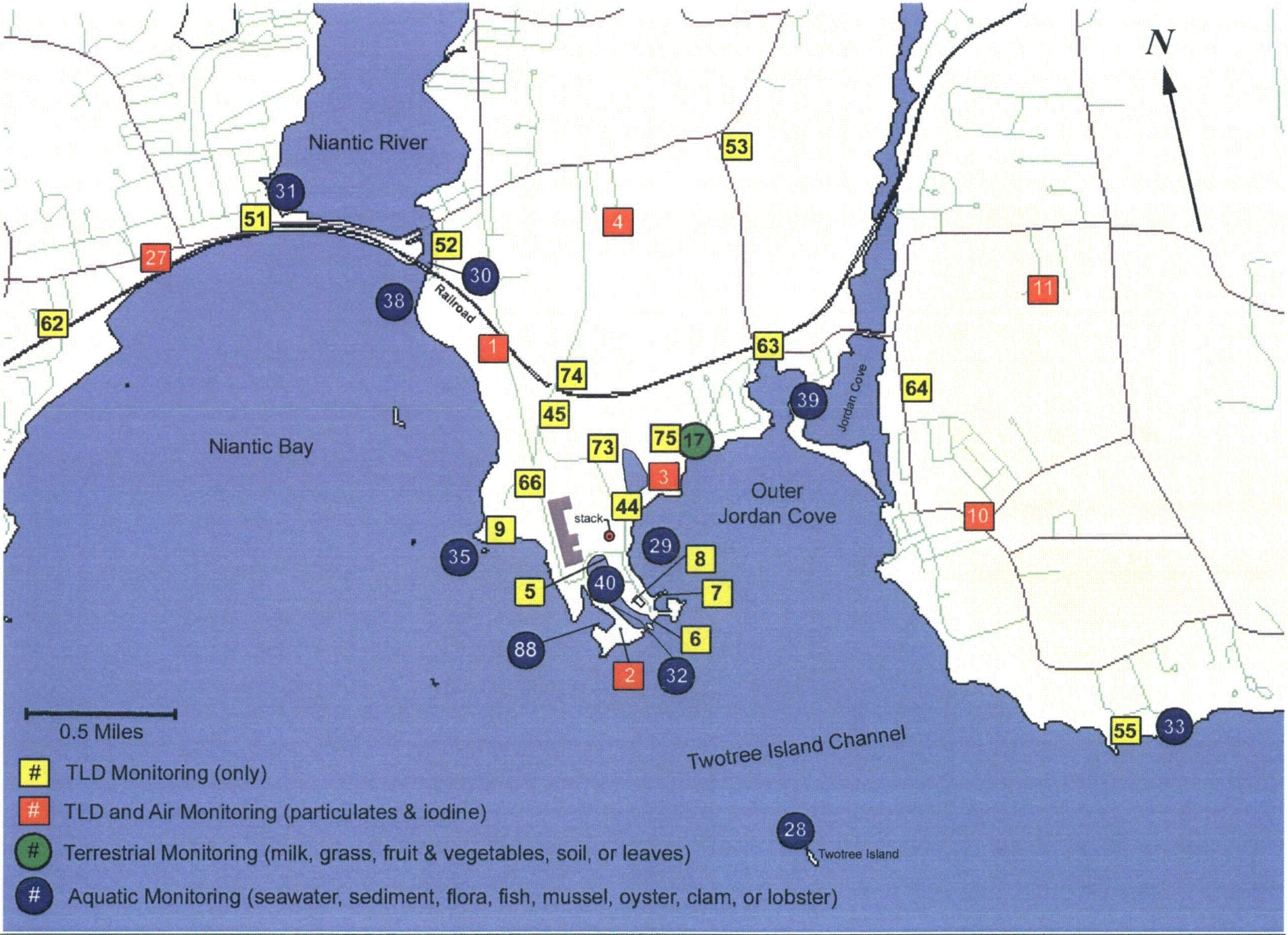


**Figure 2.3 Millstone Sampling Wells**

## 2.2 Samples Collected During Report Period

The following table summarizes the number of samples of each type collected and analyzed during 2010:

| Sample Type | Number of Technical Specification Required Samples | Number of Technical Specification Required Samples Analyzed | Number of Extra Samples Analyzed |
|---|---|---|---|
| Gamma Exposure (Environmental TLD) | 160 | 159 | 16 |
| Air Particulates | 416 | 416 | 0 |
| Air Iodine | 416 | 416 | 0 |
| Soil | 3 | 3 | 0 |
| Goat Milk | 38 | 11[1] | 0 |
| Pasture Grass | Variable[2] | 27 | 0 |
| Well Water | 12 | 12 | 51 |
| Meat | 0 | 0 | 2 |
| Fruit and Vegetables | 8 | 8 | 3 |
| Broad Leaf Vegetation | 6 | 6 | 15 |
| Sea Water | 16 | 16 | 0 |
| Bottom Sediment | 10 | 10 | 10 |
| Aquatic Flora | 0 | 0 | 24 |
| Fish | 16 | 11[3] | 3 |
| Mussels | 8 | 2[3] | 0 |
| Oysters | 16 | 16 | 4 |
| Clams | 8 | 8 | 8 |
| Lobster | 8 | 8 | 4 |
| **Total All Types** | **1,141** | **1,129** | **140** |

[1] Pasture grass sampled as necessary to substitute for unavailable milk. Hay or grain was substituted when grass was not available.
[2] Depends upon availability of goat milk samples
[3] Due to sample unavailability, not all required fish and shellfish samples could be obtained (see Notes at end of Section 3 for details)

# 3. RADIOCHEMICAL RESULTS

## 3.1 Summary Table

In accordance with the Radiological Effluent Monitoring and Offsite Dose Calculation Manual (REMODCM), Section I.F.1, a summary table of the radiochemical results has been prepared and is presented on the following pages.

The mean and range recorded are based only upon detectable measurements. The parentheses indicate the fraction of the measurements that are considered above the detection limit for each individual analysis.

A more detailed analysis of the data is given in Section 4.0 where a discussion of the variations in the data explains many aspects that are not evident in the Summary Table because of the basic limitation of data summaries. The data summaries include the extra ("X") samples collected throughout the year. These samples are taken to enhance the monitoring program, or are the results of special studies.

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis Type | Analysis Total Number | * LLD | Indicator Locations Mean Range | Indicator/Control Location with Highest Mean Number | Distance Direction | Mean Range | Control Locations Mean Range | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| **Direct Radiation** *TLD (uR/hr)* | Gamma Dose | 175 | - | 7.9 (155/155) (4.2/11.9) | 8 | 0.3 mi SE | 11.2 (4/4) (10.8/11.9) | 8.1 (20/20) (5.9/10.1) | 0 |
| **Air Iodine** *(1e-3 pCi/m³)* | I-131 | 416 | 70 | <LLD | - | - | - | <LLD | 0 |
| **Air Particulate** *(1e-3 pCi/m³)* | GR-B | 416 | 10 | 15.9 (357/364) (5.1/34.7) | 10 | 1.2 mi E | 16.8 (50/52) (5.9/33) | 15.8 (51/52) (5.6/28.7) | 0 |
| | GAMMA | 32 | | | | | | | |
| | BE-7 | | - | 115 (28/28) (67/166) | 10 | 1.2 mi E | 133 (4/4) (96/166) | 104 (4/4) (79/120) | 0 |
| | MN-54 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-58 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-60 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZN-65 | | - | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 50 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 60 | <LLD | - | - | - | <LLD | 0 |
| | BA-140 | | - | <LLD | - | - | - | <LLD | 0 |
| | CE-141 | | - | <LLD | - | - | - | <LLD | 0 |
| | CE-144 | | - | <LLD | - | - | - | <LLD | 0 |
| **Soil** *(pCi/g dry)* | GAMMA | 3 | | | | | | | |
| | BE-7 | | - | <LLD | - | - | - | <LLD | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis Type | Analysis Total Number | * LLD | Indicator Locations Mean Range | Indicator/Control Location with Highest Mean Number | Distance Direction | Mean Range | Control Locations Mean Range | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| **Soil** *(pCi/g dry)* | K-40 | | - | 13.9 (2/2) (13.3/14.4) | 3 | 0.03 mi NE | 14.4 (1/1) | 11.7 (1/1) | 0 |
| | CR-51 | | - | <LLD | - | - | - | <LLD | 0 |
| | MN-54 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-58 | | - | <LLD | - | - | - | <LLD | 0 |
| | FE-59 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-60 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZN-65 | | - | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |
| | SB-125 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 0.15 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 0.18 | 0.354 (2/2) (0.300/0.407) | 14C | 12.0 mi NE | 1.33 (1/1) | 1.33 (1/1) | 0 |
| | CE-141 | | - | <LLD | - | - | - | <LLD | 0 |
| | CE-144 | | - | <LLD | - | - | - | <LLD | 0 |
| | ACTH-228 | | - | 1.43 (2/2) (1.17/1.68) | 4 | 1.0 mi N | 1.68 (1/1) | 0.81 (1/1) | 0 |
| **Goat Milk** *(pCi/l)* | SR-89 | 1 | 10 | <LLD | - | - | - | NA | 0 |
| | SR-90 | 1 | 2 | <LLD | - | - | - | NA | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis Type | Analysis Total Number | * LLD | Indicator Locations Mean Range | Location with Highest Mean Number | Distance Direction | Mean Range | Control Locations Mean Range | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| **Goat Milk** | GAMMA | 11 | | | | | | | |
| *(pCi/l)* | K-40 | | - | 1373 (8/8)<br>(1010/1680) | 24C | 29.0 mi<br>NNW | 1613 (3/3)<br>(1560/1650) | 1613 (3/3)<br>(1560/1650) | 0 |
| | I-131 | | 1 | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 15 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 18 | 8.38 (3/8)<br>(5.49/12.4) | 21 | 2.0 mi<br>N | 8.38 (3/8)<br>(5.49/12.4) | 5.70 (2/3)<br>(5.30/6.10) | 0 |
| | BA-140 | | 70 | <LLD | - | - | - | <LLD | 0 |
| | LA-140 | | 25 | <LLD | - | - | - | <LLD | 0 |
| **Pasture** | GAMMA | 27 | | | | | | | |
| **Grass/Hay** *(pCi/g wet)* | I-131 | | 0.06 | <LLD | - | - | - | <LLD | 0 |
| | BE-7 | | - | 3.18 (7/11)<br>(0.52/7.32) | 21 | 2.0 mi<br>N | 3.18 (7/11)<br>(0.52/7.32) | 1.95 (11/16)<br>(0.36/5.00) | 0 |
| | K-40 | | - | 7.57 (11/11)<br>(2.17/13.9) | 24C | 29.0 mi<br>NNW | 7.82 (16/16)<br>(2.89/13.2) | 7.82 (16/16)<br>(2.89/13.2) | 0 |
| | CR-51 | | - | <LLD | - | - | - | <LLD | 0 |
| | MN-54 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-58 | | - | <LLD | - | - | - | <LLD | 0 |
| | FE-59 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-60 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZN-65 | | - | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled *(Units)* | Analysis Type | Analysis Total Number | * LLD | Indicator Locations Mean Range | Indicator/Control Location with Highest Mean Number | Distance Direction | Mean Range | Control Locations Mean Range | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| Pasture Grass/Hay *(pCi/g wet)* | SB-125 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 0.06 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 0.08 | 0.052 (2/11) (0.047/0.057) | 21 | 2.0 mi N | 0.052 (2/11) (0.047/0.057) | <LLD | 0 |
| | BA-140 | | - | <LLD | - | - | - | <LLD | 0 |
| | LA-140 | | - | <LLD | - | - | - | <LLD | 0 |
| | CE-141 | | - | <LLD | - | - | - | <LLD | 0 |
| | CE-144 | | - | <LLD | - | - | - | <LLD | 0 |
| | ACTH-228 | | - | <LLD | 24C | 29.0 mi NNW | 0.25 (1/16) | 0.25 (1/16) | 0 |
| Well Water *(pCi/l)* | H-3 | 63 | 2000 | 1660 (1/63) | 80 | ONSITE | 1660 (1/5) | NA | 0 |
| | Sr-89 | 44 | - | <LLD | - | - | - | NA | 0 |
| | Sr-90 | 44 | - | <LLD | - | - | - | NA | 0 |
| | GAMMA | 63 | | | | | | | |
| | I-131 | | 15 | <LLD | - | - | - | NA | 0 |
| | BE-7 | | - | <LLD | - | - | - | NA | 0 |
| | K-40 | | - | <LLD | - | - | - | NA | 0 |
| | CR-51 | | - | <LLD | - | - | - | NA | 0 |
| | MN-54 | | 15 | <LLD | - | - | - | NA | 0 |
| | CO-58 | | 15 | <LLD | - | - | - | NA | 0 |
| | FE-59 | | 30 | <LLD | - | - | - | NA | 0 |
| | CO-60 | | 15 | <LLD | - | - | - | NA | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis | | * | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | LLD | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Well Water** *(pCi/l)* | ZN-65 | | 30 | <LLD | - | - | - | NA | 0 |
| | NB-95 | | 15 | <LLD | - | - | - | NA | 0 |
| | ZR-95 | | 30 | <LLD | - | - | - | NA | 0 |
| | RU-103 | | - | <LLD | - | - | - | NA | 0 |
| | RU-106 | | - | <LLD | - | - | - | NA | 0 |
| | SB-125 | | - | <LLD | - | - | - | NA | 0 |
| | CS-134 | | 15 | <LLD | - | - | - | NA | 0 |
| | CS-137 | | 18 | <LLD | - | - | - | NA | 0 |
| | BA-140 | | 60 | <LLD | - | - | - | NA | 0 |
| | LA-140 | | 15 | <LLD | - | - | - | NA | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | NA | 0 |
| **Fruits & Vegetables** *(pCi/g wet)* | GAMMA | 11 | | | | | | | |
| | I-131 | | 0.06 | <LLD | - | - | - | <LLD | 0 |
| | BE-7 | | - | <LLD | - | - | - | <LLD | 0 |
| | K-40 | | - | 2.84 (7/7) (0.578/5.47) | 25 | within 10 mi | 2.84 (7/7) (0.578/5.47) | 2.12 (4/4) (0.621/3.99) | 0 |
| | CR-51 | | - | <LLD | - | - | - | <LLD | 0 |
| | MN-54 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-58 | | - | <LLD | - | - | - | <LLD | 0 |
| | FE-59 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-60 | | - | <LLD | - | - | - | <LLD | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis | | * | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | LLD | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Fruits & Vegetables** *(pCi/g wet)* | ZN-65 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |
| | SB-125 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 0.06 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 0.08 | <LLD | - | - | - | <LLD | 0 |
| | BA-140 | | - | <LLD | - | - | - | <LLD | 0 |
| | LA-140 | | - | <LLD | - | - | - | <LLD | 0 |
| | CE-141 | | - | <LLD | - | - | - | <LLD | 0 |
| | CE-144 | | - | <LLD | - | - | - | <LLD | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | <LLD | 0 |
| **Meat - Deer** *(pCi/g wet)* | GAMMA | 2 | | | | | | | |
| | I-131 | | - | <LLD | - | - | - | NA | 0 |
| | BE-7 | | - | <LLD | - | - | - | NA | 0 |
| | K-40 | | - | 2.92 (2/2) (2.46/3.38) | 94 | Site Boundary | 3.38 (1/1) | NA | 0 |
| | MN-54 | | - | <LLD | - | - | - | NA | 0 |
| | CO-58 | | - | <LLD | - | - | - | NA | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis | | * | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | LLD | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Meat - Deer** *(pCi/g wet)* | FE-59 | | - | <LLD | - | - | - | NA | 0 |
| | CO-60 | | - | <LLD | - | - | - | NA | 0 |
| | ZN-65 | | - | <LLD | - | - | - | NA | 0 |
| | NB-95 | | - | <LLD | - | - | - | NA | 0 |
| | ZR-95 | | - | <LLD | - | - | - | NA | 0 |
| | RU-103 | | - | <LLD | - | - | - | NA | 0 |
| | RU-106 | | - | <LLD | - | - | - | NA | 0 |
| | AG-110M | | - | <LLD | - | - | | NA | 0 |
| | CS-134 | | - | <LLD | - | - | - | NA | 0 |
| | CS-137 | | - | 0.275 (2/2) (0.194/0.356) | 94 | Site Boundary | 0.356 (1/1) | NA | 0 |
| | BA-140 | | - | <LLD | - | - | - | NA | 0 |
| | LA-140 | | - | <LLD | - | - | - | NA | 0 |
| | CE-141 | | - | <LLD | - | - | - | NA | 0 |
| | CE-144 | | - | <LLD | - | - | - | NA | 0 |
| | RA-226 | | - | <LLD | - | - | - | NA | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | NA | 0 |
| **Broad Leaf Vegetation** *(pCi/g wet)* | GAMMA | 21 | | | | | | | |
| | I-131 | | 0.06 | <LLD | - | - | - | NA | 0 |
| | BE-7 | | - | 0.998 (18/21) (0.440/2.55) | 1 NNW | 0.6 mi NE | 1.111 (6/7) (0.460/1.83) | NA | 0 |
| | K-40 | | - | 3.80 (21/21) (2.55/4.97) | 10 | 1.2 mi E | 4.15 (7/7) (3.88/4.97) | NA | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis | | * | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | LLD | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Broad Leaf Vegetation** *(pCi/g wet)* | CR-51 | | - | <LLD | - | - | - | NA | 0 |
| | MN-54 | | - | <LLD | - | - | - | NA | 0 |
| | CO-58 | | - | <LLD | - | - | - | NA | 0 |
| | FE-59 | | - | <LLD | - | - | - | NA | 0 |
| | CO-60 | | - | <LLD | - | - | - | NA | 0 |
| | ZN-65 | | - | <LLD | - | - | - | NA | 0 |
| | NB-95 | | - | <LLD | - | - | - | NA | 0 |
| | ZR-95 | | - | <LLD | - | - | - | NA | 0 |
| | RU-103 | | - | <LLD | - | - | - | NA | 0 |
| | RU-106 | | - | <LLD | - | - | - | NA | 0 |
| | SB-125 | | - | <LLD | - | - | - | NA | 0 |
| | CS-134 | | 0.06 | <LLD | - | - | - | NA | 0 |
| | CS-137 | | 0.08 | 0.031 (4/21) (0.020/0.053) | 17 | 0.5 mi NE | 0.035 (3/7) (0.026/0.053) | NA | 0 |
| | BA-140 | | - | <LLD | - | - | - | NA | 0 |
| | LA-140 | | - | <LLD | - | - | - | NA | 0 |
| | CE-141 | | - | <LLD | - | - | - | NA | 0 |
| | CE-144 | | - | <LLD | - | - | - | NA | 0 |
| | ACTH-228 | | - | 0.121 (5/21) (0.083/0.172) | 1 | 0.6 mi NNW | 0.172 (1/7) | NA | 0 |
| | H-3 | 16 | 2000 | 642 (7/12) (300/1070) | 32 | < 0.1 mi | 642 (7/12) (300/1070) | <LLD | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis | | | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | * LLD | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Sea Water** *(pCi/l)* | GAMMA | 16 | | | | | | | |
| | I-131 | | 15 | <LLD | - | - | - | <LLD | 0 |
| | BE-7 | | - | <LLD | - | - | - | <LLD | 0 |
| | K-40 | | - | 288 (12/12) (251/327) | 32 | < 0.1 mi | 288 (12/12) (251/327) | 285 (4/4) (243/321) | 0 |
| | CR-51 | | - | <LLD | - | - | - | <LLD | 0 |
| | MN-54 | | 15 | <LLD | - | - | - | <LLD | 0 |
| | CO-58 | | 15 | <LLD | - | - | - | <LLD | 0 |
| | FE-59 | | 30 | <LLD | - | - | - | <LLD | 0 |
| | CO-60 | | 15 | <LLD | - | - | - | <LLD | 0 |
| | ZN-65 | | 30 | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | 15 | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | 30 | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |
| | SB-125 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 15 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 18 | <LLD | - | - | - | <LLD | 0 |
| | BA-140 | | 60 | <LLD | - | - | - | <LLD | 0 |
| | LA-140 | | 15 | <LLD | - | - | - | <LLD | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | <LLD | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis Type | Analysis Total Number | * LLD | Indicator Locations Mean Range | Indicator/Control Location with Highest Mean Number | Distance Direction | Mean Range | Control Locations Mean Range | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| Bottom Sediment *(pCi/g dry)* | GAMMA | 20 | | | | | | | |
| | I-131 | | - | <LLD | - | - | - | <LLD | 0 |
| | BE-7 | | - | <LLD | - | - | - | <LLD | 0 |
| | K-40 | | - | 16.3 (18/18) (12.0/31.6) | 67 | 4.7 mi NNW | 25.2 (2/2) (18.8/31.6) | 15.7 (2/2) (14.0/17.3) | 0 |
| | CR-51 | | - | <LLD | - | - | - | <LLD | 0 |
| | MN-54 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-58 | | - | <LLD | - | - | - | <LLD | 0 |
| | FE-59 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-60 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZN-65 | | - | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |
| | AG-110M | | - | <LLD | - | - | - | <LLD | 0 |
| | SB-125 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 0.15 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 0.18 | <LLD | - | - | - | <LLD | 0 |
| | ACTH-228 | | - | 0.121 (5/21) (0.083/0.172) | 29 | 0.4 mi NNE | 172 (1/7) | <LLD | 0 |
| Flora *(pCi/g wet)* | GAMMA | 24 | | | | | | | |
| | I-131 | | - | <LLD | 90C | 4.0 mi E | 0.288 (2/4) (0.139/0.436) | 0.288 (2/4) (0.139/0.436) | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis | | * | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | LLD | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Flora** *(pCi/g wet)* | BE-7 | | - | 0.083 (5/20) (0.060/0.104) | 29X | 0.4 mi NNE | 0.097 (1/4) | 0.078 (1/4) | 0 |
| | K-40 | | - | 6.36 (20/20) (4.12/8.51) | 32X | < 0.1 mi | 7.29 (4/4) (5.60/8.51) | 6.69 (4/4) (5.80/7.63) | 0 |
| | CR-51 | | - | <LLD | - | - | - | <LLD | 0 |
| | MN-54 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-58 | | - | <LLD | - | - | - | <LLD | 0 |
| | FE-59 | | - | <LLD | - | - | - | <LLD | 0 |
| | CO-60 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZN-65 | | - | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |
| | AG-110M | | - | <LLD | - | - | - | <LLD | 0 |
| | SB-125 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | - | <LLD | - | - | - | <LLD | 0 |
| | ACTH-228 | | - | 0.044 (2/20) (0.040/0.048) | 36 | 3.0 mi WSW | 0.048 (1/4) | 0.032 (1/4) | 0 |
| **Fish - Flounder** *(pCi/g wet)* | GAMMA | 5 | | | | | | | |
| | I-131 | | 0.04 | <LLD | - | - | - | NA | 0 |
| | BE-7 | | - | <LLD | - | - | - | NA | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis Type | Analysis Total Number | * LLD | Indicator Locations Mean Range | Indicator/Control Location with Highest Mean Number | Indicator/Control Location with Highest Mean Distance Direction | Indicator/Control Location with Highest Mean Mean Range | Control Locations Mean Range | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| **Fish - Flounder** *(pCi/g wet)* | K-40 | | - | 3.9 (5/5) (3.7/4.2) | 35 | 0.3 mi WNW | 3.9 (3/3) (3.7/4.2) | NA | 0 |
| | CR-51 | | - | <LLD | - | - | - | NA | 0 |
| | MN-54 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | CO-58 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | FE-59 | | 0.26 | <LLD | - | - | - | NA | 0 |
| | CO-60 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | ZN-65 | | 0.26 | <LLD | - | - | - | NA | 0 |
| | NB-95 | | - | <LLD | - | - | - | NA | 0 |
| | ZR-95 | | - | <LLD | - | - | - | NA | 0 |
| | RU-103 | | - | <LLD | - | - | - | NA | 0 |
| | RU-106 | | - | <LLD | - | - | - | NA | 0 |
| | AG-110M | | - | <LLD | - | - | - | NA | 0 |
| | SB-125 | | - | <LLD | - | - | - | NA | 0 |
| | CS-134 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | CS-137 | | 0.15 | <LLD | - | - | - | NA | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | NA | 0 |
| **Fish - Other** *(pCi/g wet)* | GAMMA | 9 | | | | | | | |
| | I-131 | | 0.04 | <LLD | - | - | - | NA | 0 |
| | BE-7 | | - | <LLD | - | - | - | NA | 0 |
| | K-40 | | - | 4.6 (9/9) (2.9/11.5) | 32 | < 0.1 mi | 6.5 (3/3) (3.5/11.5) | NA | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis | | * | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | LLD | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Fish - Other** *(pCi/g wet)* | CR-51 | | - | <LLD | - | - | - | NA | 0 |
| | MN-54 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | CO-58 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | FE-59 | | 0.26 | <LLD | - | - | - | NA | 0 |
| | CO-60 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | ZN-65 | | 0.26 | <LLD | - | - | - | NA | 0 |
| | NB-95 | | - | <LLD | - | - | - | NA | 0 |
| | ZR-95 | | - | <LLD | - | - | - | NA | 0 |
| | RU-103 | | - | <LLD | - | - | - | NA | 0 |
| | RU-106 | | - | <LLD | - | - | - | NA | 0 |
| | AG-110M | | - | <LLD | - | - | - | NA | 0 |
| | SB-125 | | - | <LLD | - | - | - | NA | 0 |
| | CS-134 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | CS-137 | | 0.15 | <LLD | - | - | - | NA | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | NA | 0 |
| **Mussels** *(pCi/g wet)* | GAMMA | 2 | | | | | | | |
| | I-131 | | 0.1 | <LLD | - | - | - | NA | 0 |
| | BE-7 | | - | <LLD | - | - | - | NA | 0 |
| | K-40 | | - | 2.4 (2/2) (2.2/2.6) | 30 | 1.5 mi NNW | 2.4 (2/2) (2.2/2.6) | NA | 0 |
| | CR-51 | | - | <LLD | - | - | - | NA | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis Type | Analysis Total Number | * LLD | Indicator Locations Mean Range | Indicator/Control Location with Highest Mean Number | Distance Direction | Mean Range | Control Locations Mean Range | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| **Mussels** *(pCi/g wet)* | MN-54 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | CO-58 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | FE-59 | | 0.26 | <LLD | - | - | - | NA | 0 |
| | CO-60 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | ZN-65 | | 0.26 | <LLD | - | - | - | NA | 0 |
| | NB-95 | | - | <LLD | - | - | - | NA | 0 |
| | ZR-95 | | - | <LLD | - | - | - | NA | 0 |
| | RU-103 | | - | <LLD | - | - | - | NA | 0 |
| | RU-106 | | - | <LLD | - | - | - | NA | 0 |
| | AG-110M | | - | <LLD | - | - | - | NA | 0 |
| | SB-125 | | - | <LLD | - | - | - | NA | 0 |
| | CS-134 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | CS-137 | | 0.15 | <LLD | - | - | - | NA | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | NA | 0 |
| **Oysters** *(pCi/g wet)* | GAMMA | 20 | | | | | | | |
| | I-131 | | | <LLD | - | - | - | <LLD | 0 |
| | BE-7 | | - | <LLD | - | - | - | <LLD | 0 |
| | K-40 | | - | 2.2 (16/16) (1.0/6.5) | 34 | 4.0 mi ENE | 3.1 (4/4) (1.8/6.5) | 1.9 (4/4) (1.4/2.5) | 0 |
| | CR-51 | | - | <LLD | - | - | - | <LLD | 0 |
| | MN-54 | | 0.13 | <LLD | - | - | - | <LLD | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis Type | Analysis Total Number | * LLD | Indicator Locations Mean Range | Indicator/Control Location with Highest Mean Number | Distance Direction | Mean Range | Control Locations Mean Range | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| **Oysters** *(pCi/g wet)* | CO-58 | | 0.13 | <LLD | - | - | - | <LLD | 0 |
| | FE-59 | | 0.26 | <LLD | - | - | - | <LLD | 0 |
| | CO-60 | | 0.13 | <LLD | - | - | - | <LLD | 0 |
| | ZN-65 | | 0.26 | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |
| | AG-110M | | | 0.10 (3/16) (0.063/0.200) | 32 | < 0.1 mi | 0.10 (3/4) (0.063/0.200) | <LLD | 0 |
| | SB-125 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 0.13 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 0.15 | <LLD | - | - | - | <LLD | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | <LLD | 0 |
| **Clams** *(pCi/g wet)* | GAMMA | 16 | | | | | | | |
| | I-131 | | | <LLD | - | - | - | NA | 0 |
| | BE-7 | | - | <LLD | - | - | - | NA | 0 |
| | K-40 | | - | 2.0 (16/16) (1.5/2.7) | 29 | 0.4 mi NNE | 2.4 (4/4) (2.1/2.7) | NA | 0 |
| | CR-51 | | - | <LLD | - | - | - | NA | 0 |
| | MN-54 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | CO-58 | | 0.13 | <LLD | - | - | - | NA | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled (Units) | Analysis | | * | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | LLD | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Clams** *(pCi/g wet)* | FE-59 | | 0.26 | <LLD | - | - | - | NA | 0 |
| | CO-60 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | ZN-65 | | 0.26 | <LLD | - | - | - | NA | 0 |
| | NB-95 | | - | <LLD | - | - | - | NA | 0 |
| | ZR-95 | | - | <LLD | - | - | - | NA | 0 |
| | RU-103 | | - | <LLD | - | - | - | NA | 0 |
| | RU-106 | | - | <LLD | - | - | - | NA | 0 |
| | AG-110M | | - | <LLD | - | - | - | NA | 0 |
| | SB-125 | | - | <LLD | - | - | - | NA | 0 |
| | CS-134 | | 0.13 | <LLD | - | - | - | NA | 0 |
| | CS-137 | | 0.15 | <LLD | - | - | - | NA | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | NA | 0 |
| **Lobster** *(pCi/g wet)* | GAMMA | 12 | | | | | | | |
| | I-131 | | 1 | <LLD | - | - | - | <LLD | 0 |
| | BE-7 | | - | <LLD | - | - | - | <LLD | 0 |
| | K-40 | | - | 2.3 (7/8) (1.5/2.9) | 37C | 3.5 mi WSW | 3.4 (4/4) (1.7/8.0) | 3.4 (4/4) (1.7/8.0) | 0 |
| | CR-51 | | - | <LLD | - | - | - | <LLD | 0 |
| | MN-54 | | 0.13 | <LLD | - | - | - | <LLD | 0 |
| | CO-58 | | 0.13 | <LLD | - | - | - | <LLD | 0 |
| | FE-59 | | 0.26 | <LLD | - | - | - | <LLD | 0 |

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Dockets 50-245, 50-336 & 50-423

| Medium or Pathway Sampled *(Units)* | Analysis | | * | Indicator Locations | Indicator/Control Location with Highest Mean | | | Control Locations | Non-Routine Reported Measurements |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Total Number | *LLD* | Mean Range | Number | Distance Direction | Mean Range | Mean Range | |
| **Lobster** *(pCi/g wet)* | CO-60 | | 0.13 | <LLD | - | - | - | <LLD | 0 |
| | ZN-65 | | 0.26 | <LLD | - | - | - | <LLD | 0 |
| | NB-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | ZR-95 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-103 | | - | <LLD | - | - | - | <LLD | 0 |
| | RU-106 | | - | <LLD | - | - | - | <LLD | 0 |
| | AG-110M | | - | <LLD | - | - | - | <LLD | 0 |
| | SB-125 | | - | <LLD | - | - | - | <LLD | 0 |
| | CS-134 | | 0.13 | <LLD | - | - | - | <LLD | 0 |
| | CS-137 | | 0.15 | <LLD | - | - | - | <LLD | 0 |
| | ACTH-228 | | - | <LLD | - | - | - | <LLD | 0 |

## NOTES FOR SUMMARY TABLE

* For gamma measurements the Minimum Detectable Level (MDL) $\simeq$ the Lower Limit of Detection (LLD) / 2.33. For all others, MDL = 2 x (the standard deviation of the background). These MDLs are based on the absence of large amounts of interfering activity (excluding naturally occurring radionuclides). Deviations by factors of 3 to 4 can occur.

The LLD at a confidence level of 95% is the smallest concentration of radioactive material in a sample that will be detected with a 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ S_b}{E * V * 2.22 * Y * \exp(-\lambda\Delta t)}$$

where,

| | |
|---|---|
| LLD | is the lower limit of detection as defined above (as pCi per unit mass or volume) |
| $S_b$ | is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute) |
| E | is the counting efficiency (as counts per transformation) |
| V | is the sample size (in units of mass or volume) |
| 2.22 | is the number of transformation per minute per picoCurie |
| Y | is the fractional radiochemical yield (when applicable) |
| $\Delta$ | is the radioactive decay constant for the particular radionuclide |
| $\lambda t$ | is the elapsed time between sample collection (or end of the sample collection period) and time of counting |

The LLD is defined as "a priori" (before the fact) limit representing the capability of a measurement system and not an "a posteriori" (after the fact) limit for a particular measurement.

Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these a priori LLDs unachievable. In such cases, the contributing factors will be identified and described in this report (see Notes for Section 3 or Section 4). As shown in the equation above, for composite samples taken over a period of time, the LLD is decayed to the end of the sample period.

The listed I-131 LLD for all the vegetation samples is for leafy vegetables.
The I-131, Ba-140 and La-140 LLDs for the water samples are from end of sample period.

## 3.2 Data Tables

The data reported in this section are strictly counting statistics. The reported error is two times the standard deviation (2σ) of the net activity. Unless otherwise noted, the overall error (counting, sample size, chemistry, errors, etc.) is estimated to be 2 to 5 times that listed. Results are considered positive when the measured value exceeds 1.5 times the listed 2σ error (i.e., the measured value exceeds 3σ). Any errors listed as zero are the artifact that there were no background counts in the area of the peak for these nuclides.

Because of counting statistics, negative values, zeros and numbers below the Minimum Detectable Level (MDL) are statistically valid pieces of data. For the purposes of this report, in order to indicate any background biases, all the valid data are presented. This practice was recommended by Health and Safety Laboratory (HASL) ("Reporting of Analytical Results from HASL," letter by Leo B. Higginbotham), NUREG 0475 and NUREG/CR-4007 (Sept. 1984). In instances where zeros are listed after significant digits, this is an artifact of the computer data-handling program.

Data are given according to sample type as indicated below.

1. Gamma Exposure Rate
2. Air Particulates, Gross Beta Radioactivity
3. Air Particulates, Weekly I-131
4. Air Particulates, Quantitative Gamma Spectra
5. Air Particulates, Quarterly Strontium*
6. Soil
7. Milk - Dairy Farms*
8. Milk - Goat Farms
9. Pasture Grass
10. Well Water
11. Meat
12. Fruits & Vegetables
13. Broad Leaf Vegetation
14. Seawater
15. Bottom Sediment
16. Aquatic Flora
17. Fin Fish
18. Mussels
19. Oysters
20. Clams
21. Scallops*
22. Lobster (and Crabs)

* This type of sampling or analysis was not performed; therefore there is no table for these.

TABLE 1
QUARTERLY
GAMMA EXPOSURE RATE (uR/hr)*

LOCATIONS

| PERIOD | 1 | (+/-) | 2 | (+/-) | 3 | (+/-) | 4 | (+/-) | 5 | (+/-) | 6 | (+/-) | 7 | (+/-) | 8 | (+/-) | 9 | (+/-) | 10 | (+/-) | 11 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1Q | 7.6 | 0.3 | 10.1 | 0.3 | 7.5 | 0.2 | 7.9 | 0.2 | 9.6 | 0.3 | 8.1 | 0.3 | 5.0 | 0.2 | 10.8 | 0.3 | 8.6 | 0.3 | 10.0 | 0.6 | 6.7 | 0.2 |
| 2Q | 8.2 | 0.3 | 10.5 | 0.4 | 7.6 | 0.4 | 7.6 | 0.4 | 9.2 | 0.4 | 8.3 | 0.5 | 4.9 | 0.4 | 11.0 | 0.4 | 9.1 | 0.3 | 10.7 | 0.4 | 6.7 | 0.3 |
| 3Q | 8.2 | 0.3 | 9.9 | 0.2 | 7.6 | 0.2 | 7.9 | 0.3 | 9.9 | 0.3 | 7.8 | 0.3 | 4.2 | 0.1 | 11.1 | 0.3 | 9.3 | 0.3 | 11.0 | 0.5 | 7.0 | 0.2 |
| 4Q | 8.5 | 0.3 | 10.2 | 0.4 | 7.7 | 0.3 | 7.9 | 0.5 | 9.6 | 0.4 | 8.3 | 0.3 | 4.9 | 0.2 | 11.9 | 0.4 | 9.7 | 0.6 | 11.5 | 0.4 | 7.7 | 0.3 |

| PERIOD | 12C | (+/-) | 13C | (+/-) | 14C | (+/-) | 15C | (+/-) | 16C | (+/-) | 27 | (+/-) | 41 | (+/-) | 42 | (+/-) | 43 | (+/-) | 44 | (+/-) | 45 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1Q | 7.2 | 0.2 | 10.0 | 0.4 | 9.0 | 0.3 | 7.8 | 0.4 | 6.2 | 0.3 | 8.4 | 0.5 | 6.4 | 0.2 | | A | 6.6 | 0.2 | 7.9 | 0.2 | 7.0 | 0.3 |
| 2Q | 7.1 | 0.4 | 10.1 | 0.4 | 9.3 | 0.4 | 8.0 | 0.4 | 6.3 | 0.3 | 8.5 | 0.3 | 6.8 | 0.3 | 7.8 | 0.3 | 6.8 | 0.4 | 8.1 | 0.3 | 7.3 | 0.3 |
| 3Q | 6.9 | 0.2 | 9.5 | 0.3 | 9.0 | 0.2 | 7.6 | 0.3 | 5.9 | 0.2 | 7.8 | 0.4 | 6.5 | 0.2 | 6.8 | 0.3 | 6.7 | 0.2 | 8.1 | 0.2 | 6.8 | 0.3 |
| 4Q | 7.6 | 0.3 | 9.7 | 0.4 | 9.7 | 0.4 | 8.4 | 0.3 | 6.6 | 0.4 | 8.6 | 0.3 | 7.0 | 0.3 | 7.1 | 0.2 | 7.0 | 0.2 | 8.3 | 0.3 | 7.7 | 0.3 |

| PERIOD | 46 | (+/-) | 47 | (+/-) | 48 | (+/-) | 49 | (+/-) | 50 | (+/-) | 51 | (+/-) | 52 | (+/-) | 53 | (+/-) | 55 | (+/-) | 56 | (+/-) | 57 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1Q | 9.1 | 0.3 | 7.5 | 0.2 | 9.0 | 0.3 | 6.7 | 0.2 | 7.5 | 0.2 | 6.2 | 0.3 | 7.2 | 0.4 | 7.0 | 0.3 | 7.3 | 0.3 | 6.4 | 0.3 | 7.1 | 0.2 |
| 2Q | 9.4 | 0.4 | 7.9 | 0.3 | 9.5 | 0.4 | 7.1 | 0.4 | 8.0 | 0.3 | 6.4 | 0.3 | 7.6 | 0.4 | 7.6 | 0.4 | 7.6 | 0.3 | 7.2 | 0.3 | 6.8 | 0.3 |
| 3Q | 8.2 | 0.2 | 7.5 | 0.4 | 9.3 | 0.2 | 6.8 | 0.3 | 7.6 | 0.3 | 6.0 | 0.2 | 7.0 | 0.2 | 7.3 | 0.2 | 7.2 | 0.3 | 6.8 | 0.2 | 7.1 | 0.2 |
| 4Q | 9.3 | 0.4 | 8.1 | 0.3 | 9.9 | 0.4 | 6.9 | 0.2 | 8.3 | 0.5 | 6.7 | 0.3 | 7.5 | 0.2 | 7.5 | 0.4 | 7.9 | 0.3 | 7.4 | 0.3 | 7.5 | 0.3 |

| PERIOD | 59 | (+/-) | 60 | (+/-) | 61 | (+/-) | 62 | (+/-) | 63 | (+/-) | 64 | (+/-) | 65 | (+/-) | 66X | (+/-) | 73X | (+/-) | 74X | (+/-) | 75X | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1Q | 7.3 | 0.3 | 6.5 | 0.2 | 7.1 | 0.3 | 7.9 | 0.3 | 8.5 | 0.4 | 7.3 | 0.4 | 8.3 | 0.3 | 7.2 | 0.2 | 9.4 | 0.4 | 7.6 | 0.4 | 7.1 | 0.3 |
| 2Q | 8.0 | 0.3 | 7.0 | 0.3 | 7.7 | 0.3 | 8.4 | 0.4 | 8.9 | 0.3 | 7.8 | 0.3 | 8.0 | 0.4 | 7.1 | 0.4 | 9.1 | 0.4 | 7.7 | 0.3 | 7.1 | 0.3 |
| 3Q | 7.6 | 0.3 | 6.7 | 0.3 | 7.0 | 0.2 | 7.9 | 0.2 | 8.2 | 0.3 | 7.2 | 0.2 | 8.0 | 0.4 | 7.0 | 0.2 | 8.8 | 0.2 | 7.5 | 0.2 | 7.0 | 0.3 |
| 4Q | 8.1 | 0.3 | 6.9 | 0.4 | 7.7 | 0.5 | 8.2 | 0.4 | 9.0 | 0.4 | 7.7 | 0.4 | 7.9 | 0.3 | 7.3 | 0.2 | 9.3 | 0.5 | 7.9 | 0.4 | 7.1 | 0.4 |

* READINGS ARE THE AVERAGE OF MULTI CASO4TM PHOSPHOR ELEMENTS WITHIN ONE PANASONIC TLD BADGE
ERRORS ARE 1-SIGMA AND INCLUDE COUNTING, TRANSIT, READER AND FADE UNCERTAINTIES

TABLE 2
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
($pCi/m^3$)

LOCATIONS

| PERIOD ENDING | 1 | +/- | 2 | +/- | 3 | +/- | 4 | +/- | 10 | +/- | 11 | +/- | 15C | +/- | 27 | +/- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/05/10 | 0.016 | 0.004 | 0.015 | 0.004 | 0.013 | 0.004 | 0.012 | 0.004 | 0.012 | 0.004 | 0.015 | 0.004 | 0.017 | 0.004 | 0.016 | 0.004 |
| 01/12/10 | 0.013 | 0.004 | 0.013 | 0.004 | 0.013 | 0.004 | 0.016 | 0.004 | 0.013 | 0.004 | 0.013 | 0.004 | 0.012 | 0.004 | 0.011 | 0.003 |
| 01/19/10 | 0.027 | 0.005 | 0.020 | 0.004 | 0.026 | 0.005 | 0.029 | 0.005 | 0.027 | 0.004 | 0.029 | 0.005 | 0.024 | 0.004 | 0.026 | 0.004 |
| 01/26/10 | 0.015 | 0.004 | 0.017 | 0.004 | 0.020 | 0.004 | 0.019 | 0.004 | 0.021 | 0.004 | 0.023 | 0.004 | 0.018 | 0.004 | 0.018 | 0.004 |
| 02/02/10 | 0.023 | 0.004 | 0.025 | 0.004 | 0.023 | 0.004 | 0.026 | 0.004 | 0.028 | 0.004 | 0.023 | 0.004 | 0.027 | 0.004 | 0.026 | 0.004 |
| 02/09/10 | 0.017 | 0.004 | 0.019 | 0.004 | 0.017 | 0.004 | 0.017 | 0.004 | 0.020 | 0.004 | 0.021 | 0.004 | 0.020 | 0.004 | 0.018 | 0.004 |
| 02/16/10 | 0.012 | 0.004 | 0.017 | 0.004 | 0.015 | 0.004 | 0.014 | 0.004 | 0.016 | 0.004 | 0.014 | 0.004 | 0.014 | 0.004 | 0.012 | 0.004 |
| 02/23/10 | 0.008 | 0.004 | 0.010 | 0.004 | 0.008 | 0.004 | 0.010 | 0.004 | 0.007 | 0.004 | 0.009 | 0.004 | 0.007 | 0.004 | 0.008 | 0.004 |
| 03/02/10 | 0.006 | 0.003 | 0.005 | 0.004 | 0.006 | 0.004 | 0.007 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.003 | 0.007 | 0.004 |
| 03/09/10 | 0.022 | 0.003 | 0.022 | 0.004 | 0.026 | 0.005 | 0.023 | 0.004 | 0.025 | 0.004 | 0.023 | 0.004 | 0.027 | 0.004 | 0.025 | 0.004 |
| 03/16/10 | 0.017 | 0.003 | 0.015 | 0.003 | 0.015 | 0.003 | 0.020 | 0.004 | 0.016 | 0.004 | 0.016 | 0.004 | 0.016 | 0.003 | 0.018 | 0.004 |
| 03/23/10 | 0.028 | 0.004 | 0.030 | 0.005 | 0.033 | 0.005 | 0.030 | 0.005 | 0.031 | 0.005 | 0.030 | 0.005 | 0.029 | 0.005 | 0.028 | 0.005 |
| 03/30/10 | 0.016 | 0.003 | 0.023 | 0.004 | 0.017 | 0.004 | 0.021 | 0.004 | 0.021 | 0.004 | 0.022 | 0.004 | 0.018 | 0.004 | 0.023 | 0.004 |
| 04/06/10 | 0.009 | 0.003 | 0.008 | 0.003 | 0.007 | 0.003 | 0.012 | 0.004 | 0.008 | 0.004 | 0.012 | 0.004 | 0.009 | 0.003 | 0.010 | 0.004 |
| 04/13/10 | 0.021 | 0.004 | 0.022 | 0.004 | 0.021 | 0.004 | 0.021 | 0.004 | 0.021 | 0.004 | 0.023 | 0.005 | 0.022 | 0.004 | 0.023 | 0.005 |
| 04/20/10 | 0.016 | 0.004 | 0.017 | 0.004 | 0.014 | 0.004 | 0.015 | 0.004 | 0.017 | 0.004 | 0.016 | 0.004 | 0.015 | 0.004 | 0.015 | 0.004 |
| 04/27/10 | 0.020 | 0.004 | 0.020 | 0.004 | 0.017 | 0.004 | 0.022 | 0.004 | 0.018 | 0.004 | 0.022 | 0.004 | 0.024 | 0.005 | 0.020 | 0.004 |
| 05/04/10 | 0.020 | 0.004 | 0.020 | 0.004 | 0.020 | 0.004 | 0.025 | 0.005 | 0.018 | 0.005 | 0.019 | 0.005 | 0.021 | 0.005 | 0.020 | 0.005 |
| 05/11/10 | 0.017 | 0.004 | 0.016 | 0.004 | 0.018 | 0.004 | 0.013 | 0.004 | 0.014 | 0.004 | 0.019 | 0.004 | 0.014 | 0.004 | 0.017 | 0.004 |
| 05/18/10 | 0.019 | 0.004 | 0.021 | 0.004 | 0.019 | 0.004 | 0.020 | 0.004 | 0.018 | 0.004 | 0.021 | 0.004 | 0.018 | 0.004 | 0.019 | 0.004 |
| 05/25/10 | 0.014 | 0.004 | 0.014 | 0.004 | 0.013 | 0.003 | 0.011 | 0.004 | 0.013 | 0.004 | 0.014 | 0.004 | 0.015 | 0.004 | 0.015 | 0.004 |
| 06/01/10 | 0.016 | 0.003 | 0.015 | 0.003 | 0.017 | 0.003 | 0.019 | 0.003 | 0.018 | 0.003 | 0.015 | 0.003 | 0.017 | 0.004 B | 0.015 | 0.003 |
| 06/08/10 | 0.013 | 0.004 | 0.014 | 0.004 | 0.016 | 0.004 | 0.014 | 0.004 | 0.017 | 0.004 | 0.020 | 0.004 | 0.017 | 0.004 | 0.015 | 0.004 |
| 06/15/10 | 0.008 | 0.003 | 0.009 | 0.003 | 0.010 | 0.003 | 0.010 | 0.004 | 0.011 | 0.004 | 0.012 | 0.004 | 0.011 | 0.003 | 0.011 | 0.003 |
| 06/22/10 | 0.017 | 0.004 | 0.017 | 0.004 | 0.019 | 0.004 | 0.020 | 0.004 | 0.017 | 0.004 | 0.020 | 0.004 | 0.016 | 0.004 | 0.020 | 0.004 |
| 06/29/10 | 0.026 | 0.005 | 0.016 | 0.004 | 0.020 | 0.004 | 0.021 | 0.004 | 0.022 | 0.004 | 0.018 | 0.004 | 0.020 | 0.004 | 0.016 | 0.004 |

**SAMPLE DATES MAY VARY BY A FEW DAYS**

TABLE 2
AIR PARTICULATES
GROSS BETA RADIOACTIVITY
(pCi/m$^3$)

LOCATIONS

| PERIOD ENDING | 1 | +/- | 2 | +/- | 3 | +/- | 4 | +/- | 10 | +/- | 11 | +/- | 15C | +/- | 27 | +/- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07/06/10 | 0.010 | 0.004 | 0.014 | 0.004 | 0.013 | 0.004 | 0.014 | 0.004 | 0.015 | 0.004 | 0.016 | 0.004 | 0.016 | 0.004 | 0.013 | 0.004 |
| 07/13/10 | 0.022 | 0.004 | 0.019 | 0.003 | 0.021 | 0.003 | 0.020 | 0.003 | 0.022 | 0.004 | 0.022 | 0.003 | 0.021 | 0.003 | 0.021 | 0.003 |
| 07/20/10 | 0.015 | 0.004 | 0.012 | 0.004 | 0.015 | 0.004 | 0.012 | 0.003 | 0.015 | 0.004 | 0.016 | 0.004 | 0.015 | 0.004 | 0.016 | 0.004 |
| 07/27/10 | 0.012 | 0.004 | 0.014 | 0.004 | 0.015 | 0.004 | 0.012 | 0.004 | 0.018 | 0.004 | 0.015 | 0.004 | 0.014 | 0.004 | 0.016 | 0.004 |
| 08/03/10 | 0.008 | 0.004 | 0.009 | 0.004 | 0.010 | 0.004 | 0.011 | 0.004 | 0.014 | 0.004 | 0.013 | 0.004 | 0.012 | 0.004 | 0.014 | 0.004 |
| 08/10/10 | 0.017 | 0.005 | 0.014 | 0.004 | 0.016 | 0.004 | 0.016 | 0.004 | 0.020 | 0.005 | 0.018 | 0.004 | 0.016 | 0.004 | 0.015 | 0.004 |
| 08/17/10 | 0.015 | 0.004 | 0.014 | 0.004 | 0.013 | 0.004 | 0.016 | 0.004 | 0.018 | 0.004 | 0.016 | 0.004 | 0.016 | 0.004 | 0.012 | 0.004 |
| 08/24/10 | 0.010 | 0.004 | 0.014 | 0.004 | 0.016 | 0.004 | 0.014 | 0.004 | 0.017 | 0.005 | 0.017 | 0.004 | 0.016 | 0.004 | 0.016 | 0.004 |
| 08/31/10 | 0.015 | 0.004 | 0.018 | 0.004 | 0.018 | 0.004 | 0.018 | 0.004 | 0.019 | 0.004 | 0.019 | 0.004 | 0.016 | 0.004 | 0.015 | 0.004 |
| 09/07/10 | 0.032 | 0.005 | 0.031 | 0.005 | 0.026 | 0.005 | 0.030 | 0.005 | 0.033 | 0.005 | 0.033 | 0.005 | 0.025 | 0.004 | 0.035 | 0.005 |
| 09/14/10 | 0.008 | 0.003 | 0.010 | 0.004 | 0.011 | 0.004 | 0.008 | 0.003 | 0.013 | 0.004 | 0.011 | 0.004 | 0.012 | 0.004 | 0.012 | 0.004 |
| 09/21/10 | 0.012 | 0.004 | 0.015 | 0.004 | 0.015 | 0.004 | 0.012 | 0.004 | 0.015 | 0.004 | 0.018 | 0.004 | 0.015 | 0.004 | 0.016 | 0.004 |
| 09/28/10 | 0.016 | 0.004 | 0.019 | 0.004 | 0.019 | 0.004 | 0.020 | 0.004 | 0.021 | 0.005 | 0.020 | 0.004 | 0.020 | 0.004 | 0.017 | 0.004 |
| 10/05/10 | 0.007 | 0.003 | 0.008 | 0.004 | 0.009 | 0.004 | 0.008 | 0.003 | 0.007 | 0.004 | 0.008 | 0.004 | 0.010 | 0.003 | 0.007 | 0.004 |
| 10/12/10 | 0.018 | 0.004 | 0.013 | 0.004 | 0.013 | 0.004 | 0.014 | 0.004 | 0.012 | 0.004 | 0.015 | 0.004 | 0.013 | 0.006 C | 0.013 | 0.004 |
| 10/19/10 | 0.006 | 0.003 | 0.011 | 0.004 | 0.010 | 0.004 | 0.012 | 0.004 | 0.001 | 0.004 | 0.008 | 0.004 | 0.010 | 0.004 | 0.013 | 0.004 |
| 10/26/10 | 0.014 | 0.004 | 0.015 | 0.004 | 0.012 | 0.004 | 0.010 | 0.003 | 0.018 | 0.004 | 0.009 | 0.004 | 0.008 | 0.003 | 0.012 | 0.004 |
| 11/02/10 | 0.010 | 0.004 | 0.009 | 0.004 | 0.010 | 0.004 | 0.011 | 0.003 | 0.009 | 0.004 | 0.011 | 0.004 | 0.008 | 0.003 | 0.009 | 0.004 |
| 11/09/10 | 0.004 | 0.003 | 0.003 | 0.003 | 0.005 | 0.003 | 0.006 | 0.003 | 0.006 | 0.003 | 0.006 | 0.004 | 0.006 | 0.003 | 0.007 | 0.003 |
| 11/16/10 | 0.013 | 0.003 | 0.016 | 0.003 | 0.014 | 0.003 | 0.015 | 0.003 | 0.017 | 0.003 | 0.016 | 0.003 | 0.014 | 0.003 | 0.012 | 0.003 |
| 11/23/10 | 0.013 | 0.004 | 0.018 | 0.004 | 0.016 | 0.004 | 0.011 | 0.003 | 0.016 | 0.004 | 0.014 | 0.004 | 0.018 | 0.004 | 0.014 | 0.004 |
| 11/30/10 | 0.021 | 0.004 | 0.018 | 0.004 | 0.019 | 0.004 | 0.019 | 0.004 | 0.019 | 0.004 | 0.018 | 0.004 | 0.018 | 0.004 D | 0.022 | 0.004 |
| 12/07/10 | 0.010 | 0.003 | 0.013 | 0.003 | 0.010 | 0.003 | 0.011 | 0.003 | 0.010 | 0.003 | 0.010 | 0.003 | 0.010 | 0.003 | 0.010 | 0.003 |
| 12/14/10 | 0.010 | 0.003 | 0.011 | 0.003 | 0.010 | 0.003 | 0.009 | 0.002 | 0.010 | 0.003 | 0.009 | 0.004 | 0.012 | 0.004 | 0.009 | 0.004 |
| 12/21/10 | 0.015 | 0.004 | 0.017 | 0.004 | 0.015 | 0.004 | 0.014 | 0.003 | 0.018 | 0.004 | 0.015 | 0.003 | 0.016 | 0.004 | 0.017 | 0.004 |
| 12/28/10 | 0.007 | 0.003 | 0.008 | 0.003 | 0.007 | 0.004 | 0.005 | 0.003 | 0.007 | 0.003 | 0.007 | 0.003 | 0.006 | 0.003 | 0.007 | 0.003 |

**SAMPLE DATES MAY VARY BY A FEW DAYS**

TABLE 3
AIRBORNE IODINE
IODINE-131
(pCi/m³)

LOCATIONS

| PERIOD ENDING | 1 | (+/-) | 2 | (+/-) | 3 | (+/-) | 4 | (+/-) | 10 | (+/-) | 11 | (+/-) | 15C | (+/-) | | 27 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/05/10 | -0.001 | 0.024 | 0.009 | 0.019 | 0.012 | 0.015 | 0.005 | 0.018 | 0.000 | 0.015 | -0.017 | 0.016 | 0.009 | 0.015 | | -0.008 | 0.015 |
| 01/12/10 | 0.006 | 0.015 | -0.014 | 0.017 | -0.003 | 0.018 | 0.003 | 0.017 | -0.005 | 0.015 | 0.002 | 0.016 | 0.003 | 0.019 | | -0.007 | 0.014 |
| 01/19/10 | -0.001 | 0.018 | -0.008 | 0.015 | 0.003 | 0.016 | 0.002 | 0.017 | -0.011 | 0.014 | 0.003 | 0.014 | -0.003 | 0.018 | | -0.010 | 0.015 |
| 01/26/10 | 0.003 | 0.013 | -0.004 | 0.014 | -0.012 | 0.015 | -0.006 | 0.010 | -0.001 | 0.010 | -0.001 | 0.012 | 0.004 | 0.012 | | -0.005 | 0.013 |
| 02/02/10 | -0.003 | 0.018 | -0.017 | 0.015 | -0.010 | 0.019 | -0.009 | 0.016 | 0.007 | 0.017 | 0.016 | 0.017 | 0.011 | 0.021 | | -0.007 | 0.015 |
| 02/09/10 | 0.000 | 0.010 | 0.004 | 0.014 | -0.004 | 0.013 | 0.007 | 0.013 | -0.010 | 0.015 | 0.000 | 0.020 | 0.003 | 0.016 | | 0.012 | 0.016 |
| 02/16/10 | -0.001 | 0.011 | -0.006 | 0.012 | 0.000 | 0.018 | 0.014 | 0.013 | -0.005 | 0.008 | -0.011 | 0.010 | 0.006 | 0.013 | | -0.007 | 0.014 |
| 02/23/10 | 0.005 | 0.018 | 0.013 | 0.015 | -0.002 | 0.014 | -0.005 | 0.017 | 0.007 | 0.016 | -0.021 | 0.023 | -0.003 | 0.017 | | -0.004 | 0.014 |
| 03/02/10 | 0.003 | 0.012 | -0.007 | 0.016 | 0.002 | 0.019 | 0.006 | 0.019 | -0.001 | 0.015 | 0.006 | 0.019 | -0.008 | 0.012 | | 0.002 | 0.016 |
| 03/09/10 | -0.003 | 0.014 | -0.007 | 0.015 | 0.002 | 0.016 | 0.001 | 0.016 | 0.017 | 0.018 | 0.003 | 0.015 | 0.006 | 0.015 | | -0.011 | 0.013 |
| 03/16/10 | 0.010 | 0.011 | -0.006 | 0.016 | 0.000 | 0.014 | 0.009 | 0.013 | 0.004 | 0.014 | -0.007 | 0.014 | 0.004 | 0.013 | | -0.003 | 0.013 |
| 03/23/10 | 0.007 | 0.010 | 0.003 | 0.011 | 0.005 | 0.013 | 0.012 | 0.013 | -0.001 | 0.013 | 0.001 | 0.014 | -0.002 | 0.014 | | -0.005 | 0.008 |
| 03/30/10 | 0.001 | 0.012 | 0.001 | 0.012 | -0.009 | 0.017 | -0.006 | 0.015 | -0.003 | 0.013 | -0.006 | 0.017 | -0.009 | 0.015 | | -0.006 | 0.015 |
| 04/06/10 | 0.013 | 0.017 | 0.007 | 0.014 | -0.008 | 0.017 | -0.009 | 0.019 | 0.002 | 0.009 | 0.005 | 0.016 | -0.002 | 0.014 | | 0.016 | 0.014 |
| 04/13/10 | -0.001 | 0.014 | 0.011 | 0.012 | 0.020 | 0.021 | 0.009 | 0.017 | -0.004 | 0.014 | -0.012 | 0.014 | 0.002 | 0.022 | | 0.005 | 0.016 |
| 04/20/10 | -0.001 | 0.015 | -0.007 | 0.018 | 0.004 | 0.014 | -0.012 | 0.014 | -0.023 | 0.016 | 0.006 | 0.015 | 0.003 | 0.014 | | 0.015 | 0.021 |
| 04/27/10 | -0.002 | 0.018 | 0.007 | 0.015 | -0.002 | 0.017 | -0.019 | 0.023 | 0.007 | 0.017 | 0.010 | 0.013 | 0.003 | 0.022 | | 0.003 | 0.018 |
| 05/04/10 | -0.010 | 0.020 | 0.000 | 0.022 | -0.016 | 0.021 | -0.007 | 0.021 | 0.022 | 0.025 | -0.007 | 0.020 | 0.000 | 0.029 | | -0.014 | 0.025 |
| 05/11/10 | -0.004 | 0.018 | -0.005 | 0.012 | 0.008 | 0.018 | 0.007 | 0.021 | 0.022 | 0.017 | 0.007 | 0.022 | 0.006 | 0.026 | | -0.002 | 0.022 |
| 05/18/10 | -0.008 | 0.013 | 0.001 | 0.015 | -0.005 | 0.010 | -0.004 | 0.016 | -0.013 | 0.015 | -0.002 | 0.010 | 0.010 | 0.017 | | 0.000 | 0.014 |
| 05/25/10 | 0.009 | 0.015 | -0.007 | 0.013 | -0.010 | 0.018 | -0.011 | 0.021 | 0.000 | 0.016 | -0.009 | 0.017 | 0.003 | 0.026 | | 0.000 | 0.014 |
| 06/01/10 | -0.009 | 0.029 | 0.001 | 0.024 | 0.006 | 0.029 | 0.002 | 0.029 | 0.013 | 0.024 | 0.000 | 0.035 | 0.042 | 0.030 | B | 0.000 | 0.024 |
| 06/08/10 | -0.011 | 0.026 | 0.018 | 0.021 | 0.015 | 0.017 | 0.037 | 0.031 | -0.007 | 0.028 | -0.020 | 0.028 | 0.010 | 0.022 | | 0.043 | 0.030 |
| 06/15/10 | 0.005 | 0.017 | -0.018 | 0.022 | 0.002 | 0.016 | 0.006 | 0.021 | -0.012 | 0.023 | 0.004 | 0.020 | 0.019 | 0.016 | | -0.005 | 0.022 |
| 06/22/10 | 0.008 | 0.020 | -0.014 | 0.021 | -0.014 | 0.021 | 0.012 | 0.020 | 0.003 | 0.022 | 0.008 | 0.029 | 0.013 | 0.024 | | 0.012 | 0.021 |
| 06/29/10 | 0.011 | 0.017 | -0.008 | 0.023 | 0.000 | 0.018 | -0.006 | 0.023 | -0.018 | 0.022 | -0.014 | 0.032 | -0.030 | 0.033 | | 0.005 | 0.035 |

**SAMPLE DATES MAY VARY BY A FEW DAYS**

TABLE 3
AIRBORNE IODINE
IODINE-131
(pCi/m³)

LOCATIONS

| PERIOD ENDING | 1 | (+/-) | 2 | (+/-) | 3 | (+/-) | 4 | (+/-) | 10 | (+/-) | 11 | (+/-) | 15C | (+/-) | 27 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07/06/10 | 0.000 | 0.019 | 0.000 | 0.019 | 0.000 | 0.018 | 0.000 | 0.018 | -0.012 | 0.017 | -0.012 | 0.017 | -0.011 | 0.016 | -0.012 | 0.017 |
| 07/13/10 | 0.015 | 0.019 | 0.015 | 0.019 | 0.014 | 0.018 | 0.014 | 0.017 | 0.014 | 0.028 | 0.014 | 0.028 | 0.013 | 0.026 | 0.014 | 0.028 |
| 07/20/10 | 0.008 | 0.016 | 0.008 | 0.016 | 0.008 | 0.015 | 0.005 | 0.011 | 0.017 | 0.022 | 0.017 | 0.021 | 0.015 | 0.020 | 0.017 | 0.022 |
| 07/27/10 | -0.006 | 0.015 | -0.006 | 0.015 | -0.006 | 0.014 | -0.005 | 0.014 | 0.012 | 0.019 | 0.012 | 0.018 | 0.011 | 0.017 | 0.012 | 0.018 |
| 08/03/10 | -0.001 | 0.036 | -0.001 | 0.035 | -0.001 | 0.034 | -0.001 | 0.032 | 0.003 | 0.034 | 0.002 | 0.033 | 0.002 | 0.030 | 0.002 | 0.032 |
| 08/10/10 | 0.003 | 0.008 | 0.003 | 0.008 | 0.003 | 0.007 | 0.003 | 0.007 | -0.001 | 0.008 | -0.001 | 0.008 | -0.001 | 0.007 | -0.001 | 0.008 |
| 08/17/10 | 0.011 | 0.014 | 0.011 | 0.014 | 0.010 | 0.014 | 0.010 | 0.013 | 0.015 | 0.021 | 0.014 | 0.020 | 0.013 | 0.018 | 0.014 | 0.020 |
| 08/24/10 | 0.007 | 0.007 | 0.006 | 0.007 | 0.006 | 0.007 | 0.006 | 0.006 | -0.006 | 0.010 | -0.006 | 0.009 | -0.005 | 0.008 | -0.006 | 0.009 |
| 08/31/10 | 0.008 | 0.013 | 0.009 | 0.014 | 0.009 | 0.014 | 0.008 | 0.012 | -0.003 | 0.019 | -0.003 | 0.018 | -0.002 | 0.016 | -0.002 | 0.018 |
| 09/07/10 | -0.005 | 0.007 | -0.006 | 0.008 | -0.005 | 0.008 | -0.005 | 0.007 | -0.002 | 0.011 | -0.002 | 0.011 | -0.002 | 0.010 | -0.002 | 0.010 |
| 09/14/10 | -0.004 | 0.015 | -0.004 | 0.015 | -0.004 | 0.016 | -0.004 | 0.015 | -0.005 | 0.027 | -0.005 | 0.025 | -0.004 | 0.023 | -0.005 | 0.024 |
| 09/21/10 | 0.004 | 0.016 | 0.004 | 0.016 | 0.004 | 0.017 | 0.004 | 0.016 | 0.005 | 0.010 | 0.005 | 0.010 | 0.004 | 0.009 | 0.004 | 0.010 |
| 09/28/10 | -0.010 | 0.021 | -0.003 | 0.006 | -0.003 | 0.006 | -0.003 | 0.005 | 0.010 | 0.008 | 0.010 | 0.008 | 0.009 | 0.007 | 0.009 | 0.008 |
| 10/05/10 | 0.000 | 0.007 | 0.000 | 0.007 | 0.000 | 0.008 | 0.000 | 0.007 | 0.016 | 0.033 | 0.015 | 0.031 | 0.014 | 0.028 | C 0.015 | 0.030 |
| 10/12/10 | 0.008 | 0.038 | 0.008 | 0.037 | 0.012 | 0.037 | 0.008 | 0.037 | 0.012 | 0.028 | 0.012 | 0.027 | 0.018 | 0.040 | 0.012 | 0.026 |
| 10/19/10 | -0.010 | 0.031 | -0.010 | 0.031 | -0.011 | 0.032 | -0.010 | 0.029 | -0.022 | 0.038 | -0.020 | 0.036 | -0.018 | 0.032 | -0.019 | 0.034 |
| 10/26/10 | -0.011 | 0.027 | -0.010 | 0.026 | -0.011 | 0.028 | -0.010 | 0.025 | -0.027 | 0.032 | -0.029 | 0.036 | -0.026 | 0.032 | -0.028 | 0.034 |
| 11/02/10 | -0.027 | 0.037 | -0.027 | 0.037 | -0.028 | 0.039 | -0.025 | 0.034 | -0.032 | 0.037 | -0.034 | 0.040 | -0.031 | 0.035 | -0.033 | 0.037 |
| 11/09/10 | -0.026 | 0.037 | -0.026 | 0.037 | -0.027 | 0.039 | -0.024 | 0.034 | -0.017 | 0.033 | -0.019 | 0.037 | -0.016 | 0.032 | -0.018 | 0.034 |
| 11/16/10 | -0.031 | 0.037 | -0.030 | 0.036 | -0.033 | 0.039 | -0.028 | 0.033 | -0.007 | 0.033 | -0.007 | 0.036 | -0.007 | 0.032 | -0.007 | 0.035 |
| 11/23/10 | 0.010 | 0.027 | 0.010 | 0.027 | 0.011 | 0.029 | 0.009 | 0.025 | 0.014 | 0.033 | 0.015 | 0.035 | 0.013 | 0.031 | 0.014 | 0.033 |
| 11/30/10 | -0.031 | 0.032 | -0.031 | 0.032 | -0.033 | 0.034 | -0.028 | 0.029 | -0.004 | 0.037 | -0.004 | 0.040 | -0.004 | 0.036 | D -0.004 | 0.037 |
| 12/07/10 | 0.012 | 0.024 | 0.011 | 0.024 | 0.012 | 0.026 | 0.011 | 0.022 | -0.005 | 0.033 | -0.005 | 0.038 | -0.004 | 0.032 | -0.005 | 0.033 |
| 12/14/10 | 0.003 | 0.015 | 0.003 | 0.014 | 0.003 | 0.016 | 0.003 | 0.013 | 0.003 | 0.021 | 0.003 | 0.023 | 0.003 | 0.020 | 0.003 | 0.021 |
| 12/21/10 | -0.010 | 0.025 | -0.010 | 0.024 | -0.011 | 0.027 | -0.009 | 0.023 | -0.029 | 0.039 | -0.029 | 0.040 | -0.030 | 0.041 | -0.032 | 0.044 |
| 12/28/10 | -0.003 | 0.013 | -0.003 | 0.013 | -0.004 | 0.014 | -0.003 | 0.012 | 0.007 | 0.015 | 0.008 | 0.015 | 0.008 | 0.016 | 0.009 | 0.017 |

**SAMPLE DATES MAY VARY BY A FEW DAYS**

TABLE 4A
AIR PARTICULATES
GAMMA SPECTRA - QTR 1
(pCi/m3)

ANALYSES

| LOCATION | Be-7 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.084 | 0.037 | -0.0002 | 0.0005 | 0.0014 | 0.0016 | -0.0008 | 0.0011 | -0.0009 | 0.0017 | -0.0006 | 0.0026 | -0.0013 | 0.0030 |
| 2 | 0.113 | 0.041 | 0.0002 | 0.0016 | 0.0006 | 0.0016 | -0.0011 | 0.0013 | 0.0000 | 0.0033 | 0.0010 | 0.0029 | 0.0010 | 0.0029 |
| 3 | 0.067 | 0.037 | 0.0000 | 0.0010 | -0.0003 | 0.0007 | 0.0008 | 0.0010 | -0.0019 | 0.0025 | -0.0015 | 0.0024 | -0.0012 | 0.0030 |
| 4 | 0.123 | 0.043 | -0.0002 | 0.0012 | 0.0007 | 0.0025 | 0.0000 | 0.0017 | 0.0000 | 0.0000 | -0.0014 | 0.0031 | -0.0030 | 0.0039 |
| 10 | 0.096 | 0.040 | -0.0003 | 0.0005 | 0.0001 | 0.0013 | 0.0000 | 0.0011 | 0.0017 | 0.0024 | 0.0001 | 0.0023 | -0.0023 | 0.0027 |
| 11 | 0.090 | 0.040 | -0.0002 | 0.0007 | -0.0003 | 0.0018 | 0.0000 | 0.0008 | 0.0001 | 0.0021 | 0.0003 | 0.0032 | -0.0012 | 0.0030 |
| 15C | 0.120 | 0.040 | -0.0010 | 0.0010 | 0.0014 | 0.0016 | -0.0004 | 0.0008 | 0.0016 | 0.0022 | 0.0002 | 0.0031 | -0.0005 | 0.0035 |
| 27 | 0.101 | 0.030 | 0.0009 | 0.0009 | -0.0003 | 0.0015 | -0.0007 | 0.0009 | 0.0004 | 0.0021 | -0.0006 | 0.0022 | -0.0017 | 0.0028 |

| LOCATION | Ru-103 | (+/-) | Ru-106 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | Ce-141 | (+/-) | Ce-144 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0005 | 0.0018 | -0.010 | 0.013 | 0.0003 | 0.0007 | 0.0007 | 0.0008 | -0.012 | 0.023 | -0.0008 | 0.0030 | 0.0009 | 0.0041 |
| 2 | 0.0000 | 0.0022 | 0.009 | 0.011 | -0.0009 | 0.0008 | 0.0000 | 0.0007 | 0.000 | 0.032 | -0.0024 | 0.0033 | -0.0019 | 0.0028 |
| 3 | 0.0005 | 0.0027 | -0.002 | 0.009 | 0.0001 | 0.0008 | 0.0001 | 0.0008 | -0.001 | 0.030 | -0.0015 | 0.0032 | 0.0001 | 0.0042 |
| 4 | 0.0005 | 0.0011 | -0.001 | 0.010 | -0.0003 | 0.0008 | 0.0012 | 0.0011 | -0.013 | 0.025 | -0.0006 | 0.0029 | -0.0020 | 0.0038 |
| 10 | -0.0022 | 0.0031 | 0.001 | 0.011 | 0.0000 | 0.0008 | -0.0004 | 0.0014 | 0.034 | 0.039 | -0.0018 | 0.0030 | -0.0019 | 0.0028 |
| 11 | -0.0003 | 0.0028 | 0.000 | 0.011 | -0.0005 | 0.0006 | -0.0001 | 0.0010 | 0.007 | 0.014 | -0.0016 | 0.0037 | -0.0041 | 0.0037 |
| 15C | 0.0010 | 0.0021 | -0.008 | 0.011 | 0.0002 | 0.0003 | -0.0001 | 0.0010 | 0.011 | 0.022 | -0.0002 | 0.0027 | -0.0002 | 0.0035 |
| 27 | -0.0005 | 0.0017 | 0.006 | 0.006 | -0.0001 | 0.0005 | 0.0001 | 0.0007 | -0.011 | 0.015 | 0.0000 | 0.0022 | 0.0003 | 0.0023 |

TABLE 4B
AIR PARTICULATES
GAMMA SPECTRA - QTR 2
(pCi/m3)

ANALYSES

| LOCATION | Be-7 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.108 | 0.039 | 0.0003 | 0.0010 | -0.0004 | 0.0008 | -0.0004 | 0.0008 | -0.0003 | 0.0023 | -0.0012 | 0.0027 | 0.0016 | 0.0022 |
| 2 | 0.125 | 0.040 | 0.0004 | 0.0010 | -0.0003 | 0.0021 | 0.0000 | 0.0008 | 0.0004 | 0.0024 | 0.0007 | 0.0021 | -0.0006 | 0.0037 |
| 3 | 0.133 | 0.041 | 0.0003 | 0.0005 | 0.0001 | 0.0012 | 0.0000 | 0.0000 | -0.0020 | 0.0033 | -0.0012 | 0.0027 | -0.0020 | 0.0023 |
| 4 | 0.089 | 0.037 | 0.0006 | 0.0010 | 0.0007 | 0.0017 | 0.0002 | 0.0010 | 0.0016 | 0.0031 | -0.0004 | 0.0033 | -0.0006 | 0.0037 |
| 10 | 0.166 | 0.039 | -0.0007 | 0.0007 | 0.0007 | 0.0014 | -0.0003 | 0.0005 | -0.0008 | 0.0018 | -0.0002 | 0.0033 | -0.0008 | 0.0029 |
| 11 | 0.141 | 0.042 | 0.0008 | 0.0012 | 0.0010 | 0.0015 | 0.0002 | 0.0010 | -0.0026 | 0.0030 | -0.0015 | 0.0040 | 0.0000 | 0.0024 |
| 15C | 0.079 | 0.039 | -0.0003 | 0.0013 | 0.0000 | 0.0000 | 0.0017 | 0.0017 | -0.0005 | 0.0043 | -0.0007 | 0.0014 | -0.0013 | 0.0038 |
| 27 | 0.165 | 0.041 | 0.0002 | 0.0011 | 0.0000 | 0.0013 | -0.0006 | 0.0009 | 0.0005 | 0.0019 | -0.0003 | 0.0031 | 0.0000 | 0.0028 |

| LOCATION | Ru-103 | (+/-) | Ru-106 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | Ce-141 | (+/-) | Ce-144 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0005 | 0.0021 | 0.0017 | 0.0075 | -0.0003 | 0.0008 | 0.0002 | 0.0008 | 0.0090 | 0.0170 | 0.0021 | 0.0028 | -0.0020 | 0.0031 |
| 2 | 0.0009 | 0.0023 | 0.0052 | 0.0095 | 0.0002 | 0.0007 | 0.0005 | 0.0008 | -0.0110 | 0.0150 | -0.0016 | 0.0032 | 0.0017 | 0.0040 |
| 3 | -0.0005 | 0.0021 | -0.0030 | 0.0120 | 0.0001 | 0.0006 | -0.0010 | 0.0012 | 0.0080 | 0.0170 | 0.0005 | 0.0026 | 0.0031 | 0.0035 |
| 4 | -0.0003 | 0.0024 | -0.0020 | 0.0095 | 0.0005 | 0.0009 | -0.0003 | 0.0010 | -0.0180 | 0.0320 | -0.0017 | 0.0028 | -0.0001 | 0.0047 |
| 10 | 0.0018 | 0.0022 | 0.0004 | 0.0083 | -0.0002 | 0.0006 | -0.0007 | 0.0009 | -0.0020 | 0.0430 | 0.0019 | 0.0027 | -0.0003 | 0.0023 |
| 11 | 0.0001 | 0.0025 | 0.0038 | 0.0087 | 0.0001 | 0.0009 | 0.0003 | 0.0007 | 0.0000 | 0.0290 | -0.0005 | 0.0030 | -0.0011 | 0.0043 |
| 15C | -0.0005 | 0.0023 | -0.0054 | 0.0098 | -0.0001 | 0.0006 | -0.0001 | 0.0013 | -0.0200 | 0.0280 | 0.0006 | 0.0022 | -0.0009 | 0.0030 |
| 27 | 0.0000 | 0.0029 | 0.0010 | 0.0092 | -0.0002 | 0.0007 | 0.0008 | 0.0009 | 0.0060 | 0.0110 | 0.0016 | 0.0036 | -0.0014 | 0.0042 |

TABLE 4C
AIR PARTICULATES
GAMMA SPECTRA - QTR 3
(pCi/m3)

ANALYSES

| LOCATION | Be-7 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.115 | 0.039 | -0.0001 | 0.0010 | -0.0010 | 0.0019 | -0.0001 | 0.0011 | 0.0018 | 0.0030 | 0.0003 | 0.0024 | -0.0003 | 0.0035 |
| 2 | 0.127 | 0.045 | 0.0002 | 0.0020 | 0.0016 | 0.0034 | -0.0004 | 0.0018 | 0.0031 | 0.0048 | -0.0017 | 0.0038 | 0.0007 | 0.0066 |
| 3 | 0.115 | 0.039 | -0.0008 | 0.0014 | -0.0016 | 0.0025 | 0.0004 | 0.0011 | 0.0007 | 0.0031 | 0.0002 | 0.0024 | -0.0018 | 0.0043 |
| 4 | 0.159 | 0.045 | -0.0012 | 0.0015 | 0.0012 | 0.0026 | 0.0000 | 0.0010 | 0.0012 | 0.0033 | -0.0006 | 0.0031 | -0.0001 | 0.0050 |
| 10 | 0.159 | 0.041 | 0.0002 | 0.0015 | -0.0005 | 0.0029 | -0.0010 | 0.0011 | 0.0017 | 0.0041 | -0.0014 | 0.0025 | 0.0002 | 0.0049 |
| 11 | 0.160 | 0.036 | -0.0004 | 0.0012 | -0.0003 | 0.0022 | 0.0004 | 0.0012 | 0.0001 | 0.0024 | 0.0014 | 0.0028 | 0.0041 | 0.0043 |
| 15C | 0.119 | 0.038 | -0.0003 | 0.0017 | -0.0006 | 0.0030 | 0.0004 | 0.0013 | 0.0036 | 0.0043 | -0.0007 | 0.0032 | 0.0025 | 0.0052 |
| 27 | 0.095 | 0.030 | -0.0001 | 0.0016 | -0.0009 | 0.0034 | -0.0001 | 0.0016 | 0.0005 | 0.0044 | 0.0008 | 0.0027 | 0.0005 | 0.0044 |

| LOCATION | Ru-103 | (+/-) | Ru-106 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | Ce-141 | (+/-) | Ce-144 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -0.0021 | 0.0037 | 0.0076 | 0.0101 | 0.0011 | 0.0012 | 0.0004 | 0.0010 | -0.0564 | 0.3240 | 0.0021 | 0.0055 | 0.0026 | 0.0050 |
| 2 | 0.0010 | 0.0052 | -0.0279 | 0.0158 | 0.0023 | 0.0017 | 0.0004 | 0.0015 | 0.1110 | 0.4860 | 0.0027 | 0.0087 | 0.0029 | 0.0071 |
| 3 | 0.0039 | 0.0041 | 0.0015 | 0.0131 | 0.0012 | 0.0013 | 0.0004 | 0.0010 | 0.0774 | 0.4210 | -0.0026 | 0.0068 | 0.0024 | 0.0057 |
| 4 | 0.0011 | 0.0046 | -0.0036 | 0.0097 | 0.0019 | 0.0013 | 0.0005 | 0.0010 | -0.2390 | 0.3910 | 0.0020 | 0.0072 | 0.0009 | 0.0056 |
| 10 | 0.0018 | 0.0046 | -0.0023 | 0.0121 | 0.0016 | 0.0013 | 0.0006 | 0.0012 | 0.2670 | 0.4640 | -0.0033 | 0.0069 | 0.0018 | 0.0063 |
| 11 | -0.0006 | 0.0034 | -0.0055 | 0.0118 | -0.0008 | 0.0011 | 0.0012 | 0.0011 | 0.4410 | 0.3950 | 0.0008 | 0.0070 | 0.0019 | 0.0060 |
| 15C | -0.0008 | 0.0054 | -0.0057 | 0.0147 | 0.0031 | 0.0016 | 0.0004 | 0.0015 | -0.2780 | 0.4000 | 0.0020 | 0.0083 | -0.0040 | 0.0061 |
| 27 | 0.0027 | 0.0061 | -0.0119 | 0.0157 | 0.0010 | 0.0018 | -0.0002 | 0.0013 | 0.5830 | 0.4840 | -0.0073 | 0.0090 | -0.0002 | 0.0080 |

TABLE 4D
AIR PARTICULATES
GAMMA SPECTRA - QTR 4
(pCi/m3)

ANALYSES

| LOCATION | Be-7 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.079 | 0.026 | 0.0000 | 0.0010 | -0.0008 | 0.0017 | 0.0000 | 0.0010 | 0.0002 | 0.0028 | 0.0018 | 0.0020 | -0.0032 | 0.0036 |
| 2 | 0.110 | 0.036 | -0.0002 | 0.0017 | -0.0008 | 0.0025 | 0.0004 | 0.0012 | -0.0016 | 0.0027 | 0.0010 | 0.0026 | -0.0009 | 0.0046 |
| 3 | 0.109 | 0.028 | 0.0001 | 0.0008 | -0.0006 | 0.0018 | -0.0006 | 0.0012 | -0.0013 | 0.0019 | 0.0006 | 0.0017 | -0.0009 | 0.0028 |
| 4 | 0.098 | 0.032 | -0.0003 | 0.0009 | 0.0006 | 0.0018 | 0.0005 | 0.0011 | -0.0017 | 0.0025 | 0.0007 | 0.0020 | 0.0012 | 0.0038 |
| 10 | 0.110 | 0.031 | -0.0009 | 0.0015 | 0.0000 | 0.0025 | -0.0003 | 0.0015 | 0.0010 | 0.0040 | -0.0020 | 0.0028 | 0.0019 | 0.0048 |
| 11 | 0.096 | 0.031 | -0.0009 | 0.0012 | -0.0007 | 0.0020 | 0.0006 | 0.0014 | 0.0033 | 0.0028 | 0.0013 | 0.0020 | -0.0025 | 0.0038 |
| 15C | 0.100 | 0.025 | -0.0003 | 0.0011 | 0.0006 | 0.0017 | 0.0005 | 0.0010 | -0.0012 | 0.0023 | 0.0010 | 0.0015 | -0.0025 | 0.0033 |
| 27 | 0.085 | 0.045 | 0.0007 | 0.0016 | -0.0010 | 0.0026 | -0.0004 | 0.0011 | 0.0001 | 0.0038 | -0.0013 | 0.0031 | 0.0017 | 0.0045 |

| LOCATION | Ru-103 | (+/-) | Ru-106 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | Ce-141 | (+/-) | Ce-144 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -0.0009 | 0.0030 | -0.0101 | 0.0088 | 0.0012 | 0.0012 | -0.0003 | 0.0008 | -0.0420 | 0.1350 | -0.0003 | 0.0042 | -0.0010 | 0.0048 |
| 2 | 0.0012 | 0.0038 | 0.0034 | 0.0131 | 0.0008 | 0.0012 | 0.0003 | 0.0014 | -0.1020 | 0.2090 | -0.0072 | 0.0056 | -0.0041 | 0.0063 |
| 3 | -0.0005 | 0.0022 | 0.0010 | 0.0061 | -0.0006 | 0.0008 | 0.0005 | 0.0009 | 0.0282 | 0.1610 | -0.0003 | 0.0039 | 0.0005 | 0.0041 |
| 4 | -0.0008 | 0.0029 | -0.0061 | 0.0083 | -0.0005 | 0.0010 | 0.0002 | 0.0010 | 0.0248 | 0.1710 | -0.0011 | 0.0050 | 0.0035 | 0.0051 |
| 10 | 0.0018 | 0.0039 | -0.0042 | 0.0129 | -0.0007 | 0.0013 | -0.0001 | 0.0013 | -0.0898 | 0.2380 | -0.0022 | 0.0064 | -0.0060 | 0.0067 |
| 11 | -0.0016 | 0.0035 | -0.0060 | 0.0097 | 0.0003 | 0.0013 | 0.0002 | 0.0010 | -0.0184 | 0.1870 | 0.0022 | 0.0053 | -0.0007 | 0.0057 |
| 15C | 0.0002 | 0.0027 | -0.0013 | 0.0098 | 0.0009 | 0.0011 | -0.0002 | 0.0008 | -0.0127 | 0.1420 | -0.0010 | 0.0044 | 0.0005 | 0.0052 |
| 27 | 0.0008 | 0.0040 | 0.0033 | 0.0115 | 0.0013 | 0.0013 | -0.0007 | 0.0012 | -0.1340 | 0.1890 | 0.0003 | 0.0057 | 0.0019 | 0.0066 |

TABLE 6
SOIL
(pCi/g dry wt.)

| LOCATION | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 06/29/10 | 0.20 | 0.53 | 14.40 | 1.60 | 0.29 | 0.72 | 0.00 | 0.04 | -0.03 | 0.06 | -0.06 | 0.15 |
| 4 | 06/29/10 | -0.13 | 0.78 | 13.30 | 2.20 | -0.67 | 0.96 | -0.01 | 0.06 | 0.08 | 0.07 | 0.00 | 0.18 |
| 14C | 06/30/10 | 0.80 | 0.97 | 11.70 | 2.30 | 1.00 | 1.00 | -0.02 | 0.07 | 0.03 | 0.07 | 0.03 | 0.14 |

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 06/29/10 | 0.00 | 0.04 | -0.15 | 0.14 | -0.03 | 0.10 | 0.06 | 0.11 | -0.02 | 0.07 | -0.10 | 0.37 |
| 4 | 06/29/10 | 0.01 | 0.06 | -0.29 | 0.20 | -0.05 | 0.09 | 0.01 | 0.13 | -0.04 | 0.10 | 0.42 | 0.60 |
| 14C | 06/30/10 | -0.02 | 0.06 | -0.24 | 0.21 | 0.00 | 0.11 | 0.05 | 0.16 | -0.03 | 0.09 | -0.53 | 0.58 |

| LOCATION | COLLECTION DATE | Sb-125 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ce-141 | (+/-) | Ce-144 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 06/29/10 | -0.03 | 0.11 | 0.05 | 0.04 | 0.41 | 0.09 | 0.15 | 0.13 | -0.29 | 0.26 | 1.17 | 0.20 |
| 4 | 06/29/10 | -0.08 | 0.21 | 0.00 | 0.06 | 0.30 | 0.12 | -0.06 | 0.18 | -0.17 | 0.50 | 1.68 | 0.34 |
| 14C | 06/30/10 | -0.05 | 0.22 | 0.00 | 0.05 | 1.33 | 0.21 | 0.03 | 0.18 | 0.33 | 0.49 | 0.81 | 0.30 |

TABLE 8
GOAT MILK
(pCi/l)

| LOCATION | COLLECTION DATE | Sr-89 | (+/-) | Sr-90 | (+/-) | K-40 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | La-140 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 05/19/2010 | | | | | 1010 | 130 | -0.09 | 0.03 | -0.9 | 2.7 | -3.8 | 3.6 | -1.6 | 7.3 | -1.6 | 7.3 |
| 21 | 06/09/2010 | | | | | 1680 | 180 | 0.19 | 0.44 | 3.3 | 4.1 | 7.8 | 5.5 | -0.7 | 6.8 | -0.7 | 6.8 |
| 21 | 06/23/2010 | | | | | 1480 | 89 | -0.16 | 0.25 | -0.9 | 1.6 | 12.4 | 3.3 | 6.5 | 6.4 | 6.5 | 6.4 |
| 21 | 07/14/2010 | | | | | 1280 | 111 | 0.09 | 0.55 | -2.0 | 3.0 | 4.0 | 4.5 | -1.1 | 13.1 | 6.4 | 3.8 |
| 21 | 07/28/2010 | | | | | 1430 | 55 | 0.06 | 0.45 | 0.8 | 1.2 | 5.5 | 1.5 | 2.0 | 10.8 | -1.0 | 3.3 |
| 21 | 08/04/2010 | | | | | 1420 | 96 | -0.30 | 0.38 | -4.9 | 2.4 | 8.4 | 6.7 | 1.9 | 17.4 | -4.9 | 3.9 |
| 21 | 08/18/2010 | | | | | 1440 | 54 | 0.03 | 0.43 | 0.9 | 1.3 | 7.3 | 1.7 | 10.3 | 13.1 | -0.1 | 3.6 |
| 21 | 09/08/2010 | -1.38 | 5.14 | 1.27 | 0.88 | 1240 | 117 | -0.26 | 0.48 | -2.6 | 3.3 | 5.0 | 5.5 | -1.5 | 21.1 | -1.9 | 6.5 |
| 24C | 05/19/2010 | | | | | 1650 | 170 | 0.25 | 0.47 | -4.1 | 3.4 | 4.4 | 5.8 | -2.2 | 6.7 | -2.2 | 6.7 |
| 24C | 06/09/2010 | | | | | 1630 | 83 | -0.12 | 0.04 | 0.7 | 1.7 | 6.1 | 2.9 | 4.3 | 7.3 | 4.3 | 7.3 |
| 24C | 08/18/2010 | | A | | A | 1560 | 53 | -0.34 | 0.48 | 0.0 | 1.2 | 5.3 | 1.8 | 1.0 | 11.9 | -2.7 | 3.3 |

A: Laboratory QC failed. Not enough sample to perform a rerun.

TABLE 9
PASTURE GRASS / HAY
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) | Co-60 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 01/13/10 | F | -0.010 | 0.130 | 9.35 | 0.80 | 0.02 | 0.12 | -0.004 | 0.016 | 0.001 | 0.017 | 0.018 | 0.042 | 0.006 | 0.020 |
| 21 | 02/16/10 | F | 0.070 | 0.200 | 9.80 | 1.10 | 0.13 | 0.25 | 0.002 | 0.025 | 0.004 | 0.029 | -0.037 | 0.068 | 0.010 | 0.030 |
| 21 | 03/17/10 | F | 0.110 | 0.380 | 10.30 | 1.60 | -0.06 | 0.34 | 0.021 | 0.043 | 0.009 | 0.038 | 0.000 | 0.100 | 0.006 | 0.038 |
| 21 | 04/07/10 | E | 0.520 | 0.320 | 13.90 | 0.77 | -0.18 | 0.28 | -0.003 | 0.026 | 0.017 | 0.030 | -0.027 | 0.067 | 0.003 | 0.029 |
| 21 | 04/21/10 | | 1.410 | 0.380 | 5.93 | 0.91 | -0.21 | 0.27 | -0.004 | 0.023 | -0.016 | 0.030 | 0.018 | 0.056 | 0.003 | 0.033 |
| 21 | 05/05/10 | | 0.930 | 0.330 | 5.06 | 0.85 | 0.09 | 0.18 | -0.009 | 0.023 | 0.002 | 0.021 | 0.062 | 0.063 | 0.003 | 0.027 |
| 21 | 09/22/10 | | 7.320 | 0.229 | 4.29 | 0.23 | 0.03 | 0.07 | -0.002 | 0.004 | -0.003 | 0.004 | 0.012 | 0.010 | 0.001 | 0.004 |
| 21 | 10/07/10 | | 5.960 | 0.407 | 2.17 | 0.41 | 0.01 | 0.13 | -0.004 | 0.013 | -0.007 | 0.011 | -0.040 | 0.024 | 0.019 | 0.013 |
| 21 | 10/21/10 | | 2.630 | 0.264 | 6.26 | 0.48 | -0.03 | 0.10 | -0.004 | 0.010 | 0.010 | 0.011 | 0.012 | 0.025 | 0.005 | 0.014 |
| 21 | 11/18/10 | | 3.500 | 0.303 | 6.74 | 0.46 | 0.05 | 0.11 | -0.004 | 0.010 | 0.001 | 0.010 | -0.001 | 0.025 | -0.005 | 0.012 |
| 21 | 12/28/10 | | 0.000 | 0.123 | 9.43 | 0.71 | 0.10 | 0.13 | -0.002 | 0.014 | -0.005 | 0.015 | 0.008 | 0.038 | -0.006 | 0.021 |
| 24C | 01/13/10 | E | 1.060 | 0.320 | 10.60 | 0.90 | 0.02 | 0.20 | -0.032 | 0.031 | 0.018 | 0.029 | -0.055 | 0.073 | 0.018 | 0.036 |
| 24C | 02/16/10 | E | 0.640 | 0.350 | 10.30 | 0.82 | -0.04 | 0.34 | -0.005 | 0.030 | -0.021 | 0.033 | -0.035 | 0.079 | -0.018 | 0.031 |
| 24C | 03/17/10 | E | 0.390 | 0.320 | 13.20 | 0.83 | 0.09 | 0.30 | -0.001 | 0.030 | -0.013 | 0.030 | 0.023 | 0.071 | 0.012 | 0.033 |
| 24C | 04/07/10 | | 0.960 | 0.310 | 4.72 | 0.69 | 0.00 | 0.17 | 0.009 | 0.018 | -0.015 | 0.020 | 0.031 | 0.048 | 0.013 | 0.018 |
| 24C | 04/21/10 | | 0.360 | 0.200 | 6.33 | 0.66 | 0.07 | 0.14 | -0.016 | 0.016 | 0.007 | 0.017 | 0.006 | 0.042 | 0.005 | 0.018 |
| 24C | 05/05/10 | | 0.300 | 0.240 | 5.06 | 0.99 | 0.04 | 0.19 | 0.023 | 0.030 | -0.007 | 0.022 | 0.021 | 0.072 | -0.018 | 0.030 |
| 24C | 06/23/10 | F | 0.090 | 0.210 | 11.90 | 1.10 | 0.15 | 0.27 | -0.009 | 0.021 | -0.007 | 0.026 | -0.027 | 0.078 | -0.018 | 0.021 |
| 24C | 07/14/10 | F | -0.016 | 0.124 | 12.40 | 0.59 | -0.06 | 0.14 | 0.000 | 0.014 | -0.009 | 0.015 | -0.016 | 0.035 | 0.008 | 0.015 |
| 24C | 07/28/10 | | 1.860 | 0.144 | 5.75 | 0.24 | -0.01 | 0.08 | 0.000 | 0.006 | -0.004 | 0.006 | -0.012 | 0.014 | 0.005 | 0.005 |
| 24C | 08/04/10 | | 1.340 | 0.288 | 5.19 | 0.43 | 0.00 | 0.10 | 0.006 | 0.007 | -0.004 | 0.009 | -0.005 | 0.016 | -0.002 | 0.007 |
| 24C | 09/08/10 | | 0.939 | 0.130 | 5.86 | 0.32 | 0.02 | 0.08 | 0.001 | 0.006 | 0.002 | 0.007 | -0.017 | 0.017 | 0.003 | 0.008 |
| 24C | 09/22/10 | | 1.880 | 0.091 | 4.82 | 0.15 | 0.02 | 0.05 | 0.000 | 0.003 | 0.000 | 0.004 | -0.002 | 0.009 | 0.000 | 0.004 |
| 24C | 10/07/10 | | 3.890 | 0.398 | 6.22 | 0.66 | -0.05 | 0.17 | 0.009 | 0.017 | -0.002 | 0.016 | 0.009 | 0.036 | 0.001 | 0.021 |
| 24C | 10/21/10 | | 3.550 | 0.294 | 2.89 | 0.33 | 0.07 | 0.11 | 0.001 | 0.010 | -0.010 | 0.011 | -0.005 | 0.023 | -0.007 | 0.010 |
| 24C | 11/18/10 | | 5.000 | 0.299 | 6.80 | 0.46 | -0.11 | 0.13 | -0.005 | 0.012 | 0.001 | 0.013 | -0.008 | 0.028 | 0.003 | 0.015 |
| 24C | 12/28/10 | E | 0.139 | 0.177 | 13.00 | 0.81 | -0.02 | 0.16 | -0.009 | 0.015 | -0.003 | 0.015 | -0.013 | 0.034 | -0.002 | 0.017 |

E - Hay
F - Feed

TABLE 9
PASTURE GRASS / HAY
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 01/13/10 | -0.053 | 0.050 | -0.006 | 0.020 | -0.006 | 0.026 | 0.016 | 0.015 | 0.030 | 0.170 | 0.008 | 0.037 | -0.001 | 0.029 |
| 21 | 02/16/10 | -0.101 | 0.080 | -0.004 | 0.041 | 0.012 | 0.048 | -0.002 | 0.027 | -0.060 | 0.220 | 0.014 | 0.063 | 0.051 | 0.087 |
| 21 | 03/17/10 | -0.050 | 0.110 | 0.025 | 0.043 | -0.008 | 0.052 | 0.024 | 0.046 | 0.050 | 0.300 | -0.004 | 0.079 | 0.036 | 0.092 |
| 21 | 04/07/10 | -0.102 | 0.070 | 0.019 | 0.037 | 0.006 | 0.053 | -0.010 | 0.033 | 0.000 | 0.220 | 0.001 | 0.068 | 0.160 | 0.170 |
| 21 | 04/21/10 | -0.042 | 0.064 | 0.019 | 0.034 | 0.012 | 0.050 | 0.017 | 0.031 | 0.200 | 0.260 | -0.016 | 0.069 | 0.004 | 0.015 |
| 21 | 05/05/10 | -0.008 | 0.071 | -0.013 | 0.027 | -0.014 | 0.044 | 0.011 | 0.023 | 0.070 | 0.230 | -0.045 | 0.058 | 0.006 | 0.022 |
| 21 | 09/22/10 | 0.002 | 0.008 | 0.000 | 0.004 | -0.005 | 0.007 | -0.003 | 0.006 | 0.026 | 0.033 | -0.008 | 0.012 | 0.026 | 0.038 |
| 21 | 10/07/10 | 0.019 | 0.027 | -0.001 | 0.012 | -0.001 | 0.021 | 0.010 | 0.013 | -0.004 | 0.113 | 0.004 | 0.037 | 0.009 | 0.024 |
| 21 | 10/21/10 | -0.001 | 0.027 | 0.001 | 0.011 | 0.006 | 0.020 | 0.003 | 0.011 | 0.006 | 0.092 | -0.005 | 0.029 | 0.019 | 0.026 |
| 21 | 11/18/10 | 0.002 | 0.026 | -0.006 | 0.011 | 0.006 | 0.020 | -0.008 | 0.011 | 0.012 | 0.083 | -0.004 | 0.027 | -0.023 | 0.029 |
| 21 | 12/28/10 | -0.068 | 0.046 | 0.015 | 0.017 | -0.005 | 0.025 | -0.003 | 0.015 | 0.014 | 0.143 | -0.017 | 0.038 | -0.007 | 0.031 |
| 24 | 01/13/10 | 0.000 | 0.110 | -0.011 | 0.031 | -0.035 | 0.049 | -0.007 | 0.027 | -0.010 | 0.270 | -0.021 | 0.069 | 0.010 | 0.044 |
| 24 | 02/16/10 | -0.091 | 0.078 | -0.005 | 0.049 | -0.041 | 0.058 | 0.005 | 0.039 | 0.280 | 0.270 | 0.012 | 0.076 | 0.100 | 0.140 |
| 24 | 03/17/10 | -0.042 | 0.079 | 0.017 | 0.039 | -0.005 | 0.054 | 0.014 | 0.035 | -0.360 | 0.250 | -0.056 | 0.075 | 0.050 | 0.150 |
| 24 | 04/07/10 | 0.002 | 0.049 | -0.007 | 0.017 | 0.017 | 0.040 | -0.004 | 0.021 | 0.100 | 0.160 | 0.026 | 0.047 | -0.006 | 0.003 |
| 24 | 04/21/10 | 0.007 | 0.042 | -0.004 | 0.019 | -0.008 | 0.030 | -0.001 | 0.020 | -0.020 | 0.150 | -0.020 | 0.044 | 0.011 | 0.020 |
| 24 | 05/05/10 | -0.007 | 0.058 | -0.013 | 0.023 | -0.011 | 0.041 | 0.030 | 0.028 | 0.120 | 0.270 | 0.009 | 0.065 | 0.008 | 0.025 |
| 24 | 06/23/10 | -0.040 | 0.064 | -0.006 | 0.039 | -0.040 | 0.045 | 0.042 | 0.030 | 0.000 | 0.210 | -0.025 | 0.051 | 0.070 | 0.300 |
| 24 | 07/14/10 | -0.052 | 0.037 | 0.006 | 0.015 | -0.001 | 0.025 | -0.007 | 0.015 | 0.010 | 0.135 | -0.016 | 0.038 | 0.016 | 0.026 |
| 24 | 07/28/10 | -0.004 | 0.012 | -0.005 | 0.007 | 0.008 | 0.011 | -0.007 | 0.008 | 0.010 | 0.050 | -0.001 | 0.015 | 0.004 | 0.034 |
| 24 | 08/04/10 | 0.010 | 0.015 | 0.002 | 0.009 | -0.013 | 0.016 | 0.001 | 0.010 | 0.057 | 0.077 | 0.006 | 0.022 | 0.011 | 0.036 |
| 24 | 09/08/10 | -0.004 | 0.018 | -0.001 | 0.008 | -0.004 | 0.012 | -0.005 | 0.008 | 0.002 | 0.056 | 0.007 | 0.017 | 0.001 | 0.036 |
| 24 | 09/22/10 | -0.001 | 0.009 | -0.002 | 0.005 | -0.002 | 0.007 | 0.000 | 0.005 | 0.001 | 0.031 | -0.005 | 0.009 | 0.006 | 0.032 |
| 24 | 10/07/10 | -0.027 | 0.045 | 0.011 | 0.017 | -0.004 | 0.027 | -0.002 | 0.017 | 0.009 | 0.150 | 0.014 | 0.050 | 0.035 | 0.033 |
| 24 | 10/21/10 | -0.017 | 0.025 | 0.002 | 0.010 | -0.002 | 0.020 | -0.002 | 0.010 | 0.028 | 0.088 | -0.010 | 0.026 | 0.015 | 0.027 |
| 24 | 11/18/10 | -0.040 | 0.031 | 0.004 | 0.013 | -0.001 | 0.022 | 0.017 | 0.014 | -0.028 | 0.113 | -0.002 | 0.033 | -0.005 | 0.035 |
| 24 | 12/28/10 | 0.024 | 0.033 | -0.014 | 0.016 | -0.026 | 0.027 | 0.004 | 0.018 | -0.003 | 0.138 | 0.027 | 0.044 | -0.003 | 0.035 |

TABLE 9
PASTURE GRASS / HAY
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | La-140 | (+/-) | Ce-141 | (+/-) | Ce-144 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 01/13/10 | 0.003 | 0.013 | 0.008 | 0.017 | 0.012 | 0.023 | 0.012 | 0.023 | -0.004 | 0.020 | -0.026 | 0.064 | 0.021 | 0.074 |
| 21 | 02/16/10 | 0.008 | 0.019 | -0.026 | 0.033 | -0.025 | 0.076 | -0.025 | 0.076 | -0.030 | 0.031 | 0.080 | 0.110 | -0.010 | 0.100 |
| 21 | 03/17/10 | -0.003 | 0.022 | 0.005 | 0.035 | -0.003 | 0.061 | -0.003 | 0.061 | -0.005 | 0.048 | -0.030 | 0.150 | 0.070 | 0.160 |
| 21 | 04/07/10 | 0.005 | 0.027 | 0.013 | 0.025 | -0.080 | 0.100 | -0.080 | 0.100 | 0.015 | 0.038 | 0.050 | 0.110 | 0.090 | 0.130 |
| 21 | 04/21/10 | -0.012 | 0.020 | 0.020 | 0.025 | -0.012 | 0.053 | -0.012 | 0.053 | -0.061 | 0.038 | -0.070 | 0.110 | -0.020 | 0.110 |
| 21 | 05/05/10 | -0.007 | 0.018 | 0.003 | 0.025 | -0.021 | 0.059 | -0.021 | 0.059 | -0.027 | 0.028 | -0.045 | 0.086 | 0.002 | 0.095 |
| 21 | 09/22/10 | -0.001 | 0.003 | 0.057 | 0.013 | 0.003 | 0.055 | 0.008 | 0.012 | 0.006 | 0.011 | -0.012 | 0.030 | 0.036 | 0.055 |
| 21 | 10/07/10 | 0.006 | 0.013 | 0.047 | 0.025 | 0.008 | 0.063 | -0.016 | 0.017 | -0.002 | 0.026 | -0.039 | 0.099 | 0.034 | 0.087 |
| 21 | 10/21/10 | -0.003 | 0.011 | 0.000 | 0.011 | -0.003 | 0.065 | 0.009 | 0.015 | -0.012 | 0.020 | -0.086 | 0.080 | 0.106 | 0.046 |
| 21 | 11/18/10 | -0.004 | 0.011 | 0.007 | 0.012 | 0.015 | 0.062 | 0.010 | 0.016 | -0.007 | 0.020 | 0.041 | 0.072 | 0.024 | 0.083 |
| 21 | 12/28/10 | 0.001 | 0.017 | -0.003 | 0.015 | -0.025 | 0.070 | -0.001 | 0.022 | 0.009 | 0.022 | 0.020 | 0.080 | 0.011 | 0.064 |
| 24 | 01/13/10 | -0.010 | 0.023 | 0.035 | 0.039 | -0.044 | 0.063 | -0.044 | 0.063 | 0.004 | 0.046 | 0.050 | 0.110 | -0.030 | 0.160 |
| 24 | 02/16/10 | 0.011 | 0.027 | 0.021 | 0.030 | -0.050 | 0.110 | -0.050 | 0.110 | 0.002 | 0.047 | -0.070 | 0.120 | 0.080 | 0.160 |
| 24 | 03/17/10 | 0.002 | 0.020 | 0.001 | 0.028 | -0.051 | 0.088 | -0.051 | 0.088 | -0.065 | 0.063 | 0.040 | 0.110 | 0.250 | 0.140 |
| 24 | 04/07/10 | -0.003 | 0.015 | -0.009 | 0.018 | -0.002 | 0.035 | -0.002 | 0.035 | -0.008 | 0.023 | 0.022 | 0.069 | -0.019 | 0.065 |
| 24 | 04/21/10 | 0.009 | 0.015 | 0.012 | 0.016 | 0.011 | 0.040 | 0.011 | 0.040 | -0.006 | 0.019 | -0.028 | 0.063 | 0.003 | 0.059 |
| 24 | 05/05/10 | -0.002 | 0.018 | 0.012 | 0.027 | -0.029 | 0.043 | -0.029 | 0.043 | 0.001 | 0.031 | -0.014 | 0.087 | 0.080 | 0.110 |
| 24 | 06/23/10 | 0.005 | 0.015 | -0.007 | 0.023 | -0.080 | 0.130 | -0.080 | 0.130 | -0.043 | 0.041 | -0.044 | 0.082 | 0.028 | 0.097 |
| 24 | 07/14/10 | -0.014 | 0.017 | -0.003 | 0.016 | 0.031 | 0.068 | -0.001 | 0.018 | -0.012 | 0.026 | 0.061 | 0.100 | 0.016 | 0.090 |
| 24 | 07/28/10 | -0.002 | 0.006 | 0.001 | 0.007 | 0.032 | 0.058 | -0.012 | 0.016 | 0.006 | 0.013 | -0.027 | 0.040 | 0.045 | 0.028 |
| 24 | 08/04/10 | 0.006 | 0.008 | -0.002 | 0.008 | 0.013 | 0.068 | 0.000 | 0.015 | -0.008 | 0.019 | -0.012 | 0.056 | 0.084 | 0.107 |
| 24 | 09/08/10 | 0.004 | 0.007 | -0.003 | 0.006 | 0.073 | 0.066 | -0.012 | 0.015 | -0.010 | 0.014 | -0.015 | 0.047 | 0.027 | 0.042 |
| 24 | 09/22/10 | -0.003 | 0.004 | 0.006 | 0.004 | 0.027 | 0.045 | -0.013 | 0.013 | 0.006 | 0.008 | 0.006 | 0.022 | 0.015 | 0.027 |
| 24 | 10/07/10 | 0.009 | 0.017 | 0.007 | 0.017 | 0.062 | 0.087 | 0.011 | 0.028 | 0.000 | 0.031 | 0.073 | 0.122 | -0.032 | 0.058 |
| 24 | 10/21/10 | 0.002 | 0.011 | -0.001 | 0.010 | -0.025 | 0.060 | 0.006 | 0.016 | -0.006 | 0.019 | 0.042 | 0.068 | 0.003 | 0.041 |
| 24 | 11/18/10 | 0.005 | 0.014 | -0.002 | 0.013 | 0.029 | 0.075 | 0.001 | 0.022 | -0.008 | 0.023 | 0.015 | 0.079 | 0.099 | 0.090 |
| 24 | 12/28/10 | -0.002 | 0.016 | 0.031 | 0.018 | -0.015 | 0.095 | 0.002 | 0.022 | -0.025 | 0.029 | 0.007 | 0.105 | -0.015 | 0.071 |

TABLE 10
WELL WATER
(pCi/l)

| LOCATION | COLLECTION DATE | H-3 | (+/-) | Sr-89 | (+/-) | Sr-90 | (+/-) | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71 | 03/16/10 | -520 | 870 | -8.4 | 3.3 | 1.03 | 0.92 | -12 | 33 | -33 | 42 | 21 | 37 | 0.2 | 3.8 | -0.7 | 3.1 |
| 71 | 06/21/10 | 440 | 850 | -3.2 | 3.5 | 0.57 | 0.99 | -2 | 22 | 6 | 48 | -19 | 25 | -0.9 | 2.6 | 0.8 | 2.5 |
| 71 | 09/20/10 | -164 | 542 | 0.3 | 2.3 | 0.70 | 0.97 | -1 | 9 | 32 | 22 | -9 | 12 | 0.2 | 0.9 | 0.9 | 1.1 |
| 71 | 12/22/10 | 316 | 457 | | | | | 0 | 12 | 21 | 22 | 7 | 16 | 0.1 | 1.1 | 0.2 | 1.2 |
| 72 | 03/10/10 | -230 | 880 | -1.4 | 2.4 | 0.30 | 0.93 | -2 | 30 | -16 | 44 | -12 | 29 | 1.5 | 3.8 | 0.0 | 3.4 |
| 72 | 03/26/10 | -490 | 870 | -1.4 | 3.1 | 0.38 | 0.91 | 11 | 32 | 38 | 48 | 11 | 34 | -3.3 | 3.9 | 1.6 | 3.1 |
| 72 | 06/16/10 | -310 | 830 | -2.3 | 2.5 | 0.06 | 0.66 | 13 | 21 | 0 | 44 | -15 | 21 | -0.9 | 2.7 | 1.7 | 2.5 |
| 72 | 09/16/10 | -174 | 555 | 1.9 | 2.4 | 0.47 | 0.97 | 6 | 14 | -17 | 24 | -12 | 18 | -1.2 | 1.2 | 0.9 | 1.4 |
| 72 | 12/15/10 | -443 | 531 | | | | | 13 | 30 | 24 | 69 | -13 | 28 | 0.7 | 3.6 | -5.3 | 3.7 |
| 76X | 02/26/10 | 490 | 870 | -2.5 | 2.6 | -0.59 | 0.66 | -3 | 21 | 8 | 34 | -16 | 21 | 0.0 | 1.9 | 1.3 | 2.2 |
| 76X | 06/15/10 | 550 | 870 | -2.9 | 2.1 | -0.14 | 0.55 | 15 | 18 | -20 | 31 | 2 | 19 | -1.0 | 2.0 | -1.8 | 2.3 |
| 76X | 09/13/10 | 268 | 679 | 1.8 | 1.7 | 0.17 | 0.65 | -4 | 12 | 8 | 25 | -7 | 16 | -0.8 | 1.2 | 0.4 | 1.5 |
| 76X | 12/07/10 | -110 | 442 | | | | | -3 | 31 | 53 | 68 | -1 | 35 | -0.4 | 2.9 | -1.2 | 3.3 |
| 77X | 02/26/10 | 170 | 870 | -1.2 | 2.5 | -0.14 | 0.63 | 14 | 20 | 13 | 44 | -6 | 22 | -0.3 | 2.1 | 0.7 | 2.6 |
| 77X | 06/15/10 | -290 | 820 | 1.7 | 2.7 | -0.23 | 0.67 | -1 | 22 | -6 | 40 | -2 | 22 | 2.4 | 2.7 | 1.4 | 2.6 |
| 77X | 09/13/10 | -346 | 651 | 0.1 | 1.8 | 0.06 | 0.67 | 3 | 12 | 41 | 32 | 7 | 15 | 0.2 | 1.3 | -1.3 | 1.4 |
| 77X | 12/07/10 | -302 | 430 | | | | | -13 | 25 | 48 | 62 | 3 | 28 | 0.7 | 3.1 | -2.8 | 3.0 |
| 78X | 02/26/10 | 380 | 850 | -1.4 | 2.3 | 0.06 | 0.60 | 5 | 24 | -11 | 43 | -2 | 24 | -2.3 | 2.4 | 0.2 | 2.4 |
| 78X | 06/15/10 | -390 | 820 | -0.3 | 2.6 | -0.69 | 0.66 | 7 | 22 | -13 | 39 | 13 | 22 | 0.1 | 2.4 | -0.5 | 2.3 |
| 78X | 09/13/10 | 273 | 679 | 0.3 | 1.7 | -0.09 | 0.571 | 3 | 14 | 7 | 27 | 4 | 17 | -0.3 | 1.3 | -0.8 | 1.4 |
| 78X | 12/07/10 | 137 | 469 | | | | | 13 | 31 | -13 | 52 | -10 | 38 | 0.8 | 3.7 | -0.2 | 4.2 |
| 79 | 03/10/10 | -350 | 870 | 0.3 | 2.2 | 0.20 | 0.82 | -3 | 28 | -31 | 46 | -23 | 29 | 1.0 | 3.5 | 2.0 | 3.6 |
| 79 | 06/21/10 | 490 | 840 | -2.0 | 3.5 | 0.07 | 0.95 | 4 | 23 | 16 | 46 | 30 | 25 | 2.1 | 2.5 | -0.9 | 2.8 |
| 79 | 09/15/10 | -397 | 544 | -0.7 | 2.6 | 0.86 | 0.85 | 16 | 14 | 45 | 34 | -12 | 19 | 0.1 | 1.4 | 0.3 | 1.7 |
| 79 | 12/08/10 | 222 | 460 | | | | | 2 | 27 | 31 | 69 | -3 | 32 | 2.0 | 3.1 | 2.7 | 3.1 |
| 80 | 03/16/10 | 320 | 900 | -1.5 | 4.0 | 0.70 | 1.00 | -7 | 30 | 5 | 53 | -1 | 34 | 0.9 | 3.5 | 0.2 | 3.9 |
| 80 | 06/21/10 | 1660 | 880 | -0.1 | 3.5 | -0.07 | 0.91 | -5 | 26 | 14 | 38 | 2 | 26 | -0.1 | 2.4 | 0.7 | 2.9 |
| 80 | 08/05/10 | 176 | 609 | | | | | -2 | 12 | 12 | 21 | -14 | 17 | -0.3 | 1.2 | -0.6 | 1.3 |
| 80 | 09/20/10 | 554 | 599 | 2.0 | 2.3 | 0.93 | 0.77 | 3 | 9 | 31 | 26 | 3 | 12 | -0.3 | 0.9 | 0.1 | 1.1 |
| 80 | 12/15/10 | 286 | 560 | | | | | -16 | 30 | 80 | 65 | 12 | 32 | -3.1 | 3.6 | -2.8 | 3.8 |
| 80A | 08/05/10 | 841 | 691 | | | | | 1 | 11 | -5 | 27 | 0 | 13 | 0.3 | 1.2 | -1.3 | 1.3 |

TABLE 10
WELL WATER
(pCi/l)

| LOCATION | COLLECTION DATE | H-3 | (+/-) | Sr-89 | (+/-) | Sr-90 | (+/-) | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | 03/16/10 | 250 | 900 | -4.0 | 3.1 | 0.31 | 0.79 | 4 | 27 | 56 | 51 | 23 | 32 | 1.0 | 3.3 | -0.2 | 3.9 |
| 81 | 06/21/10 | 490 | 840 | 0.7 | 4.0 | 0.20 | 1.00 | -7 | 22 | 21 | 45 | 9 | 23 | 1.4 | 2.4 | 1.2 | 2.8 |
| 81 | 09/20/10 | -438 | 536 | 0.7 | 2.6 | 0.18 | 0.83 | 6 | 6 | -92 | 16 | 3.8 | 7.2 | -0.1 | 0.6 | 0.2 | 0.7 |
| 81 | 12/22/10 | 206 | 215 | | | | | 7 | 10 | 24 | 23 | -8.3 | 13.4 | -0.1 | 1.0 | 0.9 | 1.1 |
| 82 | 03/10/10 | -120 | 880 | -1.4 | 2.5 | 1.16 | 0.98 | -18 | 28 | -15 | 46 | 3.0 | 29.0 | 0.7 | 3.1 | -2.6 | 3.1 |
| 82 | 03/26/10 | 70 | 880 | -1.2 | 2.9 | 0.65 | 0.88 | 21 | 27 | -3 | 49 | 15.0 | 26.0 | -2.6 | 2.8 | 0.5 | 3.3 |
| 82 | 06/16/10 | 450 | 870 | -2.8 | 3.6 | 0.80 | 1.10 | -17 | 23 | 0 | 45 | -10.0 | 23.0 | -1.2 | 2.7 | -2.0 | 2.9 |
| 82 | 08/05/10 | 786 | 688 | | | | | 1 | 14 | 65 | 24 | -2.0 | 18.7 | 0.5 | 1.2 | -1.3 | 1.4 |
| 82 | 09/15/10 | -370 | 541 | 2.5 | 2.6 | 1.17 | 0.90 | 7 | 10 | 15 | 20 | -4.6 | 13.5 | -0.6 | 1.0 | -0.2 | 1.1 |
| 82 | 12/15/10 | 194 | 562 | | | | | -5 | 34 | 8 | 62 | 7.1 | 38.6 | 0.3 | 3.9 | -4.9 | 4.0 |
| 83 | 03/10/10 | -530 | 860 | 1.0 | 2.2 | 0.45 | 0.80 | 0 | 30 | -2 | 41 | -9.0 | 32.0 | 1.1 | 3.7 | -1.8 | 3.0 |
| 83 | 03/26/10 | -250 | 870 | -0.6 | 3.0 | 0.90 | 0.92 | 14 | 29 | 38 | 33 | -3.0 | 30.0 | 1.5 | 3.1 | -7.4 | 3.7 |
| 83 | 06/16/10 | -110 | 850 | -3.4 | 2.4 | 0.00 | 0.64 | 4 | 26 | 44 | 40 | -24.0 | 27.0 | 0.1 | 2.7 | -1.5 | 2.7 |
| 83 | 09/15/10 | -55.4 | 554 | 0.4 | 2.4 | 0.93 | 0.73 | 10 | 13 | 76 | 30 | 9.9 | 17.9 | -1.5 | 1.3 | 0.1 | 1.4 |
| 83 | 12/08/10 | -9.61 | 452 | | | | | -24 | 32 | 68 | 60 | -0.5 | 39.2 | -2.8 | 3.5 | -3.9 | 3.7 |
| 84 | 03/10/10 | 150 | 880 | -0.7 | 2.2 | -0.55 | 0.81 | -5 | 24 | -4 | 42 | -6.0 | 24.0 | 1.5 | 2.5 | 0.0 | 2.7 |
| 84 | 06/16/10 | 180 | 860 | -0.2 | 2.4 | -0.05 | 0.62 | -1 | 28 | -16 | 46 | 12.0 | 27.0 | 0.4 | 2.8 | 2.6 | 3.2 |
| 84 | 09/20/10 | 296 | 571 | 1.2 | 2.2 | 0.20 | 0.62 | 6.1 | 12.0 | 18 | 26 | -6.8 | 16.2 | -0.6 | 1.1 | 0.9 | 1.3 |
| 84 | 12/08/10 | 67.7 | 552 | | | | | 15.7 | 23.3 | 1 | 38 | -9.0 | 30.2 | -0.2 | 2.4 | 0.8 | 3.0 |
| 85 | 02/24/10 | 320 | 880 | -0.7 | 2.4 | 1.20 | 0.84 | -11.0 | 35.0 | 30 | 49 | 6.0 | 35.0 | -2.0 | 3.8 | -4.6 | 3.4 |
| 85 | 06/24/10 | 490 | 840 | 2.9 | 3.5 | 1.02 | 0.96 | 7.0 | 32.0 | 42 | 49 | 1.0 | 35.0 | -1.4 | 3.3 | -0.2 | 3.2 |
| 85 | 08/05/10 | 857 | 701 | | | | | 2.3 | 15.2 | 27 | 36 | 4.9 | 19.9 | -1.3 | 1.4 | -0.8 | 1.6 |
| 85 | 09/08/10 | 83.1 | 1070 | 0.9 | 2.1 | 1.00 | 0.858 | -11.8 | 17.5 | 42 | 34 | -18.8 | 24.3 | -1.2 | 1.9 | -0.2 | 2.0 |
| 85 | 12/06/10 | 586 | 500 | | | | | 13.3 | 27.7 | 62 | 67 | -2.9 | 32.8 | -0.7 | 3.0 | -1.4 | 3.5 |
| 86 | 02/24/10 | 750 | 920 | -3.7 | 5.1 | 0.68 | 0.76 | -4.0 | 31.0 | 8 | 45 | 17.0 | 34.0 | 2.8 | 3.9 | 0.0 | 3.5 |
| 86 | 06/24/10 | 280 | 820 | -1.4 | 3.6 | 0.20 | 1.00 | -15.0 | 27.0 | -34 | 46 | -19.0 | 30.0 | -1.2 | 3.0 | -2.1 | 3.1 |
| 86 | 09/02/10 | 309 | 1080 | 1.5 | 2.9 | 1.18 | 1.22 | 3.3 | 14.6 | -46 | 30 | -8.0 | 18.9 | -0.4 | 1.3 | 0.5 | 1.6 |
| 86 | 12/06/10 | 86.8 | 460 | | | | | 3.3 | 21.1 | -5 | 31 | -4.8 | 22.8 | -1.0 | 2.2 | -1.3 | 1.9 |
| 91 | 09/20/10 | -274 | 534 | 0.7 | 2.0 | 0.22 | 0.85 | 8.1 | 9.8 | 38 | 27.7 | -11.9 | 13.2 | -0.3 | 0.9 | -1.0 | 1.1 |
| 91 | 12/22/10 | 248 | 244 | | | | | 9.3 | 11.2 | 21 | 25.7 | 2.2 | 14.8 | -0.8 | 1.0 | 0.2 | 1.2 |
| 92 | 09/21/10 | -147 | 560 | 1.5 | 2.1 | 0.27 | 0.77 | 5.3 | 13.0 | 0 | 32.6 | -8.5 | 18.1 | -1.0 | 1.2 | -0.2 | 1.4 |
| 92 | 12/15/10 | -386 | 534 | | | | | 34.7 | 34.8 | -28 | 60.7 | 9.4 | 32.8 | -0.2 | 4.0 | -0.3 | 4.3 |

TABLE 10
WELL WATER
(pCi/l)

| LOCATION | COLLECTION DATE | Fe-59 | (+/-) | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) | Sb-125 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71 | 03/16/10 | 7.8 | 8.0 | -2.8 | 4.2 | -2.8 | 8.1 | 1.8 | 4.7 | -0.2 | 6.4 | -1.8 | 4.5 | -14 | 36 | 0.0 | 10.0 |
| 71 | 06/21/10 | 0.6 | 6.8 | 0.2 | 3.4 | -10.2 | 7.5 | 0.3 | 3.4 | 2.4 | 4.6 | -0.7 | 2.9 | -5 | 26 | -2.1 | 6.8 |
| 71 | 09/20/10 | 0.1 | 2.4 | -1.1 | 0.9 | -0.1 | 2.1 | 1.2 | 1.1 | 1.0 | 1.8 | -1.9 | 1.4 | -2.4 | 7.9 | -0.1 | 2.6 |
| 71 | 12/22/10 | 0.2 | 2.8 | 0.8 | 1.1 | 3.0 | 2.6 | 0.0 | 1.3 | 0.3 | 2.3 | 0.3 | 1.8 | 7.1 | 10.5 | -0.3 | 3.2 |
| 72 | 03/10/10 | -17.7 | 8.9 | -1.0 | 4.4 | -0.6 | 7.5 | 2.4 | 4.3 | -3.6 | 6.9 | -2.5 | 4.1 | 4.0 | 26.0 | 8.0 | 9.6 |
| 72 | 03/26/10 | -4.4 | 7.0 | -2.9 | 3.6 | -5.7 | 6.8 | -1.8 | 3.7 | -0.9 | 5.5 | -0.3 | 4.1 | 13.0 | 33.0 | 4.5 | 9.3 |
| 72 | 06/16/10 | 1.1 | 6.2 | 2.1 | 2.8 | 0.1 | 7.1 | -0.8 | 3.1 | 1.5 | 4.6 | -1.1 | 2.7 | 9.0 | 22.0 | 4.9 | 6.6 |
| 72 | 09/16/10 | -2.4 | 3.3 | 0.3 | 1.3 | -2.7 | 3.2 | 1.1 | 1.5 | 0.4 | 2.6 | -0.9 | 1.8 | 1.2 | 11.7 | 2.2 | 3.6 |
| 72 | 12/15/10 | 0.8 | 7.6 | 1.1 | 4.3 | 3.6 | 6.9 | 2.7 | 3.9 | 2.0 | 6.2 | -6.8 | 3.8 | -24.7 | 30.9 | -3.5 | 9.5 |
| 76X | 02/26/10 | 1.9 | 5.1 | 1.1 | 2.4 | 7.3 | 9.5 | -0.4 | 2.8 | -0.5 | 4.2 | -2.3 | 2.8 | -9.0 | 21.0 | 1.0 | 5.8 |
| 76X | 06/15/10 | 3.9 | 4.6 | 0.7 | 2.1 | 1.6 | 4.6 | -0.2 | 2.6 | 0.3 | 3.6 | -1.2 | 2.4 | -15.0 | 16.0 | -0.5 | 5.4 |
| 76X | 09/13/10 | 0.5 | 3.2 | 0.3 | 1.4 | 1.3 | 3.0 | 0.6 | 1.4 | 0.3 | 2.4 | -0.2 | 1.9 | -7.8 | 11.5 | -2.5 | 3.7 |
| 76X | 12/07/10 | -6.0 | 6.5 | 1.9 | 2.9 | -6.0 | 7.5 | -0.7 | 3.5 | 1.5 | 5.7 | -1.1 | 3.4 | -0.8 | 30.8 | 2.6 | 9.8 |
| 77X | 02/26/10 | 0.6 | 6.3 | -2.1 | 2.9 | -2.0 | 6.8 | -1.9 | 3.3 | -0.1 | 4.4 | -2.3 | 2.8 | -4.0 | 25.0 | -0.7 | 6.3 |
| 77X | 06/15/10 | -3.1 | 5.8 | -0.2 | 3.0 | -4.4 | 6.1 | -1.4 | 3.0 | -2.4 | 4.8 | -1.9 | 2.6 | 3.0 | 23.0 | -6.9 | 6.7 |
| 77X | 09/13/10 | -0.1 | 3.0 | -0.2 | 1.7 | 0.5 | 2.9 | -0.3 | 1.5 | -1.2 | 2.4 | -2.5 | 1.7 | -1.8 | 12.2 | -1.4 | 3.4 |
| 77X | 12/07/10 | 0.9 | 6.6 | -1.3 | 2.8 | 0.1 | 6.6 | 4.2 | 3.6 | -2.0 | 5.4 | 1.1 | 3.3 | -11.1 | 26.4 | 7.5 | 8.6 |
| 78X | 02/26/10 | -5.9 | 6.1 | 0.0 | 2.8 | 3.5 | 8.3 | -1.4 | 3.0 | 0.1 | 5.3 | 2.5 | 3.0 | -18.0 | 25.0 | 3.0 | 6.8 |
| 78X | 06/15/10 | 3.3 | 5.8 | -0.2 | 2.9 | -2.1 | 6.0 | 0.3 | 2.9 | 1.0 | 4.6 | -2.0 | 2.9 | -7.0 | 23.0 | -1.5 | 6.3 |
| 78X | 09/13/10 | 2.9 | 3.2 | 0.2 | 1.3 | -1.3 | 3.0 | 0.1 | 1.5 | -0.2 | 2.6 | 0.5 | 1.7 | -3.0 | 11.9 | -0.3 | 3.8 |
| 78X | 12/07/10 | -0.6 | 7.8 | -0.5 | 3.2 | -13.1 | 8.3 | 1.4 | 4.4 | -6.4 | 6.7 | -1.3 | 4.3 | 9.1 | 36.1 | -1.2 | 10.4 |
| 79 | 03/10/10 | 4.2 | 7.7 | 0.0 | 3.9 | 0.5 | 7.7 | 3.7 | 4.0 | 2.6 | 6.4 | -0.3 | 4.1 | 1.0 | 30.0 | 4.3 | 9.9 |
| 79 | 06/21/10 | 3.3 | 7.1 | 0.1 | 3.3 | 1.4 | 5.7 | 0.9 | 3.8 | -0.8 | 5.2 | -0.2 | 3.1 | 4.0 | 23.0 | 0.3 | 6.5 |
| 79 | 09/15/10 | 1.0 | 3.3 | -0.5 | 1.6 | -0.3 | 3.0 | 0.2 | 1.7 | -2.1 | 2.9 | -1.4 | 1.8 | -7.8 | 12.2 | -1.0 | 3.6 |
| 79 | 12/08/10 | -3.2 | 6.4 | -1.4 | 3.1 | -7.9 | 7.8 | -1.3 | 3.0 | 2.7 | 5.8 | 2.3 | 3.6 | 17.5 | 28.5 | 5.0 | 8.5 |
| 80 | 03/16/10 | 2.0 | 6.1 | -2.7 | 4.2 | 15.0 | 12.0 | -3.6 | 4.9 | 0.8 | 6.4 | -5.1 | 4.3 | 23.0 | 31.0 | 6.0 | 10.0 |
| 80 | 06/21/10 | 2.3 | 7.0 | -0.4 | 2.8 | -3.6 | 8.3 | 4.2 | 3.6 | -2.3 | 5.0 | 0.4 | 3.4 | -14.0 | 23.0 | 4.6 | 7.4 |
| 80 | 09/20/10 | -1.3 | 2.4 | -0.1 | 0.9 | 0.0 | 1.9 | -0.7 | 1.1 | 0.6 | 1.8 | -1.9 | 1.3 | -1.3 | 7.8 | -0.9 | 2.5 |
| 80 | 12/15/10 | 2.2 | 5.9 | 3.5 | 3.5 | 5.5 | 6.9 | 5.0 | 4.1 | -3.7 | 6.0 | -0.9 | 3.5 | 4.0 | 30.4 | -0.4 | 10.4 |
| 80 | 08/05/10 | 1.8 | 2.8 | 0.9 | 1.1 | -6.1 | 2.8 | 0.2 | 1.4 | 3.1 | 2.4 | -1.9 | 1.7 | 3.2 | 11.1 | -2.1 | 3.5 |
| 80A | 08/05/10 | -0.2 | 3.0 | 1.5 | 1.2 | -5.7 | 2.7 | 1.0 | 1.3 | 3.0 | 2.3 | -1.7 | 1.5 | -5.3 | 10.4 | 0.8 | 2.8 |

TABLE 10
WELL WATER
(pCi/l)

| LOCATION | COLLECTION DATE | Fe-59 | (+/-) | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) | Sb-125 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | 03/16/10 | 4.0 | 7.3 | -2.9 | 3.5 | -6.4 | 7.7 | 0.2 | 3.7 | 3.4 | 5.2 | 0.6 | 3.7 | 19.0 | 30.0 | -6.5 | 9.5 |
| 81 | 06/21/10 | 0.7 | 6.6 | 1.7 | 2.9 | -5.0 | 6.5 | 0.4 | 3.2 | -1.7 | 4.9 | -1.4 | 2.8 | -15.0 | 25.0 | -1.7 | 6.5 |
| 81 | 09/20/10 | -0.2 | 1.5 | 0.2 | 0.6 | -0.3 | 1.2 | -0.2 | 0.7 | -0.6 | 1.2 | -0.4 | 0.8 | 2.3 | 5.4 | -0.2 | 1.6 |
| 81 | 12/22/10 | 0.004 | 2.6 | -0.4 | 1.4 | -4.1 | 2.2 | 0.2 | 1.2 | -1.6 | 2.0 | -1.1 | 1.7 | 5.2 | 9.5 | -2.3 | 2.7 |
| 82 | 03/10/10 | 2.7 | 6.8 | -1.0 | 3.5 | 15.0 | 12.0 | 0.8 | 4.0 | 2.2 | 5.8 | 0.2 | 3.6 | -2.0 | 29.0 | 1.1 | 9.0 |
| 82 | 03/26/10 | 4.2 | 6.6 | -0.2 | 3.5 | 4.0 | 10.0 | 1.5 | 6.1 | -2.0 | 5.8 | -2.4 | 3.3 | 18.0 | 26.0 | -2.7 | 7.4 |
| 82 | 06/16/10 | -0.8 | 6.1 | 0.8 | 3.0 | -1.1 | 7.6 | 0.7 | 3.6 | -4.6 | 4.7 | -0.3 | 3.1 | 8.0 | 25.0 | 2.4 | 6.6 |
| 82 | 08/05/10 | 2.8 | 2.9 | 0.5 | 1.1 | 1.2 | 2.7 | 1.9 | 1.5 | -2.5 | 2.6 | 3.0 | 1.8 | 7.3 | 12.0 | -2.0 | 3.7 |
| 82 | 09/15/10 | 0.6 | 2.4 | 1.2 | 1.0 | -7.1 | 2.3 | 1.1 | 1.3 | -0.4 | 2.0 | -0.9 | 1.6 | 5.2 | 9.1 | 0.5 | 2.7 |
| 82 | 12/15/10 | -3.4 | 7.3 | -0.8 | 4.15 | 6.9 | 9.5 | 7.8 | 4.8 | -2.3 | 6.9 | 2.4 | 4.4 | 26.1 | 37.0 | 9.6 | 12.3 |
| 83 | 03/10/10 | -0.8 | 6.8 | -2.3 | 3.7 | 10.0 | 14.0 | 1.8 | 5.6 | 2.5 | 5.7 | -3.5 | 3.9 | 2.0 | 31.0 | 1.0 | 8.6 |
| 83 | 03/26/10 | -4.7 | 7.9 | 0.6 | 3.3 | 7.0 | 16.0 | 1.5 | 6.2 | -0.6 | 5.9 | -1.7 | 3.8 | 1.0 | 27.0 | 1.1 | 8.9 |
| 83 | 06/16/10 | -1.0 | 5.3 | -1.7 | 2.8 | 11.0 | 10.0 | -2.1 | 4.8 | -0.8 | 4.3 | -4.4 | 3.3 | -10.0 | 25.0 | 0.4 | 7.1 |
| 83 | 09/15/10 | 2.4 | 3.3 | -0.5 | 1.4 | -2.6 | 3.1 | 0.6 | 1.6 | 1.9 | 2.6 | -0.8 | 1.7 | -10.7 | 11.6 | -2.0 | 3.6 |
| 83 | 12/08/10 | -4.3 | 7.4 | 0.2 | 4.0 | 0.0 | 7.8 | 4.4 | 4.6 | 3.8 | 6.2 | 0.7 | 4.4 | 16.2 | 31.4 | -1.7 | 11.1 |
| 84 | 03/10/10 | 1.5 | 5.9 | 1.3 | 2.4 | -6.8 | 6.1 | -0.6 | 3.4 | 1.4 | 5.0 | -2.0 | 3.2 | 1.0 | 24.0 | -3.0 | 7.7 |
| 84 | 06/16/10 | 1.8 | 7.4 | -1.3 | 3.7 | 2.1 | 6.4 | 1.7 | 4.4 | 3.6 | 5.8 | -4.0 | 3.6 | -25.0 | 24.0 | -1.5 | 7.7 |
| 84 | 09/20/10 | 0.4 | 3.0 | -0.1 | 1.1 | 1.0 | 2.5 | 0.3 | 1.6 | -0.5 | 2.3 | -0.9 | 1.9 | -3.3 | 10.0 | -0.7 | 3.3 |
| 84 | 12/08/10 | 1.5 | 5.4 | 1.4 | 2.5 | -0.8 | 6.6 | 1.1 | 2.9 | 6.0 | 4.9 | -2.8 | 2.9 | 7.2 | 23.1 | -3.4 | 7.4 |
| 85 | 02/24/10 | 2.0 | 6.8 | -1.6 | 3.3 | 10.0 | 17.0 | -0.8 | 6.5 | 2.5 | 5.4 | -0.1 | 4.2 | 17.0 | 31.0 | 0.3 | 9.8 |
| 85 | 06/24/10 | -1.1 | 7.3 | 1.9 | 3.3 | 7.0 | 13.0 | 3.6 | 6.8 | -1.7 | 5.2 | -0.2 | 4.0 | -24.0 | 32.0 | 4.1 | 8.1 |
| 85 | 08/05/10 | 0.7 | 3.3 | -0.9 | 1.4 | 1.9 | 3.2 | 0.3 | 1.7 | -2.7 | 2.9 | -2.3 | 2.0 | -8.9 | 13.2 | 1.7 | 4.1 |
| 85 | 09/08/10 | -3.2 | 4.0 | 0.3 | 1.8 | 1.8 | 4.2 | 4.0 | 2.7 | 1.5 | 3.2 | -0.6 | 2.3 | -2.8 | 18.0 | 0.9 | 5.3 |
| 85 | 12/06/10 | -1.0 | 6.4 | 0.2 | 3.0 | -6.5 | 6.8 | 5.1 | 3.5 | 0.3 | 5.1 | -2.2 | 3.4 | -2.6 | 25.3 | 7.8 | 8.5 |
| 86 | 02/24/10 | -3.2 | 7.3 | 0.7 | 3.8 | 2.5 | 8.3 | 1.7 | 4.1 | -0.9 | 6.3 | -0.6 | 3.8 | -12.0 | 33.0 | 1.8 | 9.7 |
| 86 | 06/24/10 | 0.4 | 6.1 | 0.9 | 2.6 | -3.6 | 6.6 | 1.1 | 3.7 | -0.9 | 5.1 | -0.6 | 3.6 | -27.0 | 25.0 | -1.0 | 8.5 |
| 86 | 09/02/10 | -0.3 | 3.3 | 0.4 | 1.4 | 0.7 | 2.5 | -0.3 | 1.5 | -2.5 | 2.7 | -0.2 | 1.9 | -8.7 | 13.4 | -0.6 | 4.2 |
| 86 | 12/06/10 | 2.9 | 4.4 | 2.6 | 2.3 | -3.0 | 5.1 | 0.2 | 2.6 | -1.1 | 4.3 | 0.4 | 2.6 | 17.7 | 18.3 | 1.4 | 6.5 |
| 91 | 09/21/10 | -0.8 | 2.3 | -0.6 | 0.9 | -1.8 | 1.8 | -0.6 | 1.2 | -1.4 | 2.0 | -2.1 | 1.4 | 1.5 | 8.6 | 0.7 | 2.8 |
| 91 | 12/15/10 | -0.2 | 2.5 | 0.6 | 1.0 | 0.8 | 2.4 | 0.2 | 1.2 | 1.1 | 2.2 | -0.3 | 1.5 | 1.3 | 9.6 | 0.8 | 2.9 |
| 92 | 09/21/10 | -0.3 | 2.9 | -0.1 | 1.2 | 4.4 | 2.7 | 1.7 | 1.4 | -0.2 | 2.5 | 2.6 | 2.4 | -7.6 | 11.4 | 2.0 | 3.6 |
| 92 | 12/15/10 | 1.4 | 8.8 | 0.2 | 4.4 | 2.1 | 7.6 | 6.0 | 4.7 | -6.3 | 7.2 | -1.5 | 4.2 | 26.0 | 39.0 | 0.7 | 10.6 |

TABLE 10
WELL WATER
(pCi/l)

| LOCATION | COLLECTION DATE | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | La-140 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71 | 03/16/10 | 5.8 | 8.1 | -0.4 | 3.4 | 0.0 | 4.2 | -2.5 | 7.2 | -2.5 | 7.2 | 0.0 | 13 |
| 71 | 06/21/10 | -0.4 | 7.3 | -1.1 | 2.3 | -1.0 | 2.7 | 4.4 | 8.5 | 4.4 | 8.5 | -6.0 | 12 |
| 71 | 09/20/10 | 1.5 | 5.4 | 0.2 | 1.0 | 0.3 | 1.0 | 0.9 | 9.3 | 2.3 | 3.2 | 0.7 | 4.1 |
| 71 | 12/22/10 | -1.3 | 7.4 | 0.6 | 1.2 | 0.4 | 1.4 | 7.7 | 12.2 | -0.9 | 3.6 | 0.4 | 5.1 |
| 72 | 03/10/10 | 1.9 | 6.3 | -0.7 | 2.6 | 1.5 | 3.7 | -1.6 | 7.1 | -1.6 | 7.1 | 5.0 | 14.0 |
| 72 | 03/26/10 | -5.1 | 8.0 | -0.2 | 2.7 | 0.1 | 3.9 | 0.0 | 6.9 | 0.0 | 6.9 | -3.0 | 13.0 |
| 72 | 06/16/10 | -1.3 | 5.8 | 3.3 | 2.3 | 0.7 | 2.7 | -1.5 | 7.9 | -1.5 | 7.9 | 12.8 | 9.9 |
| 72 | 09/16/10 | -1.8 | 8.2 | 0.1 | 1.4 | -0.8 | 1.6 | 2.7 | 13.0 | -1.6 | 4.4 | -1.5 | 5.6 |
| 72 | 12/15/10 | 2.4 | 5.0 | -0.9 | 3.7 | -1.6 | 3.8 | -10.5 | 16.0 | 0.3 | 4.0 | 24.1 | 17.0 |
| 76X | 02/26/10 | -0.2 | 5.4 | -0.6 | 1.6 | 0.4 | 2.1 | 0.1 | 4.9 | 0.1 | 4.9 | -0.1 | 8.8 |
| 76X | 06/15/10 | -0.3 | 5.5 | 1.6 | 1.8 | -1.1 | 1.8 | 2.5 | 5.1 | 2.5 | 5.1 | -0.5 | 9.2 |
| 76X | 09/13/10 | 0.0 | 5.1 | 0.0 | 1.4 | 0.3 | 1.6 | 6.9 | 10.1 | -1.3 | 3.2 | -2.4 | 5.5 |
| 76X | 12/07/10 | 0.0 | 6.6 | 1.6 | 3.3 | -0.7 | 3.5 | -1.9 | 16.1 | 1.8 | 5.3 | -1.2 | 10.9 |
| 77X | 02/26/10 | -2.4 | 6.0 | -1.8 | 1.9 | 0.6 | 2.6 | -5.8 | 7.4 | -5.8 | 7.4 | 13.0 | 11.0 |
| 77X | 06/15/10 | 2.2 | 6.3 | 0.6 | 2.0 | 1.5 | 2.7 | -0.9 | 7.7 | -0.9 | 7.7 | 0.0 | 10.0 |
| 77X | 09/13/10 | -0.7 | 4.7 | -0.1 | 1.4 | 0.6 | 1.4 | -1.2 | 10.5 | -1.6 | 3.4 | -3.4 | 5.7 |
| 77X | 12/07/10 | -3.0 | 5.5 | 2.5 | 3.2 | -2.2 | 3.3 | 5.7 | 14.8 | 1.2 | 5.3 | -6.4 | 10.5 |
| 78X | 02/26/10 | -5.3 | 7.1 | 1.0 | 2.4 | -0.7 | 2.9 | -4.5 | 7.3 | -4.5 | 7.3 | 13.0 | 14.0 |
| 78X | 06/15/10 | -0.2 | 7.6 | -0.2 | 2.2 | -2.8 | 2.7 | -4.2 | 7.2 | -4.2 | 7.2 | 2.0 | 12.0 |
| 78X | 09/13/10 | -0.8 | 5.5 | -0.1 | 1.5 | -0.5 | 1.4 | -1.7 | 10.6 | -2.5 | 3.4 | 2.9 | 5.6 |
| 78X | 12/07/10 | -3.9 | 7.3 | 2.7 | 4.3 | -0.7 | 4.4 | 6.0 | 17.1 | 4.6 | 6.7 | -9.6 | 13.9 |
| 79 | 03/10/10 | 4.4 | 6.1 | -1.6 | 2.6 | 1.5 | 3.4 | -4.0 | 6.2 | -4.0 | 6.2 | -18.0 | 12.0 |
| 79 | 06/21/10 | -3.6 | 7.4 | 0.4 | 2.0 | 3.7 | 3.0 | 4.3 | 8.6 | 4.3 | 8.6 | -4.0 | 12.0 |
| 79 | 09/15/10 | -3.6 | 8.6 | -1.1 | 1.5 | 0.5 | 1.5 | 7.1 | 14.9 | -3.4 | 4.7 | -2.2 | 6.0 |
| 79 | 12/08/10 | 2.7 | 6.1 | -0.2 | 4.1 | -1.1 | 3.4 | 2.9 | 15.7 | 4.4 | 4.7 | 4.5 | 11.9 |
| 80 | 03/16/10 | -2.3 | 7.7 | -2.4 | 3.7 | 0.4 | 3.5 | -2.9 | 7.3 | -2.9 | 7.3 | 3.0 | 13.0 |
| 80 | 06/21/10 | 0.9 | 8.5 | 2.1 | 2.3 | 0.2 | 2.6 | 3.6 | 7.3 | 3.6 | 7.3 | -4.1 | 9.7 |
| 80 | 09/20/10 | -1.0 | 5.7 | -0.5 | 0.9 | -0.1 | 0.9 | 7.4 | 9.2 | -0.7 | 2.9 | 2.6 | 6.6 |
| 80 | 12/15/10 | -2.7 | 5.4 | 1.1 | 3.8 | 0.0 | 3.5 | -1.3 | 15.7 | 1.8 | 5.3 | 1.9 | 13.9 |
| 80 | 08/05/10 | -5.6 | 7.4 | -7.3 | 1.4 | -0.9 | 1.4 | -5.2 | 12.8 | -0.5 | 3.9 | 0.1 | 5.2 |
| 80A | 08/05/10 | -0.9 | 6.0 | -3.6 | 1.2 | 0.8 | 1.1 | 12.1 | 11.4 | 4.0 | 4.0 | -5.0 | 7.3 |

TABLE 10
WELL WATER
(pCi/l)

| LOCATION | COLLECTION DATE | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | La-140 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | 03/16/10 | 3.5 | 7.2 | -1.0 | 2.5 | 3.3 | 3.3 | 0.9 | 7.2 | 0.9 | 7.2 | -7.0 | 13 |
| 81 | 06/21/10 | -0.8 | 8.4 | 0.3 | 2.4 | 2.2 | 2.9 | 5.8 | 7.3 | 5.8 | 7.3 | 9.0 | 14 |
| 81 | 09/20/10 | 1.8 | 3.4 | -0.17 | 0.5 | -0.6 | 0.8 | 1.9 | 6.1 | -1.4 | 2.1 | -3.2 | 3.6 |
| 81 | 12/22/10 | -0.6 | 6.0 | -0.72 | 1.1 | 0.3 | 1.1 | 2.7 | 10.7 | -2.0 | 3.3 | 1.9 | 7.5 |
| 82 | 03/10/10 | 3.5 | 6.2 | 0.2 | 3.4 | -0.5 | 3.1 | -0.7 | 5.5 | -0.7 | 5.5 | -7.0 | 13.0 |
| 82 | 03/26/10 | -3.3 | 5.8 | -1.7 | 2.2 | -0.3 | 3.8 | -0.5 | 7.8 | -0.5 | 7.8 | 10.0 | 18.0 |
| 82 | 06/16/10 | 1.6 | 7.8 | 0.0 | 2.7 | -0.8 | 3.2 | 2.2 | 8.0 | 2.2 | 8.0 | -7.0 | 12.0 |
| 82 | 08/05/10 | -13.7 | 8.4 | 2.01 | 3.1 | 0.6 | 1.3 | -1.7 | 13.6 | 0.8 | 3.7 | -0.6 | 5.1 |
| 82 | 09/15/10 | 1.1 | 6.5 | -0.27 | 1.0 | -0.2 | 1.0 | 7.9 | 10.1 | 2.2 | 3.7 | -2.1 | 5.9 |
| 82 | 12/15/10 | 0.4 | 7.1 | 0.053 | 4.8 | 2.7 | 4.5 | 11.3 | 18.2 | -3.1 | 6.3 | -7.8 | 15.1 |
| 83 | 03/10/10 | -2.4 | 6.4 | 1.6 | 2.5 | -4.2 | 3.9 | -0.4 | 6.2 | -0.4 | 6.2 | 2.0 | 13.0 |
| 83 | 03/26/10 | -6.9 | 7.5 | -0.4 | 2.2 | -3.2 | 3.5 | 3.0 | 7.6 | 3.0 | 7.6 | 9.0 | 12.0 |
| 83 | 06/16/10 | 1.3 | 7.5 | 0.5 | 2.3 | -1.1 | 2.7 | -2.7 | 6.4 | -2.7 | 6.4 | -1.0 | 10.0 |
| 83 | 09/15/10 | 4.4 | 8.3 | 0.324 | 1.4 | 0.6 | 1.3 | -3.2 | 14.0 | -2.6 | 4.6 | 1.3 | 9.6 |
| 83 | 12/08/10 | -0.7 | 7.2 | -0.95 | 4.2 | -5.1 | 4.1 | 5.6 | 18.4 | 2.3 | 6.0 | 2.0 | 14.4 |
| 84 | 03/10/10 | -4.5 | 4.9 | -1.1 | 2.2 | -0.2 | 2.8 | 2.4 | 5.1 | 2.4 | 5.1 | 8.0 | 11.0 |
| 84 | 06/16/10 | -2.1 | 7.1 | 0.4 | 2.0 | -2.6 | 4.0 | 6.5 | 7.2 | 6.5 | 7.2 | -13.0 | 12.0 |
| 84 | 09/20/10 | -2.3 | 7.6 | 0.693 | 1.2 | 0.7 | 1.2 | -6.2 | 12.4 | -3.7 | 4.1 | 2.2 | 5.2 |
| 84 | 12/08/10 | 3.4 | 7.8 | -0.42 | 2.5 | 1.6 | 2.8 | -6.0 | 16.4 | 3.6 | 4.5 | -3.3 | 10.5 |
| 85 | 02/24/10 | -1.2 | 7.2 | -0.6 | 3.0 | -1.7 | 3.7 | -3.2 | 6.1 | -3.2 | 6.1 | -8.0 | 13.0 |
| 85 | 06/24/10 | -1.2 | 8.4 | 1.1 | 3.4 | -3.3 | 3.4 | 3.8 | 7.2 | 3.8 | 7.2 | 0.0 | 12.0 |
| 85 | 08/05/10 | 4.5 | 8.3 | 0.067 | 1.5 | 0.0 | 1.5 | -0.2 | 13.8 | -1.1 | 3.7 | 3.0 | 6.2 |
| 85 | 09/08/10 | -1.8 | 5.6 | 1.05 | 2.0 | -2.6 | 2.0 | -9.0 | 12.3 | -0.7 | 4.2 | 11.5 | 13.6 |
| 85 | 12/06/10 | 3.6 | 7.7 | -0.72 | 3.4 | -1.6 | 3.2 | 5.6 | 18.5 | 2.2 | 5.7 | 6.0 | 12.1 |
| 86 | 02/24/10 | 0.0 | 6.7 | 0.3 | 3.3 | 2.1 | 3.7 | -0.8 | 7.0 | -0.8 | 7.0 | 4.0 | 13.0 |
| 86 | 06/24/10 | -8.1 | 7.4 | -0.9 | 2.5 | 1.8 | 2.9 | -3.0 | 6.2 | -3.0 | 6.2 | 0.0 | 12.0 |
| 86 | 09/02/10 | 5.9 | 7.1 | -0.85 | 1.6 | -0.5 | 1.8 | 14.7 | 13.9 | -1.7 | 4.6 | -4.4 | 6.5 |
| 86 | 12/06/10 | 1.3 | 4.9 | -0.27 | 2.6 | 1.4 | 2.5 | -8.3 | 11.9 | 1.3 | 3.7 | 7.9 | 8.1 |
| 91 | 09/20/10 | -2.9 | 5.8 | -0.27 | 1.0 | 0.9 | 0.9 | -1.1 | 9.9 | -0.7 | 2.8 | -0.5 | 5.1 |
| | 12/22/10 | -1.0 | 6.6 | 0.403 | 1.2 | 0.2 | 1.1 | -3.5 | 11.3 | 0.3 | 3.2 | 3.1 | 6.3 |
| 92 | 09/21/10 | -6.5 | 7.9 | -0.04 | 1.4 | -0.9 | 1.2 | -12.6 | 13.3 | -4.0 | 4.0 | 0.5 | 8.4 |
| | 12/15/10 | 2.6 | 6.1 | -3.44 | 4.3 | -2.8 | 4.2 | -5.5 | 15.3 | 3.1 | 6.2 | 3.6 | 14.8 |

TABLE 11
DEER MEAT
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) | Co-60 | (+/-) | Zn-65 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 93 | 12/09/2010 | 0.169 | 0.181 | 2.46 | 0.482 | 0.014 | 0.017 | -0.013 | 0.021 | 0.011 | 0.047 | -0.004 | 0.019 | -0.021 | 0.038 |
| 94 | 11/29/2010 | -0.109 | 0.115 | 3.38 | 0.378 | 0.001 | 0.011 | -0.007 | 0.014 | -0.005 | 0.026 | -0.008 | 0.014 | -0.009 | 0.032 |

| LOCATION | COLLECTION DATE | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) | Ag-110M | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 93 | 12/09/2010 | 0.021 | 0.020 | -0.019 | 0.034 | -0.003 | 0.024 | 0.073 | 0.148 | -0.003 | 0.019 | 0.058 | 0.170 | -0.033 | 0.019 |
| 94 | 11/29/2010 | 0.019 | 0.014 | 0.006 | 0.022 | 0.007 | 0.014 | 0.084 | 0.115 | 0.001 | 0.014 | -0.001 | 0.029 | 0.005 | 0.015 |

| LOCATION | COLLECTION DATE | Cs-137 | (+/-) | Ba-140 | (+/-) | La-140 | (+/-) | Ce-141 | (+/-) | Ce-144 | (+/-) | Ra-226 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 93 | 12/09/2010 | 0.194 | 0.042 | 0.187 | 0.233 | 0.008 | 0.068 | 0.022 | 0.036 | -0.02 | 0.10 | 0.13 | 0.48 | 0.01 | 0.06 |
| 94 | 11/29/2010 | 0.356 | 0.035 | 0.015 | 0.070 | 0.005 | 0.023 | -0.010 | 0.020 | -0.04 | 0.07 | 0.28 | 0.30 | -0.01 | 0.05 |

TABLE 12
FRUITS & VEGETABLES
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | TYPE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) | Co-60 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 06/15/10 | Lettuce | 0.030 | 0.110 | 2.130 | 0.330 | -0.110 | 0.110 | -0.009 | 0.011 | 0.009 | 0.011 | 0.011 | 0.023 | 0.005 | 0.013 |
| 25 | 06/15/10 | Strawberries | 0.020 | 0.047 | 1.120 | 0.110 | 0.018 | 0.057 | 0.001 | 0.004 | -0.007 | 0.005 | 0.001 | 0.012 | 0.004 | 0.005 |
| 25 | 07/13/10 | Swiss Chard/Basil | 0.147 | 0.127 | 5.470 | 0.482 | 0.063 | 0.110 | -0.001 | 0.012 | 0.000 | 0.014 | -0.008 | 0.031 | -0.001 | 0.012 |
| 25 | 07/20/10 | Bluberries | 0.055 | 0.040 | 0.578 | 0.082 | 0.000 | 0.021 | 0.001 | 0.002 | 0.003 | 0.002 | 0.001 | 0.005 | 0.001 | 0.002 |
| 25 | 08/18/10 | Kale | 0.113 | 0.110 | 5.420 | 0.446 | -0.004 | 0.112 | -0.007 | 0.011 | -0.004 | 0.012 | -0.010 | 0.029 | -0.109 | 0.012 |
| 25 | 09/08/10 | Collard Greens | 0.095 | 0.064 | 4.080 | 0.308 | -0.036 | 0.078 | 0.001 | 0.006 | -0.001 | 0.007 | -0.015 | 0.014 | -0.001 | 0.006 |
| 25 | 09/09/10 | Apples | 0.029 | 0.059 | 1.110 | 0.176 | 0.013 | 0.073 | 0.001 | 0.006 | -0.003 | 0.006 | -0.002 | 0.015 | 0.007 | 0.006 |
| 26C | 06/23/10 | Lettuce | 0.080 | 0.150 | 2.440 | 0.530 | 0.110 | 0.130 | 0.004 | 0.015 | -0.002 | 0.018 | 0.019 | 0.038 | 0.006 | 0.016 |
| 26C | 06/23/10 | Cherries | -0.070 | 0.110 | 1.430 | 0.330 | -0.110 | 0.120 | -0.004 | 0.012 | 0.007 | 0.013 | 0.005 | 0.028 | 0.001 | 0.013 |
| 26C | 07/24/10 | Blueberries | 0.051 | 0.030 | 0.621 | 0.081 | -0.025 | 0.039 | -0.001 | 0.003 | 0.002 | 0.003 | -0.002 | 0.006 | -0.001 | 0.002 |
| 26C | 08/18/10 | Lettuce | 0.085 | 0.108 | 3.990 | 0.313 | -0.034 | 0.122 | 0.007 | 0.011 | 0.001 | 0.011 | 0.009 | 0.024 | -0.007 | 0.009 |

| LOCATION | COLLECTION DATE | TYPE | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 06/15/10 | Lettuce | -0.032 | 0.030 | -0.007 | 0.015 | 0.005 | 0.021 | 0.003 | 0.012 | 0.028 | 0.084 | 0.008 | 0.029 | 0.019 | 0.034 |
| 25 | 06/15/10 | Strawberries | -0.003 | 0.010 | 0.004 | 0.006 | 0.010 | 0.009 | 0.001 | 0.006 | -0.032 | 0.040 | -0.013 | 0.012 | 0.009 | 0.028 |
| 25 | 07/13/10 | Swiss Chard/Basil | -0.012 | 0.035 | 0.002 | 0.012 | 0.004 | 0.021 | -0.003 | 0.013 | -0.106 | 0.110 | 0.020 | 0.033 | 0.009 | 0.022 |
| 25 | 07/20/10 | Bluberries | -0.001 | 0.005 | -0.001 | 0.003 | 0.002 | 0.004 | -0.001 | 0.002 | 0.009 | 0.021 | 0.000 | 0.006 | 0.000 | 0.004 |
| 25 | 08/18/10 | Kale | -0.034 | 0.027 | 0.006 | 0.010 | 0.006 | 0.019 | 0.002 | 0.013 | -0.075 | 0.094 | 0.016 | 0.029 | 0.015 | 0.031 |
| 25 | 09/08/10 | Collard Greens | -0.006 | 0.014 | -0.004 | 0.006 | 0.001 | 0.011 | 0.009 | 0.007 | 0.028 | 0.051 | -0.009 | 0.016 | 0.002 | 0.034 |
| 25 | 09/09/10 | Apples | -0.026 | 0.013 | 0.002 | 0.007 | -0.003 | 0.012 | -0.001 | 0.007 | 0.012 | 0.052 | -0.014 | 0.016 | -0.004 | 0.031 |
| 26C | 06/23/10 | Lettuce | -0.024 | 0.046 | -0.011 | 0.015 | -0.004 | 0.024 | -0.009 | 0.015 | 0.100 | 0.150 | 0.009 | 0.042 | 0.000 | 0.025 |
| 26C | 06/23/10 | Cherries | 0.004 | 0.027 | 0.004 | 0.016 | -0.015 | 0.025 | 0.000 | 0.014 | -0.080 | 0.130 | 0.024 | 0.034 | 0.011 | 0.019 |
| 26C | 07/24/10 | Blueberries | -0.009 | 0.006 | -0.001 | 0.003 | 0.001 | 0.005 | -0.003 | 0.004 | -0.004 | 0.025 | -0.005 | 0.008 | 0.000 | 0.020 |
| 26C | 08/18/10 | Lettuce | 0.018 | 0.024 | 0.002 | 0.011 | -0.005 | 0.019 | 0.007 | 0.013 | 0.055 | 0.104 | 0.028 | 0.029 | -0.003 | 0.037 |

TABLE 12
FRUITS & VEGETABLES
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | TYPE | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | La-140 | (+/-) | Ce-141 | (+/-) | Ce-144 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 06/15/10 | Lettuce | 0.002 | 0.008 | 0.005 | 0.012 | -0.014 | 0.028 | -0.014 | 0.028 | -0.005 | 0.015 | 0.037 | 0.051 | -0.015 | 0.043 |
| 25 | 06/15/10 | Strawberries | 0.002 | 0.004 | 0.001 | 0.004 | 0.003 | 0.018 | 0.003 | 0.018 | 0.000 | 0.007 | -0.008 | 0.021 | 0.002 | 0.023 |
| 25 | 07/13/10 | Swiss Chard/Basil | -0.002 | 0.015 | -0.008 | 0.013 | -0.007 | 0.066 | -0.012 | 0.019 | 0.009 | 0.020 | 0.014 | 0.081 | 0.018 | 0.054 |
| 25 | 07/20/10 | Bluberries | 0.001 | 0.002 | 0.001 | 0.002 | 0.004 | 0.012 | 0.001 | 0.004 | -0.002 | 0.004 | -0.001 | 0.015 | -0.003 | 0.010 |
| 25 | 08/18/10 | Kale | 0.007 | 0.011 | -0.037 | 0.012 | -0.017 | 0.065 | -0.008 | 0.014 | 0.008 | 0.019 | -0.014 | 0.064 | -0.007 | 0.042 |
| 25 | 09/08/10 | Collard Greens | 0.002 | 0.005 | 0.006 | 0.006 | -0.006 | 0.059 | 0.002 | 0.016 | 0.002 | 0.015 | 0.019 | 0.045 | 0.019 | 0.027 |
| 25 | 09/09/10 | Apples | 0.001 | 0.006 | -0.002 | 0.006 | -0.035 | 0.056 | -0.002 | 0.015 | -0.006 | 0.012 | -0.014 | 0.037 | 0.007 | 0.034 |
| 26C | 06/23/10 | Lettuce | -0.003 | 0.013 | -0.009 | 0.018 | 0.008 | 0.029 | 0.008 | 0.029 | -0.023 | 0.020 | -0.019 | 0.064 | 0.010 | 0.069 |
| 26C | 06/23/10 | Cherries | -0.012 | 0.009 | 0.001 | 0.013 | -0.002 | 0.019 | -0.002 | 0.019 | -0.013 | 0.018 | -0.041 | 0.066 | 0.017 | 0.051 |
| 26C | 07/24/10 | Blueberries | -0.001 | 0.003 | 0.002 | 0.003 | -0.011 | 0.032 | 0.000 | 0.007 | -0.004 | 0.007 | -0.016 | 0.021 | -0.004 | 0.012 |
| 26C | 08/18/10 | Lettuce | 0.009 | 0.013 | 0.007 | 0.011 | -0.002 | 0.073 | 0.006 | 0.019 | 0.007 | 0.024 | -0.078 | 0.082 | 0.003 | 0.039 |

TABLE 13
BROADLEAF VEGETATION
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Be-7 | (/-) | K-40 | (/-) | Cr-51 | (/-) | Mn-54 | (/-) | Co-58 | (/-) | Fe-59 | (/-) | Co-60 | (/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 04/21/10 | 0.91 | 0.27 | 4.59 | 0.67 | -0.01 | 0.18 | -0.007 | 0.019 | -0.006 | 0.019 | 0.018 | 0.042 | -0.004 | 0.020 |
| 1 | 05/24/10 | 0.46 | 0.22 | 3.56 | 0.74 | 0.14 | 0.19 | 0.010 | 0.021 | 0.003 | 0.024 | -0.009 | 0.061 | 0.003 | 0.030 |
| 1 | 06/08/10 | 0.44 | 0.14 | 3.86 | 0.32 | -0.01 | 0.12 | 0.000 | 0.010 | 0.006 | 0.011 | 0.001 | 0.027 | -0.005 | 0.011 |
| 1 | 07/13/10 | 0.83 | 0.16 | 3.17 | 0.35 | -0.06 | 0.09 | 0.002 | 0.009 | 0.000 | 0.009 | 0.001 | 0.020 | 0.010 | 0.009 |
| 1 | 08/11/10 | 1.05 | 0.16 | 3.43 | 0.26 | 0.01 | 0.08 | 0.003 | 0.006 | -0.006 | 0.007 | 0.001 | 0.015 | -0.002 | 0.007 |
| 1 | 09/14/10 | 1.83 | 0.12 | 3.59 | 0.18 | 0.00 | 0.05 | 0.004 | 0.004 | 0.001 | 0.004 | -0.003 | 0.010 | 0.001 | 0.004 |
| 1 | 10/14/10 | 1.59 | 0.18 | 3.02 | 0.29 | 0.07 | 0.10 | 0.004 | 0.007 | -0.001 | 0.009 | -0.011 | 0.019 | 0.008 | 0.008 |
| 10 | 04/21/10 | 0.10 | 0.12 | 4.97 | 0.82 | -0.06 | 0.14 | -0.013 | 0.018 | 0.000 | 0.020 | -0.016 | 0.044 | 0.006 | 0.022 |
| 10 | 05/24/10 | 0.47 | 0.41 | 4.40 | 1.10 | -0.19 | 0.24 | 0.006 | 0.036 | -0.018 | 0.026 | -0.020 | 0.056 | 0.018 | 0.033 |
| 10 | 06/08/10 | 0.14 | 0.34 | 4.28 | 0.82 | 0.04 | 0.29 | -0.007 | 0.027 | 0.022 | 0.029 | 0.037 | 0.073 | 0.009 | 0.018 |
| 10 | 07/13/10 | 0.55 | 0.15 | 3.94 | 0.30 | 0.04 | 0.12 | 0.012 | 0.011 | -0.003 | 0.012 | -0.019 | 0.023 | 0.002 | 0.011 |
| 10 | 08/11/10 | 0.53 | 0.10 | 3.91 | 0.20 | 0.04 | 0.07 | 0.002 | 0.006 | -0.003 | 0.007 | 0.008 | 0.016 | -0.156 | 0.010 |
| 10 | 09/14/10 | 1.24 | 0.12 | 4.10 | 0.18 | -0.02 | 0.07 | 0.002 | 0.005 | 0.000 | 0.006 | 0.005 | 0.013 | 0.001 | 0.006 |
| 10 | 10/14/10 | 1.15 | 0.14 | 3.88 | 0.27 | 0.01 | 0.09 | -0.005 | 0.008 | -0.002 | 0.008 | -0.001 | 0.019 | 0.003 | 0.009 |
| 17 | 04/21/10 | 0.69 | 0.29 | 3.90 | 0.73 | -0.01 | 0.17 | 0.006 | 0.018 | 0.002 | 0.020 | 0.026 | 0.050 | -0.006 | 0.020 |
| 17 | 05/24/10 | 0.57 | 0.25 | 3.40 | 0.55 | -0.16 | 0.19 | -0.005 | 0.018 | -0.021 | 0.020 | 0.004 | 0.042 | 0.005 | 0.024 |
| 17 | 06/08/10 | 0.44 | 0.19 | 3.86 | 0.43 | 0.01 | 0.15 | 0.005 | 0.015 | 0.001 | 0.016 | 0.034 | 0.039 | -0.003 | 0.018 |
| 17 | 07/13/10 | 0.95 | 0.16 | 3.39 | 0.29 | 0.02 | 0.07 | 0.000 | 0.007 | -0.002 | 0.007 | -0.0001 | 0.015 | -0.001 | 0.006 |
| 17 | 08/11/10 | 0.76 | 0.10 | 3.49 | 0.19 | 0.02 | 0.07 | -0.003 | 0.005 | -0.003 | 0.006 | 0.003 | 0.014 | 0.001 | 0.005 |
| 17 | 09/14/10 | 2.55 | 0.15 | 4.49 | 0.20 | 0.06 | 0.07 | 0.000 | 0.005 | -0.004 | 0.005 | -0.003 | 0.012 | 0.002 | 0.005 |
| 17 | 10/14/10 | 1.44 | 0.17 | 2.55 | 0.27 | -0.05 | 0.10 | 0.003 | 0.009 | 0.001 | 0.009 | 0.002 | 0.021 | -0.001 | 0.009 |

TABLE 13
BROADLEAF VEGETATION
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Zn-65 | (/-) | Nb-95 | (/-) | Zr-95 | (/-) | Ru-103 | (/-) | Ru-106 | (/-) | Sb-125 | (/-) | I-131 | (/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 04/21/10 | -0.013 | 0.049 | 0.027 | 0.025 | -0.003 | 0.033 | -0.018 | 0.022 | -0.09 | 0.16 | -0.018 | 0.050 | -0.005 | 0.002 |
| 1 | 05/24/10 | -0.011 | 0.069 | -0.012 | 0.028 | -0.024 | 0.039 | 0.000 | 0.023 | -0.01 | 0.19 | 0.034 | 0.052 | 0.027 | 0.031 |
| 1 | 06/08/10 | -0.002 | 0.024 | -0.001 | 0.016 | 0.018 | 0.022 | -0.004 | 0.014 | 0.03 | 0.094 | -0.008 | 0.028 | 0.001 | 0.023 |
| 1 | 07/13/10 | -0.015 | 0.020 | 0.003 | 0.010 | -0.005 | 0.017 | -0.001 | 0.009 | 0.00 | 0.09 | -0.016 | 0.025 | 0.000 | 0.025 |
| 1 | 08/11/10 | -0.001 | 0.013 | -0.003 | 0.007 | 0.001 | 0.012 | -0.001 | 0.008 | 0.01 | 0.06 | -0.011 | 0.017 | -0.015 | 0.031 |
| 1 | 09/14/10 | 0.006 | 0.009 | -0.005 | 0.004 | 0.002 | 0.008 | 0.003 | 0.004 | 0.00 | 0.03 | 0.003 | 0.010 | -0.007 | 0.026 |
| 1 | 10/14/10 | 0.004 | 0.017 | 0.014 | 0.009 | -0.004 | 0.015 | 0.002 | 0.010 | 0.00 | 0.07 | 0.002 | 0.021 | -0.038 | 0.037 |
| 10 | 04/21/10 | 0.000 | 0.061 | 0.021 | 0.024 | 0.006 | 0.033 | 0.003 | 0.018 | -0.15 | 0.18 | 0.010 | 0.047 | -0.003 | 0.001 |
| 10 | 05/24/10 | -0.036 | 0.092 | -0.001 | 0.041 | 0.003 | 0.059 | 0.016 | 0.026 | -0.09 | 0.31 | 0.012 | 0.074 | -0.004 | 0.001 |
| 10 | 06/08/10 | -0.010 | 0.064 | 0.004 | 0.043 | 0.000 | 0.059 | 0.004 | 0.033 | -0.01 | 0.24 | -0.002 | 0.063 | -0.006 | 0.015 |
| 10 | 07/13/10 | 0.024 | 0.026 | -0.009 | 0.012 | 0.013 | 0.020 | 0.002 | 0.013 | 0.01 | 0.11 | -0.011 | 0.033 | -0.001 | 0.025 |
| 10 | 08/11/10 | 0.000 | 0.015 | -0.002 | 0.007 | -0.004 | 0.012 | 0.008 | 0.008 | -0.03 | 0.05 | 0.004 | 0.017 | -0.018 | 0.026 |
| 10 | 09/14/10 | 0.003 | 0.012 | 0.005 | 0.006 | 0.002 | 0.010 | 0.000 | 0.006 | -0.01 | 0.04 | -0.009 | 0.013 | -0.004 | 0.032 |
| 10 | 10/14/10 | 0.002 | 0.019 | 0.006 | 0.010 | 0.005 | 0.015 | -0.001 | 0.010 | 0.02 | 0.07 | -0.003 | 0.019 | 0.017 | 0.036 |
| 17 | 04/21/10 | -0.015 | 0.046 | 0.009 | 0.025 | 0.002 | 0.032 | -0.005 | 0.019 | -0.17 | 0.20 | -0.010 | 0.043 | -0.003 | 0.001 |
| 17 | 05/24/10 | -0.055 | 0.048 | -0.008 | 0.029 | -0.002 | 0.043 | -0.001 | 0.021 | -0.04 | 0.17 | 0.024 | 0.046 | -0.004 | 0.002 |
| 17 | 06/08/10 | -0.008 | 0.035 | 0.001 | 0.022 | -0.001 | 0.029 | 0.015 | 0.017 | -0.05 | 0.13 | 0.001 | 0.034 | -0.006 | 0.015 |
| 17 | 07/13/10 | -0.010 | 0.017 | -0.003 | 0.008 | -0.001 | 0.013 | -0.002 | 0.008 | -0.005 | 0.07 | -0.009 | 0.020 | 0.017 | 0.025 |
| 17 | 08/11/10 | -0.006 | 0.014 | 0.002 | 0.007 | -0.007 | 0.011 | 0.000 | 0.007 | -0.03 | 0.05 | -0.002 | 0.015 | 0.000 | 0.032 |
| 17 | 09/14/10 | -0.005 | 0.012 | 0.000 | 0.006 | 0.005 | 0.010 | -0.007 | 0.007 | 0.04 | 0.04 | -0.005 | 0.014 | 0.006 | 0.035 |
| 17 | 10/14/10 | 0.009 | 0.022 | 0.011 | 0.011 | 0.010 | 0.018 | 0.004 | 0.011 | 0.00 | 0.08 | 0.000 | 0.024 | -0.019 | 0.038 |

TABLE 13
BROADLEAF VEGETATION
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Cs-134 | (/-) | Cs-137 | (/-) | Ba-140 | (/-) | La-140 | (/-) | Ce-141 | (/-) | Ce-144 | (/-) | AcTH-228 | (/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 04/21/10 | -0.008 | 0.014 | 0.007 | 0.017 | 0.001 | 0.043 | 0.001 | 0.043 | -0.004 | 0.025 | -0.048 | 0.077 | 0.060 | 0.081 |
| 1 | 05/24/10 | -0.006 | 0.021 | 0.014 | 0.025 | -0.006 | 0.067 | -0.006 | 0.067 | 0.009 | 0.027 | 0.033 | 0.083 | 0.070 | 0.100 |
| 1 | 06/08/10 | -0.002 | 0.010 | 0.009 | 0.013 | -0.003 | 0.038 | -0.003 | 0.038 | -0.009 | 0.018 | 0.026 | 0.048 | 0.041 | 0.056 |
| 1 | 07/13/10 | -0.013 | 0.010 | -0.003 | 0.010 | 0.024 | 0.046 | 0.002 | 0.013 | -0.004 | 0.015 | -0.013 | 0.058 | 0.172 | 0.050 |
| 1 | 08/11/10 | -0.001 | 0.006 | -0.004 | 0.008 | 0.016 | 0.063 | -0.001 | 0.015 | -0.015 | 0.017 | -0.038 | 0.050 | 0.084 | 0.056 |
| 1 | 09/14/10 | 0.002 | 0.004 | 0.002 | 0.004 | 0.012 | 0.038 | -0.001 | 0.011 | -0.009 | 0.008 | 0.010 | 0.023 | 0.037 | 0.041 |
| 1 | 10/14/10 | 0.005 | 0.009 | 0.020 | 0.012 | -0.020 | 0.068 | -0.005 | 0.020 | 0.004 | 0.018 | -0.022 | 0.061 | 0.020 | 0.031 |
| 10 | 04/21/10 | 0.005 | 0.014 | 0.016 | 0.022 | -0.004 | 0.048 | -0.004 | 0.048 | 0.000 | 0.021 | -0.065 | 0.069 | 0.068 | 0.085 |
| 10 | 05/24/10 | -0.005 | 0.019 | -0.012 | 0.029 | -0.032 | 0.078 | -0.032 | 0.078 | -0.027 | 0.037 | -0.007 | 0.096 | 0.000 | 0.130 |
| 10 | 06/08/10 | -0.009 | 0.017 | 0.016 | 0.023 | 0.030 | 0.140 | 0.030 | 0.140 | 0.009 | 0.043 | -0.040 | 0.100 | 0.080 | 0.100 |
| 10 | 07/13/10 | 0.004 | 0.012 | 0.015 | 0.013 | -0.051 | 0.058 | 0.015 | 0.016 | 0.019 | 0.024 | -0.058 | 0.095 | 0.083 | 0.055 |
| 10 | 08/11/10 | -0.001 | 0.006 | -0.048 | 0.009 | -0.010 | 0.058 | -0.015 | 0.016 | 0.001 | 0.013 | -0.006 | 0.038 | 0.024 | 0.038 |
| 10 | 09/14/10 | 0.002 | 0.005 | 0.005 | 0.005 | 0.054 | 0.054 | 0.000 | 0.014 | 0.007 | 0.011 | -0.0002 | 0.032 | 0.051 | 0.042 |
| 10 | 10/14/10 | -0.005 | 0.009 | 0.008 | 0.009 | 0.054 | 0.066 | -0.008 | 0.017 | 0.010 | 0.016 | 0.029 | 0.051 | 0.104 | 0.046 |
| 17 | 04/21/10 | -0.011 | 0.014 | -0.006 | 0.024 | -0.064 | 0.043 | -0.064 | 0.043 | 0.011 | 0.022 | -0.038 | 0.068 | -0.051 | 0.086 |
| 17 | 05/24/10 | -0.013 | 0.017 | 0.000 | 0.019 | 0.001 | 0.046 | 0.001 | 0.046 | -0.028 | 0.029 | 0.036 | 0.084 | 0.036 | 0.078 |
| 17 | 06/08/10 | 0.003 | 0.011 | 0.018 | 0.017 | 0.032 | 0.061 | 0.032 | 0.061 | 0.001 | 0.024 | 0.007 | 0.049 | 0.163 | 0.075 |
| 17 | 07/13/10 | 0.000 | 0.009 | 0.004 | 0.008 | -0.026 | 0.038 | -0.007 | 0.009 | 0.004 | 0.014 | 0.036 | 0.055 | 0.100 | 0.066 |
| 17 | 08/11/10 | 0.003 | 0.006 | 0.026 | 0.010 | -0.015 | 0.052 | -0.006 | 0.015 | 0.005 | 0.013 | 0.001 | 0.034 | 0.003 | 0.041 |
| 17 | 09/14/10 | 0.002 | 0.005 | 0.053 | 0.010 | 0.011 | 0.056 | -0.026 | 0.016 | -0.004 | 0.012 | -0.001 | 0.033 | 0.090 | 0.047 |
| 17 | 10/14/10 | -0.003 | 0.010 | 0.027 | 0.014 | -0.038 | 0.075 | 0.006 | 0.022 | 0.017 | 0.017 | -0.005 | 0.054 | 0.080 | 0.071 |

TABLE 14
SEA WATER
(pCi/l)

| LOCATION | | COLLECTION DATE | H-3 | (+/-) | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | G | 01/26/10 | 300 | 160 | 2 | 36 | 269 | 80 | -41 | 35 | 0.0 | 3.4 | -4.8 | 4.0 | -0.1 | 7.6 |
| | G | 02/23/10 | 1070 | 170 | 10 | 25 | 316 | 58 | -12 | 28 | 0.2 | 2.9 | 0.6 | 2.6 | -2.4 | 5.5 |
| | | 03/30/10 | 330 | 160 | 4 | 25 | 288 | 68 | -19 | 27 | -3.7 | 2.8 | 0.1 | 3.0 | -4.4 | 7.1 |
| | | 04/27/10 | 410 | 160 | -10 | 34 | 309 | 79 | -9 | 35 | 0.0 | 3.9 | 0.6 | 3.4 | 2.2 | 7.6 |
| | | 05/25/10 | 230 | 160 | 5 | 17 | 278 | 41 | 0 | 18 | -0.7 | 1.9 | 0.1 | 2.1 | -1.4 | 4.1 |
| | | 06/29/10 | 40 | 150 | 6 | 20 | 256 | 59 | -1 | 21 | 1.8 | 2.5 | -1.2 | 2.4 | 2.4 | 6.5 |
| | | 07/29/10 | 159 | 181 | -6 | 9 | 327 | 40 | -10 | 13 | 0.4 | 0.7 | -0.1 | 0.8 | -2.1 | 2.0 |
| | | 08/31/10 | 59 | 179 | 11 | 11 | 273 | 32 | 1 | 15 | -0.3 | 1.0 | 0.7 | 1.1 | 0.2 | 2.7 |
| | | 09/28/10 | 260 | 205 | -4 | 25 | 251 | 71 | 17 | 28 | -1.0 | 2.7 | -0.2 | 2.7 | 1.9 | 5.7 |
| | | 10/26/10 | 664 | 170 | -15 | 22 | 266 | 55 | 18 | 25 | 0.6 | 2.7 | 1.4 | 2.4 | 3.9 | 5.4 |
| | | 11/30/10 | 944 | 184 | -4 | 23 | 306 | 71 | -8 | 25 | -2.0 | 2.4 | 0.8 | 2.4 | -4.0 | 5.3 |
| | | 12/28/10 | 773 | 169 | -13 | 19 | 314 | 53 | 6 | 22 | -0.9 | 1.8 | -0.3 | 2.0 | -1.6 | 4.3 |
| 37C | | 02/23/10 | 10 | 150 | 8 | 22 | 243 | 77 | 14 | 24 | -1.5 | 2.9 | 0.2 | 3.1 | 8.8 | 7.6 |
| | | 06/01/10 | -20 | 150 | 21 | 27 | 291 | 60 | 11 | 30 | -1.6 | 2.9 | 0.9 | 2.7 | -3.6 | 6.2 |
| | | 08/31/10 | -47 | 101 | 4 | 4 | 283 | 27 | 3 | 4 | 0.1 | 0.4 | 0.2 | 0.4 | -0.2 | 0.8 |
| | | 11/30/10 | 78 | 140 | 6 | 14 | 321 | 82 | 5 | 18 | -0.7 | 1.4 | 1.4 | 1.7 | 0.6 | 3.5 |

TABLE 14
SEA WATER
(pCi/l)

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) | Sb-125 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 12/29/09 | 2.7 | 4.4 | -6.0 | 10.0 | 4.1 | 4.5 | 2.3 | 8.1 | -2.3 | 4.7 | 2 | 42 | 0.0 | 10.0 |
| | 01/26/10 | 0.0 | 4.7 | 13.0 | 17.0 | -2.8 | 4.7 | -6.5 | 6.8 | -2.7 | 4.3 | -3 | 32 | 0.3 | 9.5 |
| | 02/23/10 | -0.6 | 3.1 | -1.5 | 5.5 | 0.3 | 2.9 | -0.2 | 4.4 | -1.6 | 3.2 | 13 | 24 | -0.3 | 7.5 |
| | 03/30/10 | -0.5 | 3.7 | -6.5 | 6.8 | 0.9 | 3.4 | 0.3 | 6.1 | -0.9 | 3.2 | -2 | 25 | -3.1 | 7.0 |
| | 04/27/10 | -1.7 | 3.9 | -2.8 | 7.2 | -1.0 | 4.1 | -1.8 | 6.4 | -3.5 | 4.5 | -13 | 39 | -1.0 | 9.0 |
| | 05/25/10 | 0.9 | 1.9 | -2.4 | 4.0 | -0.7 | 2.4 | -2.4 | 3.6 | -0.6 | 2.3 | -5 | 16 | 1.4 | 4.9 |
| | 06/29/10 | 0.2 | 3.0 | -6.5 | 6.9 | -0.5 | 2.9 | 1.1 | 4.4 | -2.7 | 2.7 | -18 | 26 | -1.2 | 6.4 |
| | 06/29/10 | 0.0 | 0.7 | 1.0 | 1.5 | 0.4 | 0.9 | 0.3 | 1.6 | 0.4 | 1.2 | 0 | 6 | 2.0 | 2.2 |
| | 08/03/10 | -0.4 | 1.0 | 0.0 | 2.4 | 0.7 | 1.2 | 1.9 | 2.0 | -0.6 | 1.4 | 0 | 9 | -2.7 | 2.9 |
| | 09/07/10 | 0.6 | 2.9 | -3.9 | 6.5 | 0.1 | 2.7 | -0.1 | 4.9 | -2.4 | 3.0 | 7 | 23 | 1.3 | 7.5 |
| | 09/28/10 | 1.5 | 2.5 | -7.9 | 5.5 | 2.4 | 2.8 | 4.8 | 4.9 | -1.2 | 2.8 | 10 | 23 | -1.8 | 7.1 |
| | 10/26/10 | -0.6 | 2.8 | 1.2 | 6.2 | 2.2 | 2.6 | 0.5 | 4.4 | -1.6 | 2.9 | 4 | 24 | 0.6 | 7.5 |
| | 11/30/10 | 0.7 | 1.9 | -1.3 | 4.9 | 2.8 | 2.3 | 0.0 | 3.4 | -1.4 | 2.4 | -8 | 17 | 3.2 | 5.5 |
| 37C | 02/23/10 | 1.5 | 3.7 | 0.9 | 7.7 | -0.2 | 3.2 | 2.9 | 5.6 | -2.4 | 3.2 | -38 | 29 | 2.0 | 7.2 |
| | 06/01/10 | -0.1 | 2.8 | -0.6 | 5.8 | 2.2 | 3.5 | -1.3 | 4.8 | -3.6 | 3.7 | -11 | 29 | 4.1 | 7.4 |
| | 08/31/10 | 0.3 | 0.4 | -0.1 | 0.7 | 0.1 | 0.4 | 0.0 | 0.6 | -0.1 | 0.4 | -1 | 3 | -0.3 | 1.0 |
| | 11/30/10 | -1.5 | 1.6 | 2.0 | 2.7 | 0.2 | 2.0 | 0.8 | 2.9 | -0.8 | 1.9 | -3 | 15 | 1.5 | 5.5 |

TABLE 14
SEA WATER
(pCi/l)

| LOCATION | COLLECTION DATE | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | Ba-140 | (+/-) | La-140 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 01/26/10 | -0.3 | 6.9 | 2.3 | 2.7 | -2.9 | 3.5 | -0.8 | 6.5 | -0.8 | 6.5 | 7.0 | 15.0 |
| | 02/23/10 | 1.0 | 6.1 | -0.3 | 2.0 | 1.3 | 2.9 | 2.4 | 4.8 | 2.4 | 4.8 | -8.0 | 10.0 |
| | 03/30/10 | 0.3 | 7.0 | -0.6 | 2.3 | -1.3 | 3.9 | 2.2 | 8.2 | 2.2 | 8.2 | 13.0 | 14.0 |
| | 04/27/10 | 0.0 | 7.0 | 0.7 | 2.9 | -2.4 | 3.8 | 2.9 | 6.7 | 2.9 | 6.7 | -6.0 | 15.0 |
| | 05/25/10 | 0.3 | 5.5 | 1.1 | 1.6 | 0.5 | 1.7 | 0.0 | 4.5 | 0.0 | 4.5 | 0.2 | 8.5 |
| | 06/29/10 | -4.6 | 5.9 | 1.0 | 2.2 | -0.4 | 2.6 | -2.9 | 7.8 | -2.9 | 7.8 | 5.0 | 11.0 |
| | 06/29/10 | -2.1 | 9.1 | 0.0 | 0.7 | 0.0 | 0.7 | 2.6 | 11.1 | 1.3 | 3.9 | 1.2 | 8.7 |
| | 08/03/10 | -1.6 | 8.3 | -0.5 | 1.0 | -0.8 | 1.0 | -6.6 | 12.2 | -2.7 | 4.0 | 2.2 | 7.5 |
| | 09/07/10 | 1.3 | 5.7 | -1.4 | 2.6 | -1.4 | 3.1 | 4.4 | 13.7 | -2.8 | 4.6 | -8.7 | 10.7 |
| | 09/28/10 | 6.0 | 5.1 | -2.0 | 3.0 | -1.5 | 2.6 | 6.5 | 14.6 | -0.1 | 4.3 | -1.5 | 10.4 |
| | 10/26/10 | -0.5 | 4.9 | -0.2 | 2.9 | 0.6 | 2.9 | -6.2 | 13.1 | 2.4 | 3.2 | -8.4 | 9.3 |
| | 11/30/10 | -2.3 | 6.3 | 0.7 | 2.2 | -2.2 | 1.9 | -6.9 | 13.7 | 0.9 | 4.0 | 6.5 | 8.5 |
| 37C | 02/23/10 | 4.8 | 6.3 | -0.2 | 2.3 | -3.2 | 3.1 | 5.1 | 6.6 | 5.1 | 6.6 | 0.0 | 13.0 |
| | 06/01/10 | 8.3 | 7.9 | -2.0 | 2.0 | 0.1 | 3.1 | -1.7 | 6.0 | -1.7 | 6.0 | 3.0 | 11.0 |
| | 08/31/10 | 0.3 | 1.3 | -0.3 | 0.3 | 0.0 | 0.4 | -0.8 | 2.8 | -0.7 | 0.9 | -8.3 | 3.4 |
| | 11/30/10 | 1.1 | 3.6 | 0.4 | 1.9 | 1.0 | 2.1 | -0.3 | 8.9 | -0.5 | 1.7 | 8.3 | 10.2 |

TABLE 15
BOTTOM SEDIMENT
(pCi/g dry wt.)

| LOCATION | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 04/30/10 | -0.20 | 0.73 | 18.70 | 3.20 | -0.10 | 0.73 | 0.072 | 0.083 | 0.036 | 0.066 | 0.180 | 0.180 |
| 29 | 11/30/10 | 0.04 | 0.25 | 14.00 | 1.14 | 0.17 | 0.27 | 0.029 | 0.026 | 0.015 | 0.028 | -0.005 | 0.063 |
| 31 | 04/19/10 | -0.03 | 0.41 | 17.10 | 2.20 | 0.12 | 0.52 | 0.005 | 0.043 | 0.011 | 0.042 | 0.010 | 0.130 |
| 31 | 11/03/10 | 0.05 | 0.15 | 17.30 | 0.81 | -0.04 | 0.15 | 0.003 | 0.020 | -0.002 | 0.018 | -0.016 | 0.041 |
| 32 | 04/30/10 | -0.20 | 0.62 | 13.90 | 2.00 | -0.18 | 0.67 | -0.005 | 0.055 | 0.024 | 0.058 | 0.040 | 0.140 |
| 32 | 12/10/10 | 0.19 | 0.35 | 15.90 | 1.30 | -0.40 | 0.46 | -0.003 | 0.038 | -0.027 | 0.041 | -0.086 | 0.097 |
| 33 | 04/19/10 | 0.30 | 0.44 | 17.10 | 2.90 | 0.09 | 0.44 | 0.025 | 0.060 | 0.013 | 0.047 | -0.110 | 0.140 |
| 33 | 10/04/10 | 0.12 | 0.23 | 15.10 | 1.20 | -0.08 | 0.24 | 0.008 | 0.026 | -0.010 | 0.027 | 0.021 | 0.065 |
| 34 | 04/19/10 | 0.25 | 0.36 | 13.10 | 2.50 | -0.38 | 0.52 | 0.029 | 0.049 | -0.019 | 0.064 | 0.020 | 0.140 |
| 34 | 10/04/10 | -0.02 | 0.20 | 14.00 | 1.16 | 0.01 | 0.23 | -0.020 | 0.024 | -0.017 | 0.025 | -0.014 | 0.064 |
| 35X | 04/30/10 | 0.06 | 0.57 | 14.70 | 2.60 | 0.30 | 0.77 | -0.011 | 0.069 | -0.022 | 0.073 | 0.040 | 0.140 |
| 35X | 11/30/10 | -0.08 | 0.27 | 13.50 | 1.10 | -0.07 | 0.28 | 0.025 | 0.030 | -0.015 | 0.031 | 0.016 | 0.065 |
| 37C | 04/19/10 | 0.18 | 0.42 | 17.30 | 2.20 | -0.41 | 0.47 | 0.005 | 0.034 | -0.006 | 0.050 | -0.080 | 0.120 |
| 37C | 09/15/10 | 0.13 | 0.20 | 14.00 | 1.15 | -0.18 | 0.21 | -0.010 | 0.023 | -0.004 | 0.026 | 0.025 | 0.052 |
| 39X | 04/30/10 | -0.17 | 0.63 | 15.40 | 2.10 | -0.22 | 0.71 | 0.025 | 0.051 | -0.006 | 0.061 | -0.020 | 0.130 |
| 39X | 12/10/10 | -0.02 | 0.20 | 12.00 | 0.94 | -0.10 | 0.26 | 0.020 | 0.023 | 0.010 | 0.024 | 0.056 | 0.060 |
| 67X | 04/19/10 | 0.00 | 0.43 | 18.80 | 2.20 | -0.36 | 0.47 | 0.049 | 0.054 | -0.022 | 0.044 | -0.100 | 0.130 |
| 67X | 12/15/10 | 0.02 | 0.36 | 31.60 | 1.84 | 0.34 | 0.48 | 0.014 | 0.043 | -0.016 | 0.045 | 0.036 | 0.124 |
| 69X | 04/19/10 | -0.25 | 0.41 | 16.40 | 2.20 | -0.04 | 0.55 | 0.021 | 0.045 | -0.006 | 0.054 | -0.072 | 0.090 |
| 69X | 11/15/10 | 0.04 | 0.24 | 14.40 | 1.11 | 0.16 | 0.28 | 0.031 | 0.026 | 0.004 | 0.027 | 0.042 | 0.069 |

TABLE 15
BOTTOM SEDIMENT
(pCi/g dry wt.)

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 04/30/10 | -0.090 | 0.099 | 0.000 | 0.200 | 0.020 | 0.110 | -0.050 | 0.130 | 0.108 | 0.088 | 0.07 | 0.58 |
| 29 | 11/30/10 | 0.015 | 0.031 | -0.047 | 0.075 | 0.056 | 0.033 | 0.060 | 0.051 | 0.027 | 0.031 | 0.17 | 0.23 |
| 31 | 04/19/10 | -0.052 | 0.059 | 0.000 | 0.100 | -0.006 | 0.049 | 0.000 | 0.078 | 0.014 | 0.050 | 0.25 | 0.38 |
| 31 | 11/03/10 | -0.008 | 0.021 | -0.100 | 0.047 | 0.004 | 0.018 | 0.025 | 0.033 | -0.013 | 0.017 | -0.02 | 0.15 |
| 32 | 04/30/10 | -0.013 | 0.063 | -0.010 | 0.260 | -0.041 | 0.094 | -0.030 | 0.120 | -0.026 | 0.080 | 0.03 | 0.40 |
| 32 | 12/10/10 | 0.004 | 0.040 | -0.105 | 0.098 | 0.001 | 0.050 | 0.004 | 0.079 | -0.047 | 0.048 | 0.00 | 0.31 |
| 33 | 04/19/10 | -0.083 | 0.071 | 0.020 | 0.190 | -0.052 | 0.060 | 0.080 | 0.130 | 0.024 | 0.052 | 0.22 | 0.48 |
| 33 | 10/04/10 | 0.007 | 0.034 | -0.101 | 0.075 | 0.009 | 0.026 | -0.032 | 0.050 | 0.013 | 0.026 | 0.01 | 0.21 |
| 34 | 04/19/10 | -0.018 | 0.064 | 0.040 | 0.150 | -0.023 | 0.066 | -0.040 | 0.100 | 0.050 | 0.062 | -0.22 | 0.52 |
| 34 | 10/04/10 | -0.012 | 0.035 | -0.022 | 0.078 | 0.003 | 0.025 | 0.007 | 0.046 | 0.007 | 0.026 | 0.02 | 0.23 |
| 35X | 04/30/10 | 0.003 | 0.050 | -0.040 | 0.200 | 0.063 | 0.094 | 0.160 | 0.120 | 0.055 | 0.075 | 0.44 | 0.55 |
| 35X | 11/30/10 | 0.029 | 0.032 | 0.028 | 0.077 | 0.053 | 0.038 | -0.017 | 0.054 | 0.009 | 0.032 | 0.07 | 0.26 |
| 37C | 04/19/10 | 0.020 | 0.056 | -0.014 | 0.093 | -0.075 | 0.065 | -0.020 | 0.100 | 0.004 | 0.063 | -0.16 | 0.28 |
| 37C | 09/15/10 | 0.038 | 0.033 | -0.069 | 0.065 | 0.025 | 0.025 | -0.012 | 0.044 | -0.011 | 0.024 | 0.06 | 0.22 |
| 39X | 04/30/10 | 0.000 | 0.050 | -0.140 | 0.260 | -0.046 | 0.075 | 0.080 | 0.100 | -0.031 | 0.065 | 0.02 | 0.48 |
| 39X | 12/10/10 | 0.000 | 0.028 | -0.027 | 0.062 | 0.000 | 0.027 | 0.032 | 0.043 | -0.006 | 0.026 | 0.09 | 0.16 |
| 67X | 04/19/10 | 0.006 | 0.034 | -0.220 | 0.130 | 0.019 | 0.058 | 0.000 | 0.077 | -0.002 | 0.046 | 0.02 | 0.35 |
| 67X | 12/15/10 | 0.019 | 0.050 | -0.143 | 0.110 | 0.033 | 0.049 | 0.023 | 0.084 | 0.033 | 0.049 | -0.22 | 0.37 |
| 69X | 04/19/10 | 0.007 | 0.050 | -0.040 | 0.100 | -0.006 | 0.060 | 0.072 | 0.075 | -0.003 | 0.051 | 0.04 | 0.46 |
| 69X | 11/15/10 | -0.018 | 0.033 | -0.106 | 0.071 | 0.013 | 0.030 | 0.072 | 0.050 | -0.014 | 0.028 | 0.08 | 0.23 |

TABLE 15
BOTTOM SEDIMENT
(pCi/g dry wt.)

| LOCATION | COLLECTION DATE | Ag-110M | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 04/30/10 | 0.053 | 0.099 | 0.050 | 0.170 | -0.060 | 0.260 | 0.008 | 0.047 | 0.045 | 0.093 | 0.560 | 0.300 |
| 29 | 11/30/10 | -0.013 | 0.029 | 0.029 | 0.071 | -0.055 | 0.059 | 0.001 | 0.029 | 0.033 | 0.029 | 0.970 | 0.258 |
| 31 | 04/19/10 | 0.007 | 0.056 | 0.010 | 0.120 | -0.050 | 0.170 | 0.009 | 0.036 | -0.002 | 0.042 | 0.290 | 0.250 |
| 31 | 11/03/10 | -0.012 | 0.017 | -0.008 | 0.045 | 0.010 | 0.031 | 0.003 | 0.017 | 0.007 | 0.018 | 0.025 | 0.158 |
| 32 | 04/30/10 | -0.015 | 0.076 | -0.010 | 0.190 | -0.180 | 0.230 | 0.035 | 0.042 | 0.011 | 0.054 | 0.830 | 0.270 |
| 32 | 12/10/10 | -0.056 | 0.036 | -0.077 | 0.088 | -0.042 | 0.293 | 0.001 | 0.037 | 0.009 | 0.039 | 1.090 | 0.307 |
| 33 | 04/19/10 | -0.012 | 0.054 | -0.080 | 0.120 | 0.000 | 0.190 | -0.006 | 0.040 | -0.006 | 0.053 | 0.040 | 0.250 |
| 33 | 10/04/10 | -0.011 | 0.023 | 0.012 | 0.064 | 0.041 | 0.056 | -0.011 | 0.029 | -0.004 | 0.026 | 0.200 | 0.184 |
| 34 | 04/19/10 | 0.000 | 0.070 | -0.050 | 0.140 | 0.020 | 0.210 | -0.001 | 0.039 | -0.067 | 0.056 | 0.100 | 0.270 |
| 34 | 10/04/10 | 0.004 | 0.023 | -0.016 | 0.066 | 0.000 | 0.051 | 0.007 | 0.027 | 0.000 | 0.025 | 0.108 | 0.113 |
| 35X | 04/30/10 | 0.045 | 0.090 | 0.100 | 0.160 | 0.160 | 0.360 | 0.030 | 0.051 | 0.073 | 0.069 | -0.710 | 0.540 |
| 35X | 11/30/10 | -0.011 | 0.029 | 0.041 | 0.082 | 0.015 | 0.062 | -0.013 | 0.031 | 0.004 | 0.034 | 1.020 | 0.214 |
| 37C | 04/19/10 | 0.037 | 0.044 | 0.040 | 0.120 | 0.090 | 0.180 | 0.005 | 0.040 | -0.004 | 0.039 | 0.220 | 0.220 |
| 37C | 09/15/10 | -0.002 | 0.021 | 0.068 | 0.063 | 0.009 | 0.043 | 0.005 | 0.024 | 0.024 | 0.023 | 0.182 | 0.150 |
| 39X | 04/30/10 | -0.015 | 0.069 | -0.020 | 0.180 | 0.040 | 0.300 | 0.101 | 0.069 | 0.019 | 0.056 | 1.070 | 0.270 |
| 39X | 12/10/10 | -0.015 | 0.020 | -0.001 | 0.047 | -0.062 | 0.177 | 0.001 | 0.022 | 0.015 | 0.023 | 0.050 | 0.181 |
| 67X | 04/19/10 | -0.043 | 0.057 | 0.030 | 0.110 | -0.060 | 0.150 | 0.016 | 0.037 | -0.003 | 0.040 | 0.200 | 0.180 |
| 67X | 12/15/10 | -0.043 | 0.040 | 0.051 | 0.096 | -0.031 | 0.228 | 0.023 | 0.038 | 0.042 | 0.042 | 1.140 | 0.296 |
| 69X | 04/19/10 | 0.008 | 0.063 | -0.070 | 0.120 | 0.050 | 0.160 | 0.014 | 0.044 | -0.032 | 0.042 | 0.500 | 0.430 |
| 69X | 11/15/10 | -0.023 | 0.026 | 0.028 | 0.070 | 0.010 | 0.091 | -0.015 | 0.030 | -0.001 | 0.027 | 0.072 | 0.211 |

TABLE 16
AQUATIC FLORA - FUCUS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 02/22/10 | 0.070 | 0.280 | 4.12 | 0.90 | 0.330 | 0.270 | 0.018 | 0.025 | -0.016 | 0.028 | 0.042 | 0.073 |
| 29 | 04/21/10 | 0.270 | 0.250 | 5.47 | 0.97 | 0.190 | 0.200 | 0.010 | 0.029 | 0.014 | 0.026 | 0.000 | 0.057 |
| 29 | 08/31/10 | 0.097 | 0.042 | 6.31 | 0.13 | 0.023 | 0.035 | -0.001 | 0.003 | 0.001 | 0.003 | 0.004 | 0.008 |
| 29 | 11/29/10 | 0.167 | 0.125 | 7.46 | 0.55 | -0.087 | 0.111 | 0.001 | 0.012 | -0.007 | 0.013 | -0.006 | 0.029 |
| 32X | 02/23/10 | 0.380 | 0.260 | 5.60 | 1.00 | 0.250 | 0.250 | 0.014 | 0.032 | 0.009 | 0.028 | -0.021 | 0.059 |
| 32X | 04/20/10 | 0.160 | 0.190 | 7.06 | 0.79 | -0.110 | 0.180 | -0.015 | 0.023 | -0.013 | 0.020 | -0.005 | 0.053 |
| 32X | 08/30/10 | 0.072 | 0.038 | 7.98 | 0.16 | 0.024 | 0.029 | 0.001 | 0.002 | 0.001 | 0.003 | 0.005 | 0.007 |
| 32X | 11/15/10 | 0.044 | 0.094 | 8.51 | 0.54 | 0.033 | 0.099 | 0.008 | 0.012 | 0.002 | 0.011 | 0.018 | 0.035 |
| 33X | 03/01/10 | 0.140 | 0.210 | 7.10 | 1.10 | 0.070 | 0.190 | -0.013 | 0.027 | -0.007 | 0.028 | -0.026 | 0.075 |
| 33X | 04/19/10 | 0.041 | 0.087 | 5.60 | 0.32 | 0.000 | 0.086 | -0.008 | 0.009 | 0.002 | 0.010 | -0.014 | 0.023 |
| 33X | 08/18/10 | 0.060 | 0.111 | 6.02 | 0.44 | -0.055 | 0.109 | 0.003 | 0.013 | -0.010 | 0.014 | 0.003 | 0.034 |
| 33X | 11/15/10 | 0.161 | 0.097 | 6.32 | 0.43 | -0.012 | 0.104 | 0.003 | 0.010 | 0.001 | 0.011 | 0.005 | 0.026 |
| 35X | 02/22/10 | 0.060 | 0.220 | 5.26 | 0.96 | -0.050 | 0.200 | -0.013 | 0.028 | -0.008 | 0.026 | -0.018 | 0.066 |
| 35X | 04/20/10 | 0.090 | 0.210 | 6.49 | 0.80 | 0.090 | 0.190 | 0.004 | 0.025 | -0.003 | 0.024 | 0.046 | 0.044 |
| 35X | 08/31/10 | 0.060 | 0.034 | 7.45 | 0.14 | 0.014 | 0.031 | 0.001 | 0.003 | 0.003 | 0.003 | -0.001 | 0.008 |
| 35X | 12/10/10 | 0.104 | 0.065 | 6.92 | 0.26 | -0.054 | 0.064 | -0.001 | 0.005 | 0.001 | 0.006 | 0.001 | 0.015 |
| 36X | 02/22/10 | -0.090 | 0.230 | 5.30 | 0.96 | 0.050 | 0.200 | -0.011 | 0.031 | -0.004 | 0.026 | -0.060 | 0.081 |
| 36X | 04/21/10 | 0.240 | 0.160 | 5.84 | 0.76 | 0.030 | 0.190 | 0.014 | 0.023 | 0.005 | 0.023 | 0.007 | 0.052 |
| 36X | 08/31/10 | 0.081 | 0.040 | 5.87 | 0.14 | 0.018 | 0.036 | 0.001 | 0.003 | 0.004 | 0.003 | 0.009 | 0.008 |
| 36X | 11/30/10 | 0.040 | 0.075 | 6.54 | 0.40 | 0.044 | 0.071 | -0.009 | 0.008 | 0.001 | 0.009 | -0.007 | 0.023 |
| 90C | 03/01/10 | 0.170 | 0.270 | 5.80 | 1.00 | -0.010 | 0.240 | -0.024 | 0.033 | 0.010 | 0.029 | 0.007 | 0.074 |
| 90C | 04/19/10 | 0.080 | 0.240 | 6.20 | 1.10 | -0.030 | 0.210 | 0.010 | 0.026 | 0.002 | 0.025 | 0.038 | 0.068 |
| 90C | 08/18/10 | 0.078 | 0.025 | 7.11 | 0.13 | 0.012 | 0.025 | -0.002 | 0.002 | 0.000 | 0.003 | -0.007 | 0.007 |
| 90C | 11/15/10 | 0.112 | 0.081 | 7.63 | 0.43 | -0.002 | 0.087 | 0.003 | 0.009 | -0.004 | 0.010 | 0.009 | 0.024 |

TABLE 16
AQUATIC FLORA - FUCUS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 02/22/10 | 0.004 | 0.033 | -0.055 | 0.070 | 0.000 | 0.036 | 0.079 | 0.054 | 0.004 | 0.032 | -0.200 | 0.270 |
| 29 | 04/21/10 | -0.001 | 0.027 | 0.025 | 0.069 | 0.011 | 0.029 | 0.034 | 0.057 | 0.004 | 0.027 | -0.040 | 0.300 |
| 29 | 08/31/10 | 0.002 | 0.003 | -0.004 | 0.007 | 0.001 | 0.003 | 0.000 | 0.006 | -0.003 | 0.003 | 0.014 | 0.023 |
| 29 | 11/29/10 | -0.012 | 0.016 | 0.012 | 0.030 | -0.003 | 0.015 | -0.007 | 0.023 | -0.004 | 0.013 | 0.033 | 0.102 |
| 32X | 02/23/10 | -0.008 | 0.031 | 0.040 | 0.071 | 0.003 | 0.037 | -0.010 | 0.054 | -0.015 | 0.032 | 0.090 | 0.260 |
| 32X | 04/20/10 | 0.017 | 0.026 | 0.017 | 0.057 | -0.007 | 0.024 | -0.002 | 0.036 | 0.015 | 0.024 | -0.010 | 0.160 |
| 32X | 08/30/10 | 0.000 | 0.003 | 0.003 | 0.006 | 0.000 | 0.003 | 0.003 | 0.005 | -0.001 | 0.003 | -0.008 | 0.019 |
| 32X | 11/15/10 | -0.002 | 0.016 | 0.000 | 0.031 | 0.010 | 0.012 | 0.011 | 0.021 | 0.007 | 0.012 | 0.003 | 0.097 |
| 33X | 03/01/10 | -0.008 | 0.037 | 0.049 | 0.078 | -0.024 | 0.030 | -0.004 | 0.044 | -0.006 | 0.024 | -0.100 | 0.300 |
| 33X | 04/19/10 | -0.002 | 0.010 | -0.027 | 0.024 | 0.006 | 0.011 | 0.008 | 0.018 | -0.009 | 0.011 | 0.033 | 0.081 |
| 33X | 08/18/10 | -0.008 | 0.018 | 0.030 | 0.035 | -0.003 | 0.014 | 0.014 | 0.026 | 0.005 | 0.013 | 0.037 | 0.106 |
| 33X | 11/15/10 | -0.002 | 0.014 | -0.032 | 0.027 | -0.001 | 0.011 | 0.002 | 0.019 | 0.000 | 0.012 | -0.036 | 0.087 |
| 35X | 02/22/10 | -0.027 | 0.036 | 0.012 | 0.070 | 0.013 | 0.027 | 0.012 | 0.044 | -0.006 | 0.029 | -0.140 | 0.250 |
| 35X | 04/20/10 | -0.013 | 0.028 | 0.010 | 0.051 | 0.028 | 0.027 | 0.065 | 0.045 | -0.004 | 0.023 | -0.140 | 0.200 |
| 35X | 08/31/10 | 0.001 | 0.003 | 0.006 | 0.007 | 0.001 | 0.003 | 0.000 | 0.005 | -0.004 | 0.003 | -0.006 | 0.022 |
| 35X | 12/10/10 | -0.001 | 0.006 | 0.000 | 0.014 | 0.002 | 0.006 | 0.001 | 0.010 | 0.003 | 0.006 | -0.020 | 0.044 |
| 36X | 02/22/10 | -0.014 | 0.033 | -0.013 | 0.076 | -0.009 | 0.032 | 0.015 | 0.051 | 0.020 | 0.027 | 0.090 | 0.270 |
| 36X | 04/21/10 | 0.011 | 0.023 | -0.046 | 0.051 | -0.003 | 0.026 | 0.024 | 0.042 | 0.010 | 0.024 | -0.050 | 0.220 |
| 36X | 08/31/10 | 0.001 | 0.004 | -0.011 | 0.008 | 0.001 | 0.003 | 0.001 | 0.006 | 0.000 | 0.004 | -0.007 | 0.025 |
| 36X | 11/30/10 | 0.000 | 0.013 | -0.011 | 0.023 | -0.001 | 0.009 | -0.002 | 0.015 | 0.002 | 0.008 | 0.025 | 0.080 |
| 90C | 03/01/10 | 0.024 | 0.032 | -0.097 | 0.076 | -0.002 | 0.035 | -0.062 | 0.061 | 0.011 | 0.034 | -0.140 | 0.260 |
| 90C | 04/19/10 | -0.004 | 0.031 | -0.060 | 0.073 | 0.009 | 0.033 | 0.003 | 0.043 | 0.002 | 0.030 | -0.040 | 0.270 |
| 90C | 08/18/10 | -0.002 | 0.003 | 0.001 | 0.007 | 0.001 | 0.003 | -0.001 | 0.004 | -0.001 | 0.003 | 0.009 | 0.020 |
| 90C | 11/15/10 | 0.000 | 0.012 | -0.005 | 0.024 | 0.015 | 0.010 | 0.012 | 0.018 | 0.002 | 0.010 | 0.033 | 0.080 |

TABLE 16
AQUATIC FLORA - FUCUS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Ag-110M | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 02/22/10 | -0.015 | 0.039 | 0.027 | 0.078 | -0.008 | 0.062 | 0.025 | 0.028 | -0.021 | 0.028 | 0.140 | 0.130 |
| 29 | 04/21/10 | 0.022 | 0.034 | -0.056 | 0.064 | -0.032 | 0.050 | -0.008 | 0.021 | 0.010 | 0.035 | 0.120 | 0.130 |
| 29 | 08/31/10 | -0.002 | 0.003 | -0.003 | 0.007 | 0.007 | 0.018 | 0.000 | 0.003 | 0.001 | 0.003 | 0.016 | 0.019 |
| 29 | 11/29/10 | 0.010 | 0.012 | -0.006 | 0.031 | 0.013 | 0.024 | -0.002 | 0.013 | -0.001 | 0.013 | 0.084 | 0.054 |
| 32X | 02/23/10 | 0.000 | 0.037 | -0.049 | 0.089 | -0.020 | 0.049 | 0.016 | 0.023 | -0.010 | 0.031 | 0.080 | 0.110 |
| 32X | 04/20/10 | -0.016 | 0.029 | 0.031 | 0.057 | 0.036 | 0.040 | 0.000 | 0.015 | -0.008 | 0.021 | 0.028 | 0.079 |
| 32X | 08/30/10 | 0.006 | 0.004 | -0.004 | 0.006 | 0.000 | 0.016 | 0.000 | 0.002 | 0.003 | 0.002 | 0.032 | 0.025 |
| 32X | 11/15/10 | 0.002 | 0.011 | 0.009 | 0.025 | -0.027 | 0.034 | -0.005 | 0.011 | -0.003 | 0.012 | 0.083 | 0.065 |
| 33X | 03/01/10 | -0.022 | 0.034 | 0.031 | 0.062 | -0.015 | 0.042 | -0.019 | 0.020 | 0.006 | 0.028 | 0.090 | 0.120 |
| 33X | 04/19/10 | -0.011 | 0.013 | -0.014 | 0.025 | 0.039 | 0.038 | 0.003 | 0.007 | -0.003 | 0.009 | 0.037 | 0.048 |
| 33X | 08/18/10 | -0.002 | 0.012 | 0.007 | 0.030 | 0.026 | 0.032 | -0.006 | 0.013 | 0.002 | 0.013 | 0.085 | 0.056 |
| 33X | 11/15/10 | -0.003 | 0.009 | 0.014 | 0.026 | -0.002 | 0.032 | -0.010 | 0.010 | 0.004 | 0.011 | 0.066 | 0.063 |
| 35X | 02/22/10 | -0.036 | 0.043 | 0.004 | 0.062 | 0.029 | 0.053 | 0.010 | 0.020 | -0.008 | 0.031 | 0.060 | 0.120 |
| 35X | 04/20/10 | -0.011 | 0.032 | -0.025 | 0.061 | 0.012 | 0.042 | -0.013 | 0.020 | 0.011 | 0.024 | 0.016 | 0.099 |
| 35X | 08/31/10 | -0.001 | 0.002 | 0.004 | 0.006 | -0.019 | 0.016 | 0.000 | 0.003 | 0.002 | 0.003 | 0.040 | 0.020 |
| 35X | 12/10/10 | -0.002 | 0.005 | -0.004 | 0.012 | -0.021 | 0.034 | -0.003 | 0.005 | 0.000 | 0.005 | 0.047 | 0.039 |
| 36X | 02/22/10 | 0.036 | 0.038 | 0.012 | 0.064 | -0.003 | 0.047 | -0.001 | 0.018 | -0.035 | 0.027 | 0.060 | 0.120 |
| 36X | 04/21/10 | -0.020 | 0.036 | 0.025 | 0.068 | 0.044 | 0.037 | 0.014 | 0.024 | -0.001 | 0.023 | 0.065 | 0.089 |
| 36X | 08/31/10 | -0.002 | 0.003 | 0.006 | 0.007 | 0.006 | 0.019 | -0.002 | 0.003 | 0.001 | 0.003 | 0.048 | 0.024 |
| 36X | 11/30/10 | -0.004 | 0.009 | -0.008 | 0.020 | 0.008 | 0.016 | 0.003 | 0.009 | -0.003 | 0.009 | 0.020 | 0.045 |
| 90C | 03/01/10 | 0.000 | 0.036 | -0.030 | 0.074 | -0.054 | 0.054 | -0.013 | 0.021 | 0.029 | 0.030 | 0.030 | 0.120 |
| 90C | 04/19/10 | 0.000 | 0.038 | 0.066 | 0.064 | 0.436 | 0.090 | 0.007 | 0.023 | -0.007 | 0.031 | -0.010 | 0.130 |
| 90C | 08/18/10 | -0.001 | 0.002 | 0.000 | 0.006 | 0.139 | 0.014 | -0.001 | 0.002 | 0.002 | 0.003 | 0.032 | 0.019 |
| 90C | 11/15/10 | -0.003 | 0.008 | -0.032 | 0.021 | -0.014 | 0.029 | -0.015 | 0.008 | -0.001 | 0.009 | 0.076 | 0.061 |

TABLE 17A
FISH - FLOUNDER
(pCi/g wet wt.)

| LOCATION | | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | H | 05/25/10 | -0.05 | 0.16 | 3.69 | 0.64 | 0.07 | 0.15 | 0.002 | 0.013 | -0.004 | 0.016 | -0.026 | 0.043 |
| 32 | I | 08/04/10 | -0.10 | 0.37 | 3.77 | 1.10 | -0.40 | 0.40 | -0.020 | 0.037 | 0.009 | 0.046 | -0.044 | 0.091 |
| 35 | H | 04/26/10 | 0.02 | 0.11 | 3.91 | 0.32 | 0.11 | 0.13 | 0.004 | 0.012 | 0.008 | 0.013 | -0.026 | 0.033 |
| 35 | | 07/20/10 | 0.10 | 0.35 | 4.18 | 0.80 | -0.18 | 0.33 | -0.004 | 0.033 | 0.012 | 0.038 | 0.007 | 0.093 |
| 35 | | 10/26/10 | -0.09 | 0.19 | 3.71 | 0.75 | 0.08 | 0.22 | 0.006 | 0.021 | -0.002 | 0.023 | 0.000 | 0.046 |

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 05/25/10 | -0.015 | 0.019 | -0.041 | 0.044 | 0.000 | 0.020 | 0.015 | 0.032 | 0.000 | 0.022 | -0.01 | 0.16 |
| 32 | 08/04/10 | 0.016 | 0.041 | 0.033 | 0.088 | -0.001 | 0.053 | -0.021 | 0.079 | -0.040 | 0.052 | -0.01 | 0.35 |
| 35 | 04/26/10 | 0.008 | 0.012 | -0.011 | 0.028 | 0.008 | 0.017 | -0.005 | 0.025 | -0.012 | 0.015 | -0.04 | 0.10 |
| 35 | 07/20/10 | -0.030 | 0.041 | 0.022 | 0.087 | -0.017 | 0.037 | 0.079 | 0.066 | -0.004 | 0.038 | 0.12 | 0.33 |
| 35 | 10/26/10 | 0.001 | 0.021 | -0.041 | 0.054 | -0.013 | 0.024 | -0.014 | 0.043 | 0.001 | 0.026 | -0.06 | 0.19 |

| LOCATION | COLLECTION DATE | Ag-110M | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 05/25/10 | 0.012 | 0.027 | 0.012 | 0.048 | -0.010 | 0.045 | -0.005 | 0.013 | 0.005 | 0.018 | -0.085 | 0.076 |
| 32 | 08/04/10 | -0.021 | 0.035 | -0.033 | 0.104 | -0.058 | 0.135 | -0.006 | 0.040 | -0.034 | 0.046 | -0.116 | 0.174 |
| 35 | 04/26/10 | 0.003 | 0.017 | 0.009 | 0.029 | 0.073 | 0.060 | 0.004 | 0.011 | 0.003 | 0.011 | 0.034 | 0.062 |
| 35 | 07/20/10 | 0.022 | 0.035 | -0.059 | 0.086 | 0.015 | 0.126 | -0.030 | 0.042 | -0.017 | 0.038 | -0.020 | 0.150 |
| 35 | 10/26/10 | -0.004 | 0.021 | -0.018 | 0.054 | 0.020 | 0.075 | -0.009 | 0.024 | 0.003 | 0.021 | -0.020 | 0.080 |

TABLE 17B
FISH - OTHER
(pCi/g wet wt.)

| LOCATION | | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | H | 06/22/10 | -0.01 | 0.16 | 3.54 | 0.67 | 0.04 | 0.14 | -0.002 | 0.018 | 0.009 | 0.017 | -0.018 | 0.047 |
| 32 | | 08/04/10 | 0.17 | 0.24 | 4.38 | 0.76 | -0.06 | 0.26 | -0.012 | 0.025 | -0.001 | 0.028 | 0.068 | 0.060 |
| 32 | | 10/06/10 | 0.29 | 0.54 | 11.50 | 2.08 | -0.04 | 0.67 | 0.011 | 0.066 | -0.006 | 0.060 | 0.020 | 0.126 |
| 35 | H | 04/26/10 | 0.04 | 0.10 | 3.25 | 0.39 | -0.01 | 0.11 | 0.008 | 0.012 | -0.007 | 0.013 | 0.002 | 0.032 |
| 35 | | 08/23/10 | -0.05 | 0.06 | 4.74 | 0.26 | 0.02 | 0.08 | 0.002 | 0.005 | 0.007 | 0.006 | 0.009 | 0.015 |
| 35 | | 11/18/10 | 0.04 | 0.21 | 3.62 | 0.68 | -0.11 | 0.24 | 0.005 | 0.023 | 0.009 | 0.025 | -0.012 | 0.058 |
| 40X | | 02/03/10 | 0.220 | 0.240 | 2.900 | 1.100 | 0.130 | 0.210 | -0.036 | 0.036 | -0.029 | 0.030 | -0.024 | 0.076 |
| 40X | | 05/11/10 | 0.010 | 0.130 | 3.500 | 0.630 | 0.020 | 0.160 | 0.022 | 0.019 | 0.001 | 0.017 | 0.018 | 0.045 |
| 40X | | 09/15/10 | -0.003 | 0.260 | 4.180 | 0.841 | 0.142 | 0.264 | 0.000 | 0.032 | 0.006 | 0.032 | 0.008 | 0.065 |

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 06/22/10 | 0.009 | 0.022 | -0.027 | 0.048 | 0.016 | 0.022 | 0.037 | 0.038 | -0.007 | 0.017 | 0.10 | 0.17 |
| 32 | 08/04/10 | -0.247 | 0.030 | 0.031 | 0.072 | -0.033 | 0.031 | -0.056 | 0.049 | -0.014 | 0.032 | 0.04 | 0.23 |
| 32 | 10/06/10 | 0.006 | 0.059 | 0.035 | 0.144 | 0.000 | 0.073 | -0.044 | 0.124 | -0.021 | 0.064 | -0.12 | 0.61 |
| 35 | 04/26/10 | -0.004 | 0.014 | -0.003 | 0.024 | 0.007 | 0.016 | -0.008 | 0.025 | -0.007 | 0.014 | 0.00 | 0.09 |
| 35 | 08/23/10 | 0.000 | 0.006 | -0.002 | 0.013 | -0.003 | 0.008 | -0.001 | 0.013 | 0.007 | 0.008 | -0.03 | 0.05 |
| 35 | 11/18/10 | -0.003 | 0.028 | -0.049 | 0.053 | -0.022 | 0.027 | -0.026 | 0.051 | 0.007 | 0.025 | -0.12 | 0.21 |
| 40X | 02/03/10 | -0.038 | 0.037 | 0.000 | 0.078 | 0.030 | 0.042 | 0.004 | 0.045 | -0.023 | 0.034 | -0.140 | 0.350 |
| 40X | 05/11/10 | 0.000 | 0.018 | 0.004 | 0.043 | 0.005 | 0.022 | -0.002 | 0.033 | 0.001 | 0.021 | 0.070 | 0.170 |
| 40X | 09/15/10 | 0.013 | 0.034 | -0.038 | 0.079 | -0.023 | 0.028 | 0.010 | 0.050 | 0.037 | 0.031 | -0.199 | 0.304 |

TABLE 17B
FISH - OTHER
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Ag-110M | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 06/22/10 | 0.017 | 0.026 | 0.024 | 0.042 | 0.010 | 0.027 | 0.000 | 0.015 | -0.014 | 0.020 | 0.012 | 0.780 |
| 32 | 08/04/10 | 0.003 | 0.022 | 0.042 | 0.067 | 0.052 | 0.087 | 0.020 | 0.024 | -0.101 | 0.027 | 0.048 | 0.109 |
| 32 | 10/06/10 | -0.045 | 0.066 | -0.112 | 0.181 | 0.149 | 0.124 | -0.069 | 0.068 | -0.005 | 0.076 | -0.194 | 0.254 |
| 35 | 04/26/10 | -0.013 | 0.016 | -0.001 | 0.028 | -0.018 | 0.042 | 0.000 | 0.008 | -0.006 | 0.015 | 0.040 | 0.046 |
| 35 | 08/23/10 | 0.001 | 0.005 | -0.003 | 0.014 | 0.028 | 0.058 | -0.005 | 0.006 | 0.007 | 0.006 | -0.047 | 0.035 |
| 35 | 11/18/10 | 0.003 | 0.023 | -0.005 | 0.063 | -0.002 | 0.059 | -0.058 | 0.027 | 0.009 | 0.025 | -0.043 | 0.092 |
| 40X | 02/03/10 | 0.014 | 0.060 | 0.000 | 0.085 | -0.019 | 0.050 | 0.008 | 0.025 | 0.022 | 0.025 | -0.030 | 0.140 |
| 40X | 05/11/10 | -0.012 | 0.024 | 0.000 | 0.039 | -0.010 | 0.050 | 0.002 | 0.012 | 0.006 | 0.017 | -0.049 | 0.077 |
| 40X | 09/15/10 | 0.022 | 0.030 | 0.035 | 0.087 | -0.038 | 0.049 | 0.028 | 0.035 | -0.008 | 0.033 | 0.006 | 0.120 |

TABLE 18
MUSSELS
(pCi/g wet wt.)

| LOCATION | | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J,K | | | | | | | | | | | | | |
| 30 | | 02/12/10 | 0.23 | 0.34 | 2.63 | 0.98 | -0.06 | 0.30 | -0.012 | 0.035 | 0.001 | 0.044 | 0.060 | 0.095 |
| 30 | L | 05/17/10 | 0.09 | 0.10 | 2.17 | 0.25 | -0.01 | 0.11 | 0.006 | 0.008 | 0.005 | 0.010 | -0.003 | 0.023 |

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 02/12/10 | -0.021 | 0.044 | -0.030 | 0.100 | 0.012 | 0.047 | -0.019 | 0.070 | -0.015 | 0.044 | 0.180 | 0.320 |
| 30 | 05/17/10 | -0.003 | 0.008 | 0.004 | 0.017 | -0.002 | 0.012 | 0.010 | 0.015 | -0.001 | 0.012 | -0.011 | 0.078 |

| LOCATION | COLLECTION DATE | Ag-110M | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 02/12/10 | 0.018 | 0.032 | 0.044 | 0.088 | -0.048 | 0.070 | -0.017 | 0.024 | 0.008 | 0.036 | 0.030 | 0.170 |
| 30 | 05/17/10 | 0.005 | 0.013 | -0.009 | 0.023 | -0.016 | 0.054 | 0.001 | 0.008 | -0.005 | 0.008 | -0.016 | 0.034 |

J, K, L Several samples not available due to scarcity of this type of shellfish; see NOTES for more details

TABLE 19
OYSTERS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | 03/02/10 | 0.07 | 0.20 | 2.11 | 0.77 | 0.03 | 0.19 | -0.007 | 0.023 | -0.009 | 0.018 | -0.018 | 0.056 |
| 31 | 05/10/10 | 0.07 | 0.13 | 2.05 | 0.38 | -0.09 | 0.15 | 0.008 | 0.014 | -0.002 | 0.015 | 0.011 | 0.035 |
| 31 | 08/18/10 | 0.09 | 0.12 | 1.40 | 0.29 | 0.02 | 0.13 | -0.003 | 0.013 | 0.002 | 0.015 | -0.012 | 0.028 |
| 31 | 10/08/10 | 0.07 | 0.09 | 1.87 | 0.41 | 0.02 | 0.10 | -0.002 | 0.006 | 0.003 | 0.009 | -0.006 | 0.016 |
| 32 | 02/23/10 | 0.01 | 0.17 | 1.91 | 0.54 | 0.00 | 0.20 | 0.027 | 0.021 | 0.011 | 0.017 | -0.013 | 0.047 |
| 32 | 05/05/10 | 0.20 | 0.26 | 2.35 | 0.83 | -0.01 | 0.20 | -0.003 | 0.028 | -0.003 | 0.025 | 0.029 | 0.057 |
| 32 | 07/19/10 | 0.01 | 0.08 | 2.43 | 0.46 | 0.03 | 0.10 | 0.000 | 0.008 | -0.001 | 0.009 | -0.017 | 0.018 |
| 32 | 11/15/10 | 0.09 | 0.14 | 2.10 | 0.38 | 0.18 | 0.16 | -0.004 | 0.014 | 0.003 | 0.016 | 0.009 | 0.033 |
| 34X | 03/01/10 | 0.15 | 0.19 | 2.10 | 0.57 | 0.03 | 0.20 | 0.004 | 0.019 | 0.002 | 0.020 | 0.001 | 0.046 |
| 34X | 05/10/10 | -0.03 | 0.18 | 1.77 | 0.55 | 0.05 | 0.19 | 0.010 | 0.017 | 0.003 | 0.027 | -0.046 | 0.047 |
| 34X | 08/18/10 | -0.01 | 0.07 | 1.95 | 0.26 | 0.03 | 0.08 | -0.001 | 0.007 | 0.006 | 0.008 | -0.001 | 0.016 |
| 34X | 10/04/10 | 0.14 | 0.23 | 6.47 | 0.81 | 0.06 | 0.27 | -0.015 | 0.031 | -0.017 | 0.025 | 0.010 | 0.060 |
| 37C | 02/22/10 | -0.10 | 0.18 | 1.39 | 0.55 | 0.00 | 0.18 | -0.003 | 0.028 | -0.001 | 0.019 | 0.013 | 0.056 |
| 37C | 05/11/10 | -0.15 | 0.17 | 1.59 | 0.53 | -0.04 | 0.20 | -0.013 | 0.019 | -0.016 | 0.021 | -0.075 | 0.055 |
| 37C | 08/31/10 | 0.12 | 0.10 | 1.52 | 0.36 | -0.02 | 0.13 | -0.005 | 0.010 | 0.012 | 0.011 | -0.018 | 0.020 |
| 37C | 11/30/10 | -0.01 | 0.12 | 2.48 | 0.41 | 0.10 | 0.13 | 0.011 | 0.015 | -0.008 | 0.015 | -0.016 | 0.028 |
| 88 | 02/22/10 | -0.11 | 0.20 | 2.05 | 0.77 | 0.07 | 0.19 | -0.013 | 0.022 | -0.010 | 0.025 | -0.009 | 0.058 |
| 88 | 05/11/10 | -0.06 | 0.14 | 2.21 | 0.52 | -0.05 | 0.13 | 0.002 | 0.016 | 0.009 | 0.017 | -0.044 | 0.051 |
| 88 | 08/25/10 | 0.04 | 0.24 | 1.01 | 0.57 | 0.18 | 0.28 | 0.005 | 0.018 | 0.003 | 0.025 | -0.037 | 0.067 |
| 88 | 11/15/10 | 0.03 | 0.16 | 1.74 | 0.43 | 0.10 | 0.16 | 0.007 | 0.017 | -0.003 | 0.018 | -0.016 | 0.037 |

TABLE 19
OYSTERS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | 03/02/10 | -0.005 | 0.042 | 0.036 | 0.062 | 0.014 | 0.026 | 0.012 | 0.046 | 0.023 | 0.031 | 0.25 | 0.26 |
| 31 | 05/10/10 | 0.003 | 0.015 | -0.003 | 0.034 | -0.018 | 0.019 | -0.002 | 0.025 | 0.008 | 0.016 | -0.17 | 0.12 |
| 31 | 08/18/10 | 0.003 | 0.013 | 0.054 | 0.035 | 0.023 | 0.014 | -0.013 | 0.024 | -0.011 | 0.014 | -0.06 | 0.11 |
| 31 | 10/08/10 | 0.005 | 0.008 | 0.001 | 0.016 | -0.003 | 0.009 | -0.003 | 0.014 | -0.005 | 0.011 | -0.01 | 0.07 |
| 32 | 02/23/10 | -0.009 | 0.021 | -0.077 | 0.045 | 0.012 | 0.025 | -0.008 | 0.029 | 0.011 | 0.022 | -0.07 | 0.20 |
| 32 | 05/05/10 | -0.003 | 0.037 | 0.019 | 0.067 | 0.027 | 0.031 | 0.023 | 0.050 | 0.006 | 0.029 | -0.06 | 0.26 |
| 32 | 07/19/10 | 0.001 | 0.010 | 0.009 | 0.018 | -0.008 | 0.009 | -0.001 | 0.016 | 0.006 | 0.011 | -0.06 | 0.08 |
| 32 | 11/15/10 | -0.008 | 0.017 | -0.008 | 0.032 | 0.023 | 0.018 | 0.003 | 0.024 | 0.000 | 0.019 | -0.04 | 0.14 |
| 34X | 03/01/10 | -0.006 | 0.021 | 0.016 | 0.049 | -0.016 | 0.023 | 0.012 | 0.041 | -0.007 | 0.023 | -0.11 | 0.16 |
| 34X | 05/10/10 | -0.002 | 0.018 | 0.019 | 0.040 | 0.000 | 0.026 | 0.015 | 0.029 | 0.009 | 0.021 | -0.10 | 0.17 |
| 34X | 08/18/10 | 0.010 | 0.008 | -0.005 | 0.017 | 0.002 | 0.009 | -0.006 | 0.014 | 0.000 | 0.008 | -0.05 | 0.06 |
| 34X | 10/04/10 | 0.028 | 0.031 | -0.071 | 0.066 | -0.019 | 0.028 | 0.002 | 0.051 | -0.004 | 0.028 | 0.02 | 0.25 |
| 37C | 02/22/10 | 0.014 | 0.029 | 0.023 | 0.046 | -0.004 | 0.025 | 0.020 | 0.037 | -0.008 | 0.019 | -0.03 | 0.22 |
| 37C | 05/11/10 | -0.009 | 0.026 | -0.011 | 0.045 | -0.024 | 0.027 | 0.001 | 0.042 | 0.017 | 0.023 | 0.10 | 0.18 |
| 37C | 08/31/10 | 0.003 | 0.010 | 0.020 | 0.022 | 0.003 | 0.012 | -0.005 | 0.023 | -0.008 | 0.014 | 0.00 | 0.09 |
| 37C | 11/30/10 | -0.001 | 0.016 | -0.017 | 0.035 | 0.011 | 0.016 | 0.010 | 0.027 | 0.006 | 0.015 | -0.10 | 0.12 |
| 88I | 02/22/10 | 0.016 | 0.026 | 0.000 | 0.035 | 0.006 | 0.026 | -0.015 | 0.051 | 0.000 | 0.023 | 0.15 | 0.26 |
| 88I | 05/11/10 | 0.000 | 0.020 | -0.005 | 0.039 | 0.012 | 0.018 | 0.004 | 0.032 | 0.009 | 0.017 | -0.03 | 0.15 |
| 88I | 08/25/10 | 0.005 | 0.024 | -0.033 | 0.066 | 0.040 | 0.030 | -0.005 | 0.043 | -0.004 | 0.032 | 0.12 | 0.22 |
| 88I | 11/15/10 | 0.010 | 0.021 | -0.029 | 0.038 | 0.005 | 0.019 | -0.005 | 0.033 | -0.007 | 0.019 | 0.05 | 0.15 |

TABLE 19
OYSTERS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Ag-110M | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | 03/02/10 | -0.005 | 0.027 | 0.007 | 0.060 | 0.025 | 0.042 | -0.016 | 0.018 | 0.007 | 0.025 | 0.050 | 0.110 |
| 31 | 05/10/10 | -0.001 | 0.023 | -0.021 | 0.041 | 0.013 | 0.052 | -0.006 | 0.011 | -0.002 | 0.015 | 0.002 | 0.052 |
| 31 | 08/18/10 | 0.002 | 0.012 | 0.002 | 0.033 | -0.003 | 0.036 | 0.050 | 0.015 | 0.014 | 0.013 | -0.086 | 0.063 |
| 31 | 10/08/10 | -0.011 | 0.007 | -0.016 | 0.023 | -0.001 | 0.023 | -0.008 | 0.009 | 0.006 | 0.009 | -0.014 | 0.034 |
| 32 | 02/23/10 | 0.063 | 0.023 | 0.010 | 0.066 | 0.000 | 0.040 | -0.024 | 0.018 | -0.035 | 0.060 | 0.015 | 0.068 |
| 32 | 05/05/10 | 0.057 | 0.038 | 0.007 | 0.064 | 0.004 | 0.051 | 0.003 | 0.022 | 0.050 | 0.045 | 0.010 | 0.120 |
| 32 | 07/19/10 | 0.200 | 0.023 | -0.006 | 0.022 | 0.025 | 0.055 | 0.004 | 0.008 | 0.001 | 0.008 | 0.006 | 0.102 |
| 32 | 11/15/10 | 0.101 | 0.022 | 0.011 | 0.043 | -0.025 | 0.056 | -0.006 | 0.016 | 0.005 | 0.016 | 0.030 | 0.058 |
| 34X | 03/01/10 | -0.006 | 0.030 | -0.010 | 0.049 | -0.040 | 0.041 | -0.009 | 0.015 | 0.000 | 0.022 | -0.008 | 0.075 |
| 34X | 05/10/10 | 0.029 | 0.031 | 0.032 | 0.048 | 0.057 | 0.055 | 0.010 | 0.013 | -0.010 | 0.023 | -0.019 | 0.070 |
| 34X | 08/18/10 | -0.002 | 0.007 | 0.012 | 0.022 | 0.009 | 0.023 | -0.003 | 0.008 | -0.002 | 0.007 | -0.020 | 0.037 |
| 34X | 10/04/10 | 0.006 | 0.028 | -0.012 | 0.070 | -0.052 | 0.056 | -0.042 | 0.028 | -0.002 | 0.032 | 0.005 | 0.179 |
| 37C | 02/22/10 | 0.024 | 0.031 | -0.024 | 0.065 | -0.039 | 0.040 | -0.006 | 0.014 | -0.009 | 0.019 | 0.020 | 0.110 |
| 37C | 05/11/10 | -0.012 | 0.030 | 0.004 | 0.055 | 0.018 | 0.052 | -0.005 | 0.014 | -0.003 | 0.024 | -0.002 | 0.065 |
| 37C | 08/31/10 | 0.004 | 0.010 | 0.009 | 0.026 | -0.015 | 0.060 | -0.003 | 0.011 | 0.004 | 0.012 | -0.021 | 0.043 |
| 37C | 11/30/10 | -0.002 | 0.013 | -0.018 | 0.036 | -0.016 | 0.030 | 0.000 | 0.017 | 0.000 | 0.016 | -0.049 | 0.054 |
| 88I | 02/22/10 | -0.025 | 0.038 | -0.032 | 0.073 | 0.000 | 0.043 | -0.001 | 0.019 | -0.011 | 0.028 | -0.010 | 0.110 |
| 88I | 05/11/10 | -0.002 | 0.025 | -0.014 | 0.038 | 0.003 | 0.042 | -0.001 | 0.012 | 0.016 | 0.017 | -0.028 | 0.058 |
| 88I | 08/25/10 | 0.012 | 0.026 | 0.044 | 0.057 | -0.057 | 0.183 | -0.009 | 0.025 | -0.037 | 0.027 | -0.046 | 0.087 |
| 88I | 11/15/10 | 0.013 | 0.016 | 0.015 | 0.042 | -0.036 | 0.056 | -0.004 | 0.017 | -0.006 | 0.017 | -0.023 | 0.059 |

TABLE 20
CLAMS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 02/08/10 | 0.12 | 0.17 | 2.49 | 0.74 | -0.15 | 0.21 | 0.007 | 0.026 | -0.009 | 0.022 | 0.055 | 0.065 |
| 29 | 06/15/10 | 0.00 | 0.14 | 2.06 | 0.41 | -0.22 | 0.16 | -0.004 | 0.015 | -0.006 | 0.016 | -0.019 | 0.034 |
| 29 | 07/26/10 | 0.02 | 0.08 | 2.73 | 0.26 | 0.05 | 0.10 | 0.002 | 0.008 | -0.004 | 0.009 | 0.010 | 0.019 |
| 29 | 11/03/10 | -0.03 | 0.16 | 2.16 | 0.50 | 0.00 | 0.16 | -0.001 | 0.018 | -0.016 | 0.018 | 0.010 | 0.035 |
| 35X | 03/25/10 | 0.08 | 0.13 | 1.58 | 0.38 | -0.06 | 0.14 | -0.004 | 0.013 | -0.005 | 0.013 | 0.026 | 0.033 |
| 35X | 06/15/10 | 0.07 | 0.15 | 2.00 | 0.52 | -0.10 | 0.15 | -0.003 | 0.018 | 0.006 | 0.017 | 0.011 | 0.035 |
| 35X | 07/26/10 | -0.01 | 0.08 | 1.58 | 0.22 | -0.07 | 0.10 | 0.000 | 0.007 | 0.001 | 0.009 | 0.021 | 0.019 |
| 35X | 11/03/10 | 0.03 | 0.16 | 1.80 | 0.47 | -0.02 | 0.17 | -0.006 | 0.017 | -0.001 | 0.019 | 0.007 | 0.036 |
| 38 | 03/25/10 | -0.05 | 0.13 | 2.04 | 0.51 | 0.06 | 0.15 | -0.017 | 0.020 | -0.006 | 0.017 | 0.008 | 0.048 |
| 38 | 06/15/10 | 0.11 | 0.13 | 2.52 | 0.58 | -0.06 | 0.15 | -0.011 | 0.013 | 0.002 | 0.021 | -0.029 | 0.047 |
| 38 | 07/26/10 | -0.07 | 0.09 | 1.98 | 0.30 | 0.09 | 0.12 | 0.001 | 0.009 | -0.003 | 0.011 | -0.005 | 0.024 |
| 38 | 11/03/10 | 0.06 | 0.13 | 2.12 | 0.38 | -0.01 | 0.14 | -0.001 | 0.016 | -0.002 | 0.015 | 0.013 | 0.030 |
| 39X | 02/08/10 | 0.13 | 0.14 | 1.47 | 0.59 | -0.14 | 0.18 | -0.013 | 0.018 | -0.003 | 0.021 | -0.007 | 0.060 |
| 39X | 06/17/10 | 0.08 | 0.17 | 1.96 | 0.58 | 0.03 | 0.16 | 0.004 | 0.015 | -0.003 | 0.020 | -0.037 | 0.053 |
| 39X | 09/01/10 | 0.00 | 0.07 | 1.70 | 0.22 | 0.03 | 0.08 | 0.002 | 0.007 | 0.001 | 0.007 | -0.021 | 0.016 |
| 39X | 11/29/10 | 0.08 | 0.15 | 2.01 | 0.48 | -0.06 | 0.17 | 0.010 | 0.018 | -0.008 | 0.018 | -0.017 | 0.034 |

TABLE 20
CLAMS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 02/08/10 | 0.010 | 0.023 | -0.051 | 0.044 | 0.009 | 0.028 | -0.034 | 0.044 | -0.023 | 0.026 | 0.01 | 0.22 |
| 29 | 06/15/10 | 0.006 | 0.015 | 0.003 | 0.032 | -0.009 | 0.020 | -0.021 | 0.029 | 0.006 | 0.017 | -0.06 | 0.13 |
| 29 | 07/26/10 | -0.231 | 0.014 | 0.006 | 0.018 | 0.000 | 0.009 | -0.008 | 0.016 | -0.004 | 0.010 | 0.00 | 0.07 |
| 29 | 11/03/10 | 0.005 | 0.020 | -0.013 | 0.046 | 0.020 | 0.024 | -0.008 | 0.030 | 0.003 | 0.020 | 0.13 | 0.18 |
| 35X | 03/25/10 | 0.004 | 0.013 | 0.009 | 0.037 | 0.012 | 0.018 | 0.006 | 0.024 | 0.006 | 0.019 | -0.01 | 0.13 |
| 35X | 06/15/10 | 0.007 | 0.020 | -0.010 | 0.035 | 0.004 | 0.020 | -0.011 | 0.033 | 0.000 | 0.019 | -0.01 | 0.16 |
| 35X | 07/26/10 | 0.000 | 0.007 | 0.003 | 0.017 | 0.000 | 0.009 | -0.007 | 0.016 | 0.003 | 0.010 | -0.01 | 0.07 |
| 35X | 11/03/10 | -0.016 | 0.020 | -0.063 | 0.042 | 0.001 | 0.019 | 0.005 | 0.030 | 0.008 | 0.020 | 0.04 | 0.19 |
| 38 | 03/25/10 | -0.010 | 0.021 | 0.028 | 0.052 | -0.010 | 0.020 | -0.004 | 0.031 | -0.011 | 0.018 | 0.06 | 0.17 |
| 38 | 06/15/10 | -0.015 | 0.017 | 0.000 | 0.046 | -0.008 | 0.021 | -0.005 | 0.027 | -0.008 | 0.020 | 0.02 | 0.14 |
| 38 | 07/26/10 | 0.014 | 0.010 | -0.002 | 0.023 | -0.008 | 0.011 | 0.008 | 0.019 | 0.002 | 0.012 | 0.03 | 0.08 |
| 38 | 11/03/10 | 0.013 | 0.015 | -0.019 | 0.042 | 0.016 | 0.017 | -0.009 | 0.026 | 0.002 | 0.015 | 0.04 | 0.15 |
| 39X | 02/08/10 | -0.008 | 0.020 | 0.034 | 0.038 | -0.009 | 0.023 | 0.013 | 0.034 | -0.007 | 0.023 | -0.03 | 0.19 |
| 39X | 06/17/10 | -0.005 | 0.020 | -0.030 | 0.043 | -0.011 | 0.028 | 0.015 | 0.032 | 0.014 | 0.021 | -0.03 | 0.16 |
| 39X | 09/01/10 | -0.002 | 0.007 | -0.006 | 0.018 | 0.003 | 0.007 | 0.006 | 0.013 | 0.003 | 0.009 | -0.03 | 0.06 |
| 39X | 11/29/10 | 0.018 | 0.020 | 0.012 | 0.040 | 0.014 | 0.019 | 0.003 | 0.032 | 0.007 | 0.019 | 0.12 | 0.15 |

TABLE 20
CLAMS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Ag-110M | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 02/08/10 | 0.017 | 0.036 | 0.027 | 0.061 | -0.037 | 0.064 | -0.008 | 0.017 | -0.007 | 0.025 | 0.050 | 0.095 |
| 29 | 06/15/10 | 0.011 | 0.019 | 0.007 | 0.038 | -0.008 | 0.041 | 0.000 | 0.010 | 0.000 | 0.014 | 0.001 | 0.044 |
| 29 | 07/26/10 | 0.001 | 0.007 | -0.007 | 0.019 | 0.015 | 0.050 | -0.001 | 0.008 | -0.071 | 0.012 | -0.006 | 0.037 |
| 29 | 11/03/10 | 0.001 | 0.017 | -0.011 | 0.052 | 0.028 | 0.034 | 0.003 | 0.020 | -0.008 | 0.019 | -0.011 | 0.078 |
| 35X | 03/25/10 | -0.022 | 0.020 | -0.023 | 0.037 | -0.009 | 0.054 | 0.000 | 0.012 | -0.003 | 0.015 | 0.006 | 0.055 |
| 35X | 06/15/10 | -0.027 | 0.022 | -0.024 | 0.040 | -0.011 | 0.044 | -0.003 | 0.012 | 0.004 | 0.018 | 0.057 | 0.067 |
| 35X | 07/26/10 | -0.007 | 0.008 | -0.002 | 0.020 | 0.001 | 0.053 | 0.000 | 0.009 | 0.001 | 0.008 | 0.001 | 0.065 |
| 35X | 11/03/10 | 0.014 | 0.017 | 0.004 | 0.048 | -0.003 | 0.033 | -0.011 | 0.021 | -0.004 | 0.019 | 0.137 | 0.123 |
| 38 | 03/25/10 | 0.000 | 0.024 | -0.003 | 0.039 | -0.026 | 0.044 | -0.005 | 0.011 | 0.014 | 0.017 | 0.027 | 0.067 |
| 38 | 06/15/10 | -0.013 | 0.028 | 0.019 | 0.043 | 0.029 | 0.047 | 0.001 | 0.012 | -0.012 | 0.022 | 0.030 | 0.067 |
| 38 | 07/26/10 | 0.000 | 0.009 | 0.002 | 0.024 | -0.038 | 0.062 | -0.039 | 0.010 | 0.001 | 0.010 | -0.019 | 0.058 |
| 38 | 11/03/10 | 0.000 | 0.014 | 0.016 | 0.041 | -0.025 | 0.029 | -0.001 | 0.018 | -0.006 | 0.016 | 0.016 | 0.064 |
| 39X | 02/08/10 | -0.016 | 0.019 | -0.040 | 0.059 | 0.048 | 0.064 | 0.003 | 0.015 | 0.021 | 0.028 | 0.007 | 0.078 |
| 39X | 06/17/10 | -0.008 | 0.021 | 0.000 | 0.045 | -0.004 | 0.049 | 0.008 | 0.013 | 0.009 | 0.026 | 0.127 | 0.098 |
| 39X | 09/01/10 | 0.002 | 0.007 | -0.007 | 0.018 | 0.005 | 0.035 | -0.006 | 0.008 | -0.002 | 0.007 | -0.040 | 0.038 |
| 39X | 11/29/10 | -0.007 | 0.016 | 0.009 | 0.045 | 0.011 | 0.037 | 0.001 | 0.020 | 0.002 | 0.018 | -0.032 | 0.073 |

TABLE 22
LOBSTERS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Be-7 | (+/-) | K-40 | (+/-) | Cr-51 | (+/-) | Mn-54 | (+/-) | Co-58 | (+/-) | Fe-59 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 02/03/10 | 0.03 | 0.22 | 2.80 | 1.00 | 0.05 | 0.23 | 0.018 | 0.033 | 0.006 | 0.040 | 0.013 | 0.067 |
| 32 | 05/10/10 | 0.09 | 0.17 | 1.45 | 0.57 | 0.19 | 0.19 | -0.004 | 0.024 | -0.006 | 0.020 | -0.030 | 0.053 |
| 32 | 08/05/10 | -0.02 | 0.08 | 1.81 | 0.22 | -0.01 | 0.08 | 0.007 | 0.008 | -0.003 | 0.009 | -0.005 | 0.020 |
| 32 | 10/22/10 | -0.02 | 0.06 | 2.86 | 0.20 | 0.00 | 0.08 | 0.000 | 0.007 | -0.007 | 0.008 | 0.015 | 0.017 |
| 35 | 02/03/10 | 0.00 | 0.23 | 2.19 | 0.93 | 0.02 | 0.21 | -0.014 | 0.033 | -0.002 | 0.027 | 0.007 | 0.064 |
| 35 | 05/10/10 | 0.01 | 0.11 | 2.56 | 0.43 | 0.05 | 0.13 | 0.009 | 0.015 | 0.000 | 0.016 | -0.001 | 0.031 |
| 35 | 08/05/10 | 0.00 | 0.10 | 2.09 | 0.29 | 0.02 | 0.13 | 0.007 | 0.010 | -0.001 | 0.011 | -0.016 | 0.022 |
| 35 | 11/18/10 | 0.12 | 0.19 | 2.64 | 0.62 | -0.14 | 0.22 | 0.015 | 0.022 | 0.008 | 0.021 | 0.003 | 0.045 |
| 37X | 02/12/10 | -0.05 | 0.17 | 1.92 | 0.62 | 0.13 | 0.17 | -0.006 | 0.015 | 0.010 | 0.026 | 0.004 | 0.046 |
| 37X | 05/20/10 | -0.02 | 0.11 | 1.82 | 0.40 | -0.01 | 0.12 | -0.005 | 0.014 | -0.014 | 0.013 | 0.008 | 0.036 |
| 37X | 09/29/10 | -0.05 | 0.15 | 8.01 | 0.71 | -0.14 | 0.16 | -0.005 | 0.025 | 0.001 | 0.018 | -0.008 | 0.045 |
| 37X | 10/12/10 | -0.05 | 0.14 | 1.65 | 0.46 | -0.14 | 0.15 | 0.008 | 0.016 | 0.001 | 0.017 | -0.034 | 0.038 |

| LOCATION | COLLECTION DATE | Co-60 | (+/-) | Zn-65 | (+/-) | Nb-95 | (+/-) | Zr-95 | (+/-) | Ru-103 | (+/-) | Ru-106 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 02/03/10 | -0.011 | 0.043 | -0.013 | 0.078 | -0.005 | 0.037 | 0.005 | 0.052 | 0.000 | 0.033 | -0.08 | 0.26 |
| 32 | 05/10/10 | 0.016 | 0.028 | 0.000 | 0.047 | 0.024 | 0.028 | 0.010 | 0.042 | -0.018 | 0.021 | 0.05 | 0.16 |
| 32 | 08/05/10 | -0.001 | 0.010 | -0.022 | 0.020 | 0.004 | 0.010 | 0.011 | 0.016 | 0.001 | 0.010 | 0.03 | 0.07 |
| 32 | 10/22/10 | 0.001 | 0.007 | 0.005 | 0.017 | 0.013 | 0.009 | 0.002 | 0.014 | 0.003 | 0.008 | 0.07 | 0.06 |
| 35 | 02/03/10 | 0.021 | 0.024 | -0.016 | 0.057 | -0.011 | 0.026 | -0.006 | 0.026 | 0.004 | 0.024 | -0.08 | 0.28 |
| 35 | 05/10/10 | -0.004 | 0.013 | -0.003 | 0.034 | 0.013 | 0.019 | -0.006 | 0.027 | 0.004 | 0.015 | 0.10 | 0.13 |
| 35 | 08/05/10 | 0.010 | 0.010 | -0.015 | 0.022 | -0.004 | 0.011 | 0.003 | 0.018 | 0.003 | 0.013 | -0.01 | 0.10 |
| 35 | 11/18/10 | -0.005 | 0.021 | -0.058 | 0.055 | 0.000 | 0.023 | -0.017 | 0.034 | 0.018 | 0.021 | 0.04 | 0.20 |
| 37X | 02/12/10 | -0.008 | 0.026 | 0.021 | 0.067 | -0.020 | 0.024 | 0.023 | 0.036 | -0.012 | 0.024 | 0.06 | 0.19 |
| 37X | 05/20/10 | -0.010 | 0.016 | -0.003 | 0.033 | 0.003 | 0.018 | 0.007 | 0.020 | -0.016 | 0.016 | 0.03 | 0.11 |
| 37X | 09/29/10 | 0.035 | 0.021 | 0.034 | 0.048 | -0.027 | 0.019 | -0.011 | 0.032 | -0.003 | 0.019 | -0.07 | 0.16 |
| 37X | 10/12/10 | 0.013 | 0.019 | -0.069 | 0.041 | -0.002 | 0.016 | -0.010 | 0.028 | -0.009 | 0.018 | -0.05 | 0.17 |

TABLE 22
LOBSTERS
(pCi/g wet wt.)

| LOCATION | COLLECTION DATE | Ag-110M | (+/-) | Sb-125 | (+/-) | I-131 | (+/-) | Cs-134 | (+/-) | Cs-137 | (+/-) | AcTh-228 | (+/-) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 02/03/10 | 0.018 | 0.041 | 0.040 | 0.089 | 0.004 | 0.045 | -0.014 | 0.028 | 0.009 | 0.042 | -0.020 | 0.130 |
| 32 | 05/10/10 | 0.000 | 0.025 | 0.045 | 0.043 | 0.029 | 0.056 | -0.005 | 0.014 | -0.017 | 0.023 | -0.041 | 0.083 |
| 32 | 08/05/10 | 0.000 | 0.008 | 0.009 | 0.022 | -0.016 | 0.024 | -0.003 | 0.009 | 0.003 | 0.008 | 0.031 | 0.052 |
| 32 | 10/22/10 | 0.005 | 0.006 | 0.006 | 0.018 | 0.013 | 0.036 | 0.001 | 0.008 | -0.010 | 0.007 | 0.014 | 0.037 |
| 35 | 02/03/10 | -0.013 | 0.046 | 0.009 | 0.074 | 0.027 | 0.031 | -0.001 | 0.024 | -0.010 | 0.036 | 0.030 | 0.110 |
| 35 | 05/10/10 | 0.012 | 0.021 | -0.035 | 0.034 | -0.019 | 0.045 | 0.000 | 0.010 | 0.003 | 0.015 | 0.014 | 0.045 |
| 35 | 08/05/10 | -0.002 | 0.011 | 0.000 | 0.032 | -0.002 | 0.036 | -0.002 | 0.012 | 0.002 | 0.015 | 0.041 | 0.077 |
| 35 | 11/18/10 | 0.010 | 0.018 | -0.053 | 0.055 | 0.004 | 0.054 | -0.012 | 0.023 | 0.005 | 0.021 | 0.051 | 0.124 |
| 37X | 02/12/10 | -0.012 | 0.035 | -0.005 | 0.051 | -0.006 | 0.038 | -0.007 | 0.019 | 0.004 | 0.024 | -0.013 | 0.068 |
| 37X | 05/20/10 | -0.002 | 0.019 | -0.020 | 0.026 | 0.031 | 0.051 | -0.001 | 0.008 | -0.006 | 0.017 | 0.042 | 0.050 |
| 37X | 09/29/10 | -0.006 | 0.017 | -0.013 | 0.042 | 0.023 | 0.058 | -0.004 | 0.018 | 0.006 | 0.019 | 0.001 | 0.174 |
| 37X | 10/12/10 | 0.001 | 0.014 | 0.021 | 0.043 | 0.004 | 0.031 | 0.005 | 0.020 | 0.009 | 0.016 | -0.024 | 0.062 |

## NOTES FOR DATA TABLES

| | |
|---|---|
| # | Collection Dates for Air Particulates and Iodine are listed as the end date; typically change-out days are on Tuesdays. |
| A | First quarter TLD (location 42) was not recovered after the phone pole it was mounted on was removed. Replaced TLD for second quarter. |
| B | Air Particulates had loss of power at Norwich (15) on May 26th. Sampled 10,099 cubic feet of air. Shut down was caused by a blown fuse. |
| C | Air Particulates had loss of power at Norwich (15) during sampling week of October 5 - 12. Sampled 8,218 cubic feet of air. Shut down was caused by a blown fuse. |
| D | Air Particulates had loss of power at Norwich (15) on November 24th from 12:45 to 16:05. Sampled 13,564 cubic feet of air. Shut down was caused by a blown fuse. |
| E | Non-pasture grass samples - hay |
| F | Non-pasture grass samples – feed (e.g., grain) |
| G | First quarter continuous seawater samples at Vicinity of Discharge (32) had low volume during the weeks ending January 5th, January 12th, and February 2nd due to freezing/clogging of the intake tubing line, which has since been corrected. |
| H | First quarter flounder plus other fish species at Vicinity of Discharge (32) and Niantic Bay (35) were unavailable due to scarcity during winter season. |
| I | Fourth quarter flounder plus other fish species at Vicinity of Discharge (32) and Niantic Bay (35) were unavailable due to scarcity during winter season. |
| J | First quarter mussels at Two Tree Island (28) were unavailable due to not being found intertidally and subtidally using SCUBA. |
| K | Second quarter mussels at Two Tree Island (28) were unavailable due to not being found intertidally and subtidally using SCUBA. |
| L | Third and Fourth quarters' mussels at Niantic Shoals (30) and Two Tree Island (28) were unavailable due to not being found intertidally and subtidally using SCUBA. |

# 4. DISCUSSION OF RESULTS

This section summarizes the results of the analyses on the REMP (Radiological Environmental Monitoring Program) samples. DNC has carefully examined the data throughout the year and has presented in this section all cases where station related radioactivity could be detected. The results are compared with previous environmental surveillance data.

Few impacts of the station operation on the environment were observed. Sub-sections contain a description of each particular media or potential exposure pathway. Naturally occurring nuclides such as Be-7, K-40, and Th-228 were detected in numerous samples. Be-7, which is produced by cosmic processes, was observed predominantly in airborne and vegetation samples. Th-228 results were variable and are generally at levels higher than plant related radionuclides.

Cs-137 and Sr-90 were observed at levels similar to those of past years. The levels of Cs-137 and Sr-90 detected were the result of atmospheric nuclear weapons testing in the 1960's.

## 4.1 Gamma Exposure Rate (Table 1)

Gamma exposure rate is determined from the integrated exposure measured over a calendar quarter using thermoluminescent dosimeters (TLDs). Prior to 1990, Victoreen $CaF_2(Mn)$ glass bulb glass bulb dosimeters were used for these measurements. In 1990, these were replaced by Harshaw $CaF_2(Mn)$ chips. In 2000, the $CaF_2(Mn)$ TLDs, were replaced with the $CaSO_4(Tm)$ Panasonic model UD-804 ASx TLDs.

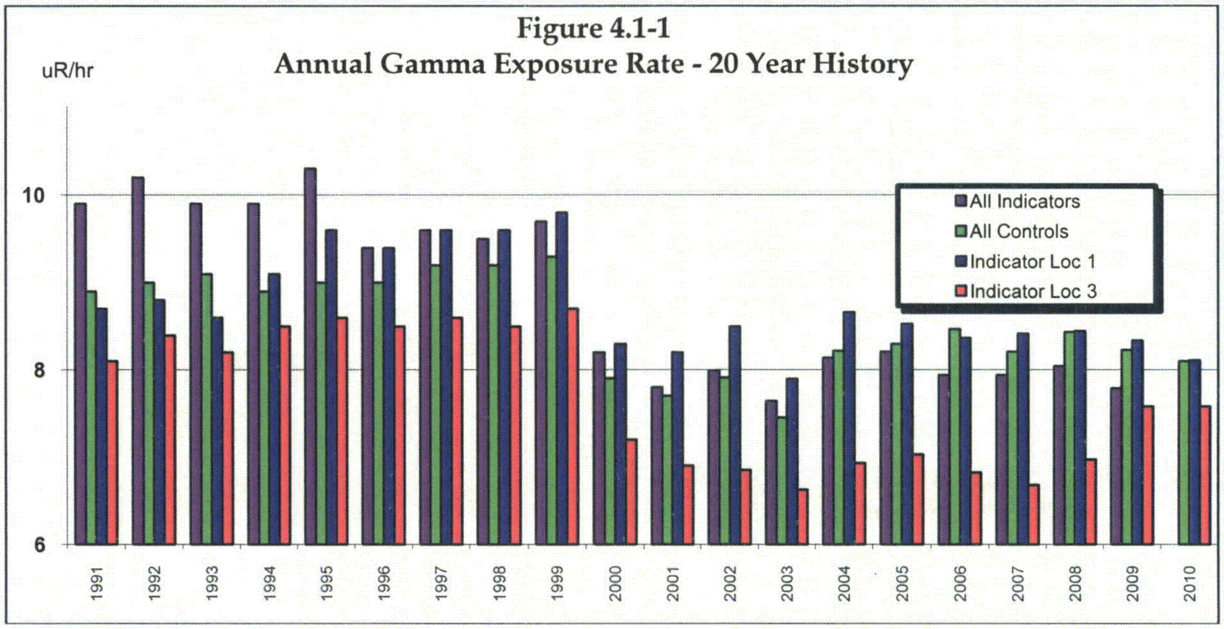
The dosimeters are strategically placed at a number of on-site locations, as well as at inner and outer off-site locations. Starting in 2001, the collection of TLDs was changed from monthly to quarterly and additional measurement locations were incorporated into the REMP requirements listed in the REMODCM (Radiological Effluent Monitoring and Offsite Dose Calculation Manual – Reference 8). Three more locations were added in mid-2003 to prepare for monitoring the potential effect of ISFSI (Independent Spent Fuel Storage Installation – Dry Cask Storage). Two Dry Cask Containers were loaded in the first quarter 2005. Three containers were loaded in mid 2006, three in October 2007, three in April 2009, and three in October 2010. None were loaded in 2008. The exposure rate measurements at the three additional TLD locations remain basically unchanged from the background measurements performed prior to any cask loading (six quarter background average mid 2003 – 2004: 9.5 uR/hour at location 73X, 7.6 uR/hour at location 74X and 6.9 uR/hour at location 75X).

Table 1 lists the exposure rate measurements for all 44 monitored locations. Trends similar to those of past years are apparent. These measurements demonstrate the general variations in background radiation between the various on-site and off-site locations and include gamma exposure from all sources of radioactivity. For example, the Weather Shack (location 02), MP3 Discharge (location 05), Environmental Laboratory (location 08), Bay Point Beach (location 09), Pleasure Beach (location 10), Corey Road (location 48), and Site Switchyard Fence (location 73) experience higher exposure rates due to their proximity to granite beds and stonewalls. In addition, the Mystic (location 13C) and Ledyard (location 14C) control locations experience relatively higher background exposure rate than the other control locations at Fisher's Island, Norwich and Old Lyme (locations 12C, 15C and 16C).

The only appreciable effect seen in the recent TLD data is that attributable to the variation in the background radiation that is consistent with previous years. Figure 4.1-1 shows a historical trend of TLD exposure rate measurements, comparing an annual average of all indicator TLDs, an annual average of all control TLDs, and the annual average of the two most critical indicator locations which are used to represent the two closest site boundary residences in the North-northwest and Northeast directions. Examination of the average measurements since 1990, shows interesting site changes and site characteristics. For example, the average of all indicator locations for the period when Unit 1 was still in operation (through 1995) exhibit the effects of N-16 BWR turbine building sky-shine to immediate areas onsite. As discussed in previous annual reports, the effects of sky-shine at onsite monitoring stations were increased exposure rates as high as 6 uR/hr at certain onsite locations. The elevated exposure rates from sky-shine decreased rapidly with distance to levels indistinguishable from normal background measurements at even the nearest offsite monitoring stations. Also apparent in Figure 4.1-1 is the replacement of the historical Victoreen TLD monitoring system with the Panasonic system in year 2000. The difference in response between the two systems is very apparent, with the new Panasonic TLDs reading 15% to 20% lower. This lower response is consistent for all locations, including both indicator and control locations.

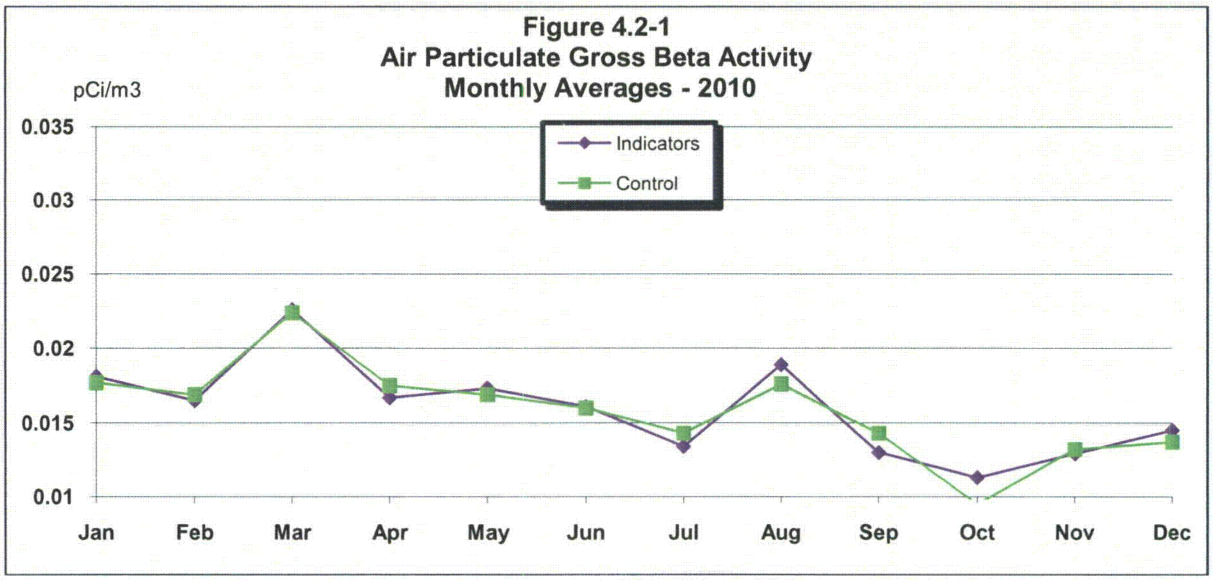
Figure 4.1-1 also relates the difference in critical indicator locations 1 and 3 and the annual average of all indicator TLDs to the annual average of the control TLDs collected and measured during coincident periods throughout the year. As discussed earlier, the exposure measurements of many indicator locations onsite (and two of the control locations) are influenced by natural background exposure differences caused by the many granite out-croppings typical of the local area. Figure 4.1-1 shows the annual average at indicator location 1 is slightly higher in gamma exposure rate than the average control gamma exposure rate. An opposite trend is shown for location 3. These differences are the result of the differences in granite at these locations. Location 3 was moved in the second quarter 2009 to minimize the effect of tree covering for the air sampler also located at this location. The 2009 and 2010 data for location 3 shows an increase likely attributable to being closer to granite at the new location.

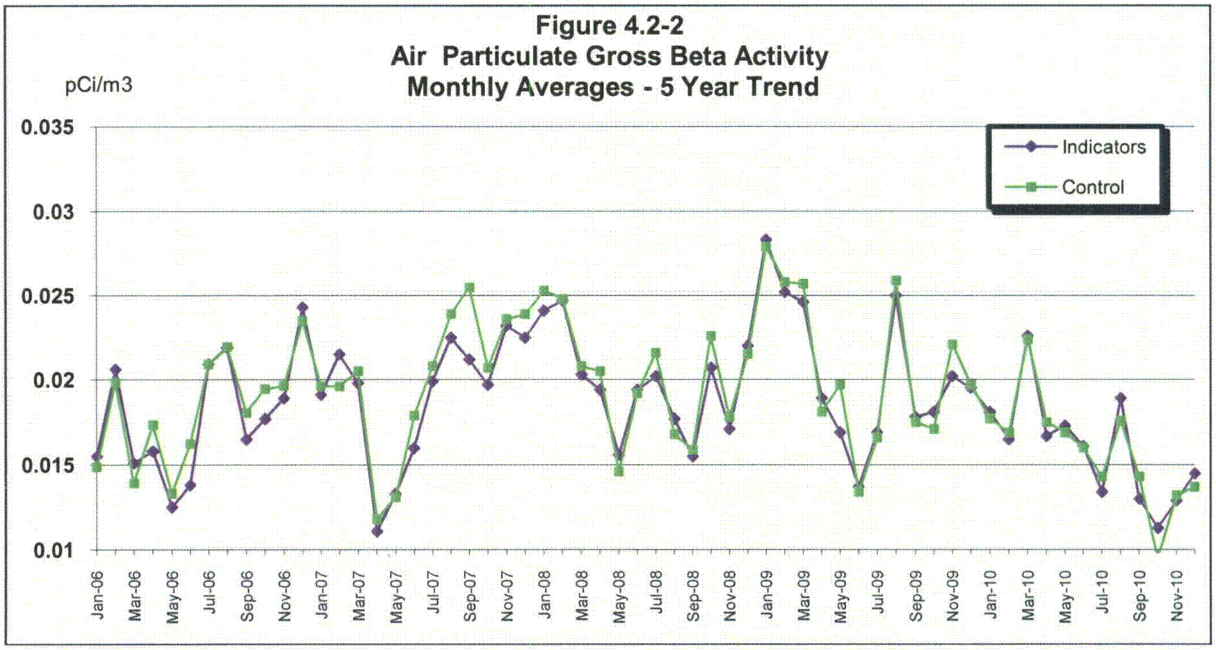
In 2005 and 2006, there was a small increase noted at locations 5 and 8 caused by storage of the Unit 2 replaced reactor head. As expected, this increase exhibited a decreasing trend because of radioactive decay. The head was shipped offsite for disposal in the fourth quarter 2006; the measured levels at these two locations have returned to the background levels measured prior to the head being placed in the storage area. Although not measurable, any resulting site boundary doses are bounded by dose rates from the radwaste storage areas and are discussed in Section 5.




4.2 Air Particulate Gross Beta Radioactivity (Table 2)

Air is continuously sampled at seven inner ring (0 to 2 miles) locations and one control location (14 miles N) by passing it through glass fiber particulate filters. These samples are collected weekly and analyzed for gross beta radioactivity. Results are shown on Figure 4.2-1 and Table 2. Gross beta activity remained at levels similar to that seen over the last decade. Inner and control monitoring locations continue to show no significant variation in measured activities (see Figure 4.2-2). This indicates that any station contribution is not measurable.






4.3 Airborne Iodine (Table 3)

Charcoal cartridges are included at all of the air particulate monitoring stations for the collection of atmospheric iodine. These cartridges are analyzed on a weekly basis for I-131. No detectable levels of I-131 were seen in the 2010 charcoal samples.

4.4 Air Particulate Gamma (Table 4A-D)

The air particulate samples that are utilized for the weekly gross beta analyses are composited quarterly and analyzed for gamma emitting isotopes. The results, as shown in Tables 4A - 4D, indicate the presence of naturally occurring Be-7, which is produced by cosmic radiation. No other positive results are seen. These analyses indicate the lack of station effects.

4.5 Air Particulate Strontium (Table 5)

Prior to 1989 Table 5 was used for listing the data for measurements of Sr-89 and Sr-90 in quarterly composite air particulate filters. The historical data indicated the lack of any detectable station related activity. Since these analyses are not listed in NUREG 1301 (Reference 15), these measurements were discontinued. In the event of widespread station related contamination or other unusual events (such as the 1986 Chernobyl incident), these measurements could be made. Historically, when world events created conditions that caused detectable measurements of these nuclides, there was no difference noted between indicator and control locations. This further confirms that any of the detectable levels for these nuclides were not plant related.

## 4.6 Soil (Table 6)

Millstone resumed collection of soil as a required media type in 2001. Prior to 2001, it had not been sampled for over fifteen years. These samples were discontinued due to the fact that, previous sample results never indicated any station related detectable activity. Similarly, since 2001, no station detectable activity has been seen in these samples. The results of these samples, allows for the determination of baseline activity levels in soil. This is particularly important for Cs-137, since significant levels from past weapons testing fallout remain in the soil. Baseline levels should be useful in the future, when site characterization and decommissioning of the station become the focus during preparations for License termination. This media is collected annually from one control and two indicator locations.

## 4.7 Cow Milk (Table 7)

Typically, the most sensitive indicator of fission product existence in the terrestrial environment is the radiological analysis of milk samples. Milk is a widely consumed food, therefore it is usually one of the most critical exposure pathways. Since 1996 all dairy (cow) farms close enough to Millstone to be considered an indicator location (i.e. conservatively within 10 miles, reference 15 specifies within 5 miles) have ceased operation. Therefore, the sampling of cow milk has been discontinued until such time dairy activities in the nearby area resume. Each year the Land Use Census is used to identify locations of milk animals that should be included in the monitoring program. It is performed annually and is maintained by observations, door-to-door surveys and consulting with local agriculture authorities. The 2010 census is listed in Appendix A. If a new dairy farm is identified close enough to Millstone to be considered an indicator location, the collection of cow milk will resume.

## 4.8 Goat Milk (Table 8)

When available, these samples are collected twice per month during grazing season and once per month during the rest of the year. Each sample is analyzed for I-131 and gamma emitting nuclides. Although not required by the REMODCM, samples from each location are composited quarterly and analyzed for Strontium.

Goat milk samples are typically a more sensitive indicator of fission products in the terrestrial environment than cow milk samples. It should be noted that the uptake of radionuclides in milk is dependent on a number of parameters. These include: metabolism of these animals, feeding habits, farming practices and feed type. Similar to previous years, Cs-137 and Sr-90 are observed in goat milk. During past weapons testing periods, samples taken at certain milk locations indicated higher uptake of fallout than others. This was especially apparent in past samples collected in the immediate area around Millstone (see previous Annual Operating Reports). One of these sites, located at 5.2 Mi. NNE of Millstone (previous location 22, sampled from 1994 through 2004), exhibited a trend of showing higher Sr-90 and Cs-137 concentrations than at some of the other locations (including ones located closer to Millstone). The Station and regulatory authorities (e.g., see Reference 17) have carefully reviewed past and present data. The presence of the Sr-90 and Cs-137 is the result of residual radioactivity deposited into the environment from the fallout of past nuclear weapons testing. The facts that lead to this conclusion are presented in Section 6.0. These facts include: effluent release totals for these isotopes show insufficient quantities to account for such measurements; Sr-89 and Cs-134 which are chemically similar and generally released in comparable quantities were not detected, and a trend since the early 1960's that shows a consistent declining presence of Cs-137 and Sr-90 in milk from Connecticut.

The 2010 results indicate no detectable I-131 in this media. In the 1970's and 1980's low levels of plant related I-131 were seen in some of these samples. However, for over 20 years, no plant related detectable levels of I-131 have been seen in goat milk samples. The only other occasions where I-131 was detected were fallout episodes from the Chinese Weapons Tests of the mid to late 1970's and Chernobyl Accident in 1986.

Goat milk was unavailable at all locations both early and later in the year. Per requirements, pasture grass or feed is collected as a substitute when milk is not available (see 4.9. Pasture Grass and Feed).

### 4.9 Pasture Grass and Feed (Table 9)

When the routine milk samples are unavailable, samples of pasture grass are required as a replacement. These samples may also be taken to further investigate the levels of radioactivity in milk. During the winter months and early spring, insufficient growth often prohibits sampling of pasture grass. Feed (e.g., hay or grain) is typically sampled whenever pasture grass is not available.

No station effects are noted in these samples. Cosmic produced Be-7 was observed in the majority of the pasture grass samples and many of the hay samples. Due to its relatively short half-life (52 days), it was not detected in the several of the "older" hay samples. Naturally occurring K-40 was approximately two times higher in hay and feed compared to pasture grass samples. Cs-137 was only observed as positive in only one sample, at a level similar to previous years which have been attributable to residual fallout from weapons testing.

### 4.10 Well Water (Table 10)

These samples were discontinued in 1985, because no detectable station activity was ever observed in these samples. However, based upon lessons learned at other nuclear plants, including several undergoing decommissioning, sampling was resumed at several locations starting in the fourth quarter 2003. Three additional locations were added in 2005 to monitor potential leakage from the ISFSI. Due to the heightened sensitivity on this potential pathway, three more locations were added in 2006, five more in the summer of 2008 and two more in the Fall of 2010. One of the newer wells, location 86 (GPI 6 – inside the Unit 3 RCA between the Boron and Waste Test Tank berm and the Fuel Building) indicated a positive tritium (H-3) result (2310 +/- 250 pCi/liter) on August 28, 2008. This was the first sample from this new well. The temporary well located nearby also indicated positive levels (see 2008 Annual Radiological Environmental Operating Report and the 2008 Radiological Effluent Report) due to penetrations in the berm and a leaky pressure gauge for one of the Boron Recovery Tanks. The penetrations have been sealed and the pressure gauge repaired. The H-3 levels have since become undetectable at this location.

Location 80 (S12-MW-2) indicated a low level of H-3 (1660 +/- 880) on 6/21/10. Follow-up sampling on 8/5/10 and H-3 analyses of this and nearby wells did not indicate any positive H-3. Subsequent September and December samples also did not indicate any positive levels of H-3. This and the above positive level were localized and transitory in nature; they were not indicative of any contamination in any drinking water supplies. Consistent with the past data, there were no other incidents of any station activity detected in these samples.

4.11 Meat (Table 11)

This is a new sample type initiated in December 2010. NRC Regulatory Guide 4.1 was revised (in 2009) to include evaluating the need for sampling and analysis of meat products. Since deer are abundant in the area near Millstone and the land use census indentified significant consumption in the area, this sample type was added to the REMP. The results indicate expected levels of background. Although Cs-137 was identified, it is related to the types of food deer consume and the weapons testing fallout in these foods. Additional deer meat samples will be taken in 2011 at areas further from the plant to confirm this supposition.

4.12 Fruits and Vegetables (Table 12)

Consistent with past years, this media did not show any station effects. Naturally occurring K-40 was detected in all samples.

4.13 Broad Leaf Vegetation (Table 13)

Consistent with past years, this media did not show any station effects. Most samples had detectable levels of cosmic produced Be-7, at levels consistent with previous years. Similar to deer meat, pasture grass and feed, and milk, periodically these samples have indicated positive levels of Cs-137. Its cause is also the same; fallout from weapons testing has been widespread in terrestrial samples for many years.

This media can be an early and sensitive indicator of releases from the station for both unplanned releases and normal operations. Therefore, to enhance program-monitoring effectiveness, samples of broadleaf vegetation are collected monthly during the growing season, May - October, even though requirements are to collect this media twice a year.

4.14 Seawater (Table 14)

The guidance in Reference 15 specifies one sample upstream (control – beyond significant influence of the discharge) and one sample downstream (indicator – beyond but near the mixing zone) for surface water samples. Historically the downstream sample for Millstone has been located in the vicinity of discharge (location 32 – see Reference 8) which is prior to the mixing zone. This location was chosen since it was readily accessible by power and resistant to cold weather conditions. Operation of an automatic sampler at the indicator location is necessary for providing a representative sample. Although samples obtained at this location actually monitor the undiluted discharge activity, it provides for an excellent check on the radioactive effluent monitoring program. Any dose consequences can be assessed by usage of the appropriate dilution factors. It's not as necessary to have a continuous sampler at the control location due to the historical relative consistency noted in seawater background activity near the Millstone Site.

A technician collects an aliquot from the automatic sampler at Location 32 on a weekly frequency. These samples are composited for monthly analyses. In September 1999, Millstone increased the required analysis frequency for this composite sample to monthly to increase monitoring effectiveness. For the Control Location, Giant's Neck (Location 37C), six weekly grab samples are obtained for quarterly compositing. In 2003, the LLD for H-3 (tritium) at the indicator location (32) was lowered by approximately a factor of four to further enhance the monitoring effectiveness. This lower LLD was continued through 2010.

Naturally occurring K-40 was the only detectable gamma activity seen in several of these samples. Measured plant related levels of H-3 in seawater from the immediate vicinity of discharge (location 32) were observed in 7 of the 12 samples. This is similar to the frequency observed in 2008, more than the positives noted in 2007 and 2009. Although only Unit 3 experienced a refueling outage in the 2nd quarter of 2010 (tritium releases are typically higher near these outages due to the need for increased liquid processing during these times), higher discharges also occurred in the 4th quarter of 2010 because of the planned outage for Unit 2. As mentioned above, these samples are taken directly from liquid effluent flow prior to dilution into the Long Island Sound. Dilution studies performed for this discharge have determined that a dilution factor of 3 is appropriate to estimate concentrations immediately outside the quarry within a near-field area.

Tritium builds up in the reactor coolant during each fuel cycle. It is generated during plant operation from fission and neutron reactions. Between 1992 and 2002, H-3 was not typically detected. However, due to the enhanced detection sensitivity, H-3 levels are now often detected at the indicator location. Figure 4.14-1 shows an eighteen-year trend of H-3 releases in the Millstone liquid effluents versus the measured environmental concentrations from the vicinity of discharge location.

Sampling "undiluted discharge water" and analyzing to a "low H-3 LLD" enables a direct comparison of effluent monitoring to environmental monitoring for this exposure pathway. Figure 4.14-2 (one year trend) and Figure 4.14-3 (five year trend) show this comparison. This comparison is more accurate than Figure 4.1-1 since it takes into account the dilution flow during each month. Dilution flow can change substantially during plant outages. By plotting the data monthly, the resolution of the comparison is further enhanced. However, there are some slight discrepancies shown in Figure 4.14-2 due to the REMP samples being taken on Tuesdays which may not exactly coincide with the effluent measurement endpoint for the month.

**Figure 4.14-1**
**H-3 Curies Released versus Seawater Concentration**
**18 Year Trend**

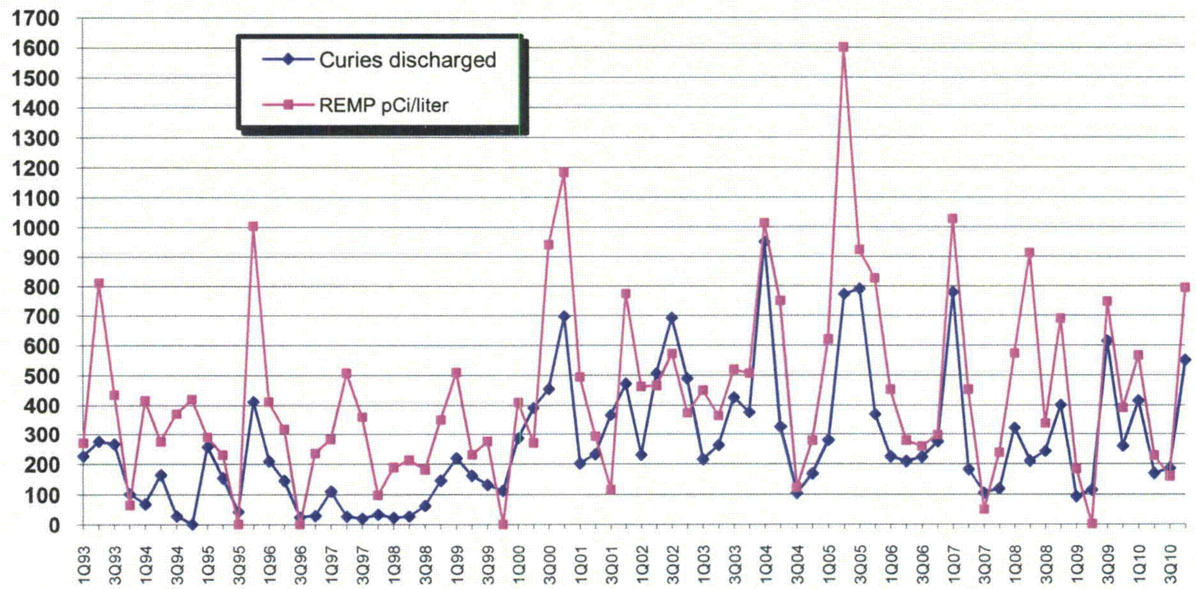


**Figure 4.14-2**
**Seawater - H-3 Concentration**
**REMP Samples vs. Effluent Measurements - 2010**

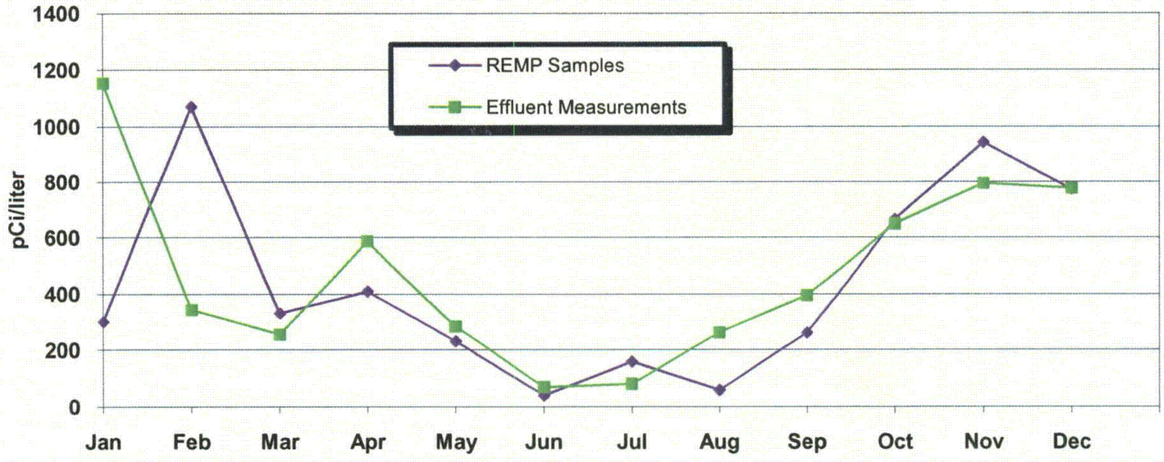
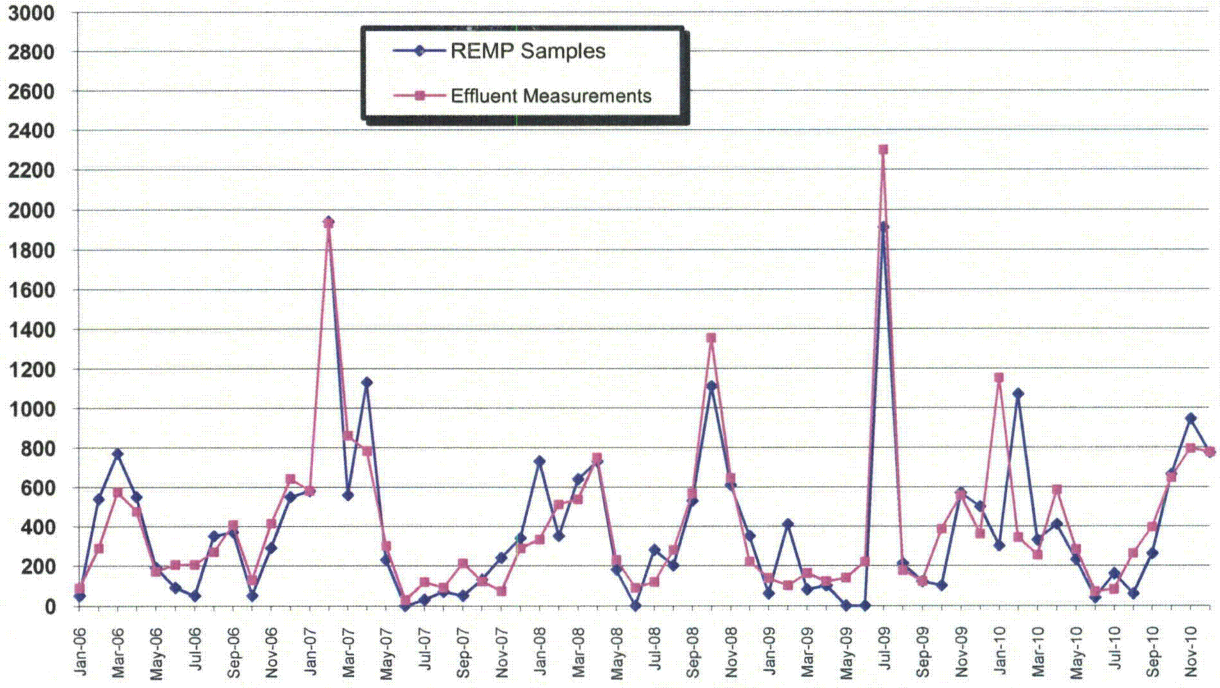



**Figure 4.14-3**
**Seawater H-3 Concentration**
**REMP Samples vs Effluent Measurements - 5 Year Trend**



## 4.15 Bottom Sediment (Table 15)

Typically Cs-137 is detected in samples from Golden Spur (67X). This year both samples did not indicate positive activity. Golden Spur is a fresh water area; levels of Cs-137 in previous years at this location were comparable to those observed in past river water sediments taken from other fresh water areas (e.g., the Connecticut River). Because of the relative distance and direction of the Golden Spur location from the station and comparable levels seen at other more distant river water locations, the historical levels of Cs-137 detected at Golden Spur were from weapons testing fallout. Similarly, in previous years Cs-137 was also detected in the extra samples from Jordon Cove Bar (39X). The levels the past two years have also decreased to below detectable. Prior to the last two years, the previous low levels likely exhibited some effect of the fresh water drainage from Jordan Brook.

Although Co-60 was noted in the previous year samples from Jordan Cove Bar, last year's downward trend continued; both 2010 samples did not indicate any positive Co-60. In any case, bottom sediment is not a significant dose pathway to man, especially at areas not typically used by the public. Analyses of other aquatic media, including seafood, sampled from near these locations (discussions that follow) do not show any detectable Co-60 or Cs-137.

A new sediment location was added in 2006 near the closest public beach (location 69X). The data for this location has not indicated any plant related activity.

## 4.16 Aquatic Flora (Table 16)

Although sampling of this media is not required, it provides useful information since it is a very sensitive indicator of radioactivity in the environment. Low levels of activity (e.g., Mn-54, Co-58, Co-60, Zn-65, I-131 and Ag-110m) have been detected in the past. Since 2000, levels have decreased to undetectable for all nuclides except for I-131. Positive levels of I-131 were noted in 2004 – 2008. Seaweed has a significant bioaccumulation factor for iodine which makes it an extremely sensitive indicator of iodine in the environment.

Due to the positive I-131 indications in 2004 and 2005, additional monitoring and studies were conducted in 2006. Extra samples were obtained at Thames River and Rocky Neck to determine if there may have been other sources for these very low levels of I-131. These extra samples indicated the most likely cause for the 2004 – 2008 positive I-131 results was the outfall from nearby wastewater (sewage) treatment plants. The usage of I-131 in medical treatments is becoming more common and it is not unusual for it to be in the wastewater. The New London Waste Water Treatment Plant is located on the west side of the Thames River near Fort Trumbull. Groton has two wastewater treatment plants, one located across the Thames River (and slightly upstream) from the New London treatment plant and the other near Bluff Point. The highest I-131 results were in the samples from within the Thames River, which were taken near the outfall from the New London Waste Water Treatment Plant.

Beginning in 2006, a control location in the Thames River (90X) was added to better determine the influence of medical practices on the levels of I-131 in aquatic flora. This location was the only one with detectable I-131. There was no other activity detected in the flora samples. Therefore, based upon the above, no Station related radioactivity was detected in aquatic flora since 2000.

4.17 Fish (Tables 17A and 17B)

4.17.1 Flounder (Table 17A)

The activity in Flounder is the same as that seen for the past decade. No activity was observed except for the naturally occurring nuclides.

4.17.2 Fish - Other (Table 17B)

The activity in other fish is the same as that seen for the past decade. No activity was observed in this media except for naturally occurring nuclides, including samples taken from within the quarry.

4.18 Mussels (Table 18)

Similar to the last several years, this sampling media showed no station related radioactivity at all locations.

4.19 Oysters (Table 19)

All locations utilize oysters stocked in trays. The oysters used for stocking these trays have been obtained from Ram Island for the last several years. To confirm that the stocked oysters are not initially contaminated, the oysters from Ram Island are also analyzed. The stocked trays are kept at most of the sampling areas to guarantee samples and facilitate sample collection. Historically, native oysters were sampled at the quarry (location 40X), which was an extra location. Due to safety concerns about diving operations, sampling at location 40X was suspended after obtaining the 2nd quarter 2007 samples. Similarly, due to other safety concerns, location 32 was moved to a more accessible area in the middle of the quarry. Although it is labeled as vicinity of the discharge, it was previously located at the end of the quarry.

The only station related activity observed in these samples was Ag-110m noted at location 32. This is typical for these samples obtained from this location. Although last year the levels decreased to below the detectable levels, a slight increase in liquid effluents caused all four samples to indicate positive Ag-110m.

For several previous years, high levels of Zn-65 were observed in oysters. This was caused by their high capacity for accumulating zinc. Studies have shown that oysters can accumulate as much as 50 times or more the amount of zinc compared to most other seafood (Wolfe, 1979). A remarkable correlation existed between the Zn-65 concentration measured in the native quarry oysters and the amount of Zn-65 discharged into the environment. However, since the permanent shutdown of Millstone Unit 1 in 1996, the amount of Zn-65 in liquid effluents has decreased significantly. Starting in 2001, no Zn-65 has been detected in either the liquid effluents or in oysters. Figure 4.19-1, shows a historical trend that existed between Zn-65 releases and measured concentrations in quarry oysters. The decreasing trend in effluent radioactive releases is apparent in both the curies released and the measured concentrations in oysters.

Figure 4.19-2 shows the trend of Ag-110m concentration in quarry oysters compared to the liquid effluents discharged. Similar to Zn-65, the correlation between Ag-110m discharged and the Ag-110m concentration measured in the native quarry oysters is apparent. Section 5 provides for a comparison of doses based upon effluent measurements (method 1) to doses based upon environmental measurements (method 2). Per regulatory guidance (reference 7), the bioaccumulation factors for both Zn and Ag were adjusted based upon several years of historical data to account for the higher measured uptakes. These adjustments have typically shown good agreement between the two methods, with method 1 usually being conservative. The 2006 and 2007 data indicate an unusual trend (see Section 5, Table 5-2). Method 2 (REMP dose assessment) indicates higher doses than method 1 (effluent dose assessment). Due to significant effluent reductions over the last several years, the low resulting doses (less than 0.01 mrem) make this comparison difficult and subject to significant error. Trending of these comparisons is routinely performed and adjustments are made, when appropriate.

The location of the quarry is on-site and not available for public use. No station activity was observed at locations beyond the station discharge area. Therefore, the actual concentration of the nuclides in oysters available for public consumption is much less than the levels found inside the quarry. The near-field dilution factor for liquid discharges from the Millstone quarry discharge is a factor of 3. The dose consequence of the station related radioactivity via this pathway is discussed in Section 5.0.

## 4.20 Clams (Table 20)

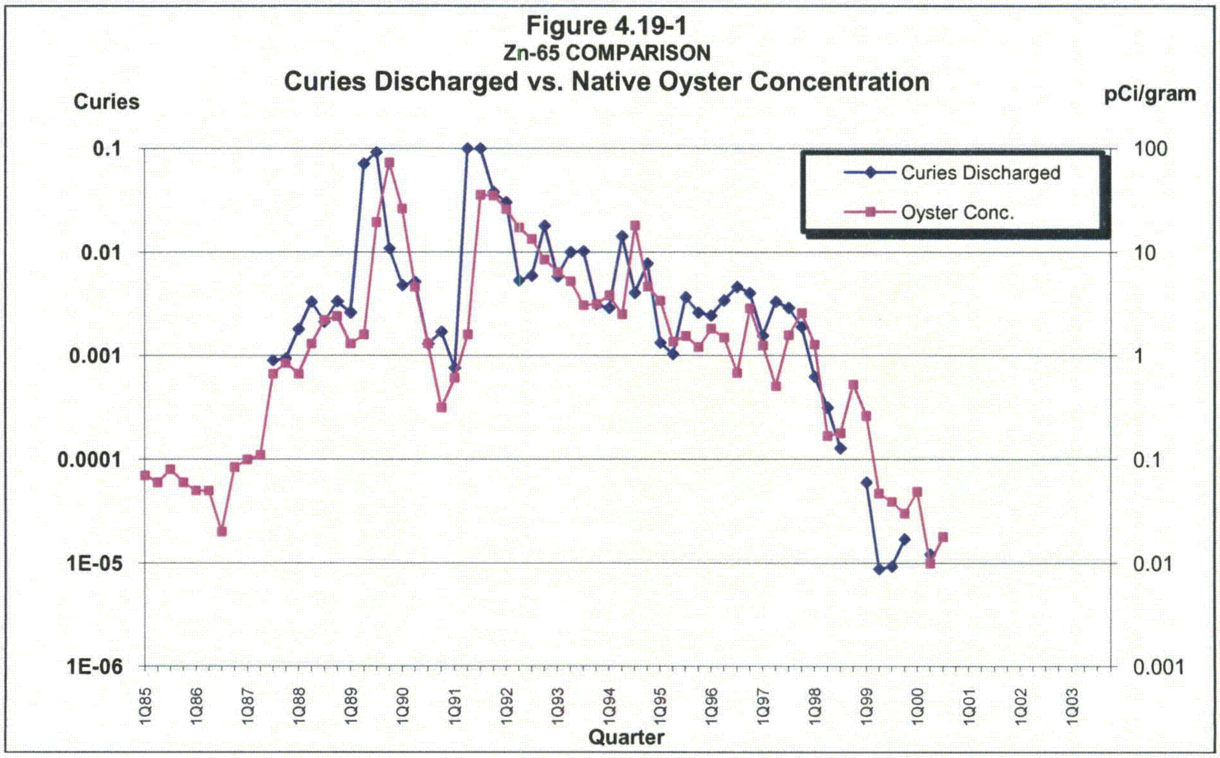
Occasionally this media indicates the presence of station related radioactivity. No station related radioactivity was observed in any of the clam samples taken in 2010.

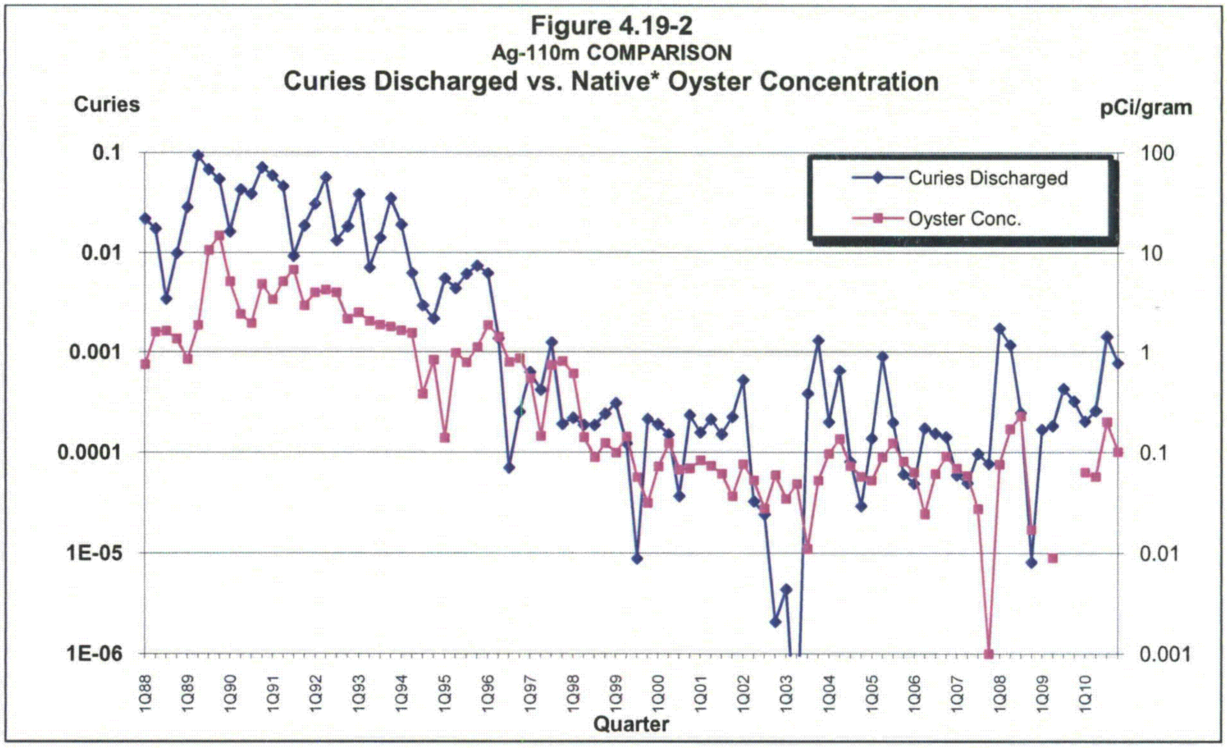
## 4.21 Scallops (Table 21)

Scallops are not required by the REMP. However, attempts are made to sample this media to confirm station effects because scallops could be available for public consumption. No scallop samples have been available for several years.

## 4.22 Lobsters (Table 22)

Like the last several years, no station related radioactivity was detected in this sample media in 2010.




* Native oysters until 3Q 2007; because of diver safety issues now the only oysters sampled in the Quarry are stocked in trays similar to what has historically been performed at all the other locations.

# 5. OFFSITE DOSE EQUIVALENT COMMITMENTS

The off-site dose consequences (dose equivalent commitments) of the station's radioactive liquid and airborne effluents have been evaluated using two methods.

The first method utilizes calculations of direct dose from sources onsite and the station's measured radioactive discharges as input parameters into conservative models to simulate the transport mechanism through the environment to man. This results in the calculation of the maximum dose consequences to individuals. The results of these computations have been submitted to the NRC in the Radioactive Effluent Release Report written in accordance with the Radiological Effluent Monitoring and Offsite Site Calculation Manual, Section I.F.2. This method, which is usually conservative (i.e., computes higher doses than that which actually occur), has the advantage of approximating an upper bound to the dose consequences. This is important in those cases where the actual dose consequence cannot be measured because they are so small as to be well below the capabilities of conventional monitoring techniques.

The second method utilizes the actual measurements of the concentrations of radioactivity in various environmental media (e.g., fish, shellfish) and then computes the dose consequences resulting from the consumption of these foods.

The results of both methods are compared in Table 5.1 for those pathways where a potential dose consequence exists and a comparison is possible. The doses presented in this table are calculated at the location of maximum effect from the station effluents for that pathway and for the critical age group. For example, the external gamma dose from gaseous effluents is calculated for the site boundary location which is not only the nearest but also has the greatest directional wind frequency and fish and shellfish doses are calculated assuming they are from an area within 500 feet of the station discharge.

Summarizing the data in Table 5.1:

MAXIMUM TOTAL INDIVIDUAL DOSES : WHOLE BODY = 0.52 mrem
Bone = 0.80 mrem
Thyroid = 0.44 mrem

The majority of the whole body dose is due to the calculated dose from the estimated Carbon 14 airborne emissions. Another significant contributor is the conservative determination of dose (≈0.19 mrem) to the nearest resident as a result of direct radiation from on-site radioactive waste operation/storage facilities and continuous occupancy. The bone dose is essentially all attributable to the airborne pathway based upon Method 1. The thyroid dose is also based upon conservative assessments using Method 1. Since the maximum dose consequence to an individual is at the location of highest dose consequence, doses will be less for all other locations. The average whole body dose to an individual within 50 miles historically is on the order of 1000 times less than the maximum individual whole body dose.

In order to provide perspective on the doses in Table 5.1, the standards on the allowable maximum dose to an individual of the general public are given in 40CFR190 as 25 mrem whole body, 75 mrem thyroid, and 25 mrem to any other organ. These standards are a fraction of the normal background radiation dose of approximately 311 mrem per year and are designed to be inconsequential in regard to public health and safety. Since station related doses are even a smaller fraction of natural background, they have insignificant public health consequences. In fact, the station related doses to the maximum individual are less than 10% of the variation in natural background.

# TABLE 5.1

## COMPARISON OF DOSE CALCULATION METHODS

## MILLSTONE POWER STATION

### 2010 Annual Dose (millirem)

| Pathway | Individual | Organ | Method 1[1] | | | | Method 2 [1] |
|---|---|---|---|---|---|---|---|
| | | | Unit 1 (BWR) | Unit 2 (PWR) | Unit 3 (PWR) | Station Total | Station |
| ***Airborne Effluents*** | | | | | | | |
| 1. External Gamma Dose (gamma air) [8] | Max[2] | Whole Body | 0.0000 | 0.00025 | 0.00292 | 0.0032 | ND[3] |
| 2. Whole Body Dose (internal and external) | Max[2] | Whole Body | 0.00036 | 0.177 | 0.130 | 0.308 | ND |
| 3. Inhalation, vegetables and goat milk | Max[2] | Thyroid | 0.00036 | 0.178 | 0.242 | 0.421 | ND |
| 4. Inhalation, vegetables and goat milk | Max[2] | Max Organ | 0.00044 | 0.884 | 0.613 | 1.50 | ND |
| ***Direct Dose*** | | | | | | | |
| Nearest Residence | Max[2] | Whole Body | N/A | N/A | N/A | ~0.19[4] | <1.8[5,8] |

## TABLE 5.1 (Cont.)

## COMPARISON OF DOSE CALCULATION METHODS

## MILLSTONE POWER STATION

### 2010 Annual Dose (millirem)

| Pathway | Max Individual | Organ | Method 1 (1) | | | | Method 2 (1) |
|---|---|---|---|---|---|---|---|
| | | | Unit 1 (BWR) | Unit 2 (PWR) | Unit 3 (PWR) | Station Total | Station |
| ***Liquid Effluents*** | | | | | | | |
| 1. Fish | * Adult | Whole Body | 0.00000013 | 0.000156 | 0.000549 | 0.000705 | ND(3) |
| | Teen | " | 0.00000007 | 0.000125 | 0.000415 | 0.000540 | |
| | Child | " | 0.00000003 | 0.000112 | 0.000341 | 0.000453 | |
| | * Adult | GI(LLI)(6) | 0.00000000 | 0.002146 | 0.001895 | 0.00404 | ND |
| | Teen | " | 0.00000000 | 0.001500 | 0.001373 | 0.00287 | |
| | Child | " | 0.00000000 | 0.000566 | 0.000597 | 0.00116 | |
| | Adult | Liver | 0.00000020 | 0.000211 | 0.000838 | 0.00105 | ND |
| | * Teen | " | 0.00000021 | 0.000190 | 0.000803 | 0.00099 | |
| | Child | " | 0.00000019 | 0.000169 | 0.000721 | 0.00089 | |
| 2. Shellfish | * Adult | Whole Body | 0.00000002 | 0.000078 | 0.000257 | 0.000335 | 0.000015(7) |
| | Teen | " | 0.00000001 | 0.000073 | 0.000239 | 0.000312 | 0.000016 |
| | Child | " | 0.00000000 | 0.000081 | 0.000270 | 0.000351 | 0.000017 |
| | * Adult | GI(LLI) | 0.00000000 | 0.006860 | 0.001254 | 0.00811 | 0.0106 |
| | Teen | " | 0.00000000 | 0.004714 | 0.000903 | 0.00562 | 0.00725 |
| | Child | " | 0.00000000 | 0.001691 | 0.000366 | 0.00206 | 0.00258 |
| | Adult | Liver | 0.00000003 | 0.000155 | 0.000617 | 0.00772 | 0.000026 |
| | * Teen | " | 0.00000003 | 0.000155 | 0.000636 | 0.00791 | 0.000026 |
| | Child | " | 0.00000003 | 0.000150 | 0.000627 | 0.00777 | 0.000022 |

Notes:

1. Except for direct dose, method 1 uses measured station discharges and meteorological data as input parameters to transport-to-man models that conservatively calculate dose to people; method 2 uses actual measured concentrations in environmental media to estimate the dose.
2. Maximum individual - The maximum individual dose is the dose to the most critical age group at the location of maximum concentration of station related activity. The dose to the average individual is much less than the maximum individual dose.
3. ND - Not Detectable - No station related activity could be detected above natural background or above the minimum detectable level (MDL).
4. The dominant source of direct dose from the station is from storage and movement of radioactive waste. Storage of radioactive waste is allowed in several areas onsite. Operation of the storage facilities is limited by design to ensure that the maximum direct dose at the site boundary from each area does not exceed one millirem. Actual exposure throughout the year was maintained much less than this operational limit. Each facility is monitored onsite by the Radiation Protection Department using TLDs. The exposure measured for each facility TLD was corrected for distance to the nearest site boundary residence. The resultant exposure was conservatively multiplied by 1.5 to account for sky-shine. These maximum estimated doses from each facility were summed for a cumulative site commitment of approximately 0.19 millirem. The whole body dose from airborne effluents was 0.31 and from liquid effluents was 0.0012 (seafood consumption, swimming & boating and shoreline recreation dose total). This results in a total estimated whole body dose to the maximum individual of 0.50 mrem (0.19 + 0.31 + 0.0012).
5. Measured dose was derived from monthly TLD readings. There are two residences that qualify as the closest residence; each has a TLD near enough to use as an estimate to each residence. The one with the highest average dose rate was used to estimate the direct dose to the closest residence. A background dose rate was subtracted. This background was derived from the average of the five control TLD locations. This method is very conservative assuming natural exposure influences, such as granite, are actually plant related exposure. This method provides a bounding high value. The exposure measurements of the select indicator locations are influenced by natural background exposure differences caused by the many granite out-croppings typical of the Millstone area. Historical data has shown that TLD sample locations in the vicinity of granite can be dramatically influenced by natural radioactivity contained within the granite.
6. GI (LLI) - Gastrointestinal Tract - Lower Large Intestine.
7. Based on measured levels in the quarry oysters. A measured near field dilution factor of 3 was used to adjust for the fact that these oysters are on-site and inaccessible to the public. This factor adjusts the measured on-site concentration to that which could occur to a public accessible off-site location after dilution of the effluent by the Long Island Sound. The measured levels in the stocked oysters within the quarry were about one-half the native quarry oysters. For conservatism, it was assumed the maximum individual consumed primarily oysters (activity in clams was much lower than in the oysters).
8. Based upon conservatively assuming no correction for building shielding and occupancy.

# 6. DISCUSSION

The evaluation of the effects of station operation on the environment requires the careful consideration of many factors. Those factors depend upon the media being affected. They include station release rates, effluent dispersion, occurrence of nuclear weapons tests, seasonal variability of fallout, local environment, and locational variability of fallout. Additional factors affecting the uptake of radionuclides in milk include soil conditions (mineral content, pH, etc.), quality of fertilization, quality of land management (e.g., irrigation), pasturing habits of animals, and type of pasturage. Any of these factors could cause significant variations in the measured radioactivity. A failure to consider these factors could cause erroneous conclusions.

Consider, for example, the problem of deciphering the effect of station releases on the radioactivity measured in milk samples. This is an important issue because this product is widely consumed and several fission products readily concentrate in this media. Some of these fission products, such as I-131 and Sr-89 are relatively short-lived. Therefore they can result from station effluents, nuclear weapons tests or nuclear incidents (e.g. Chernobyl). Sr-89's lifetime is longer than I-131's, therefore it will remain around for much longer periods of time. The even longer-lived fission products, Sr-90 and Cs-137, cause more of a concern. These isotopes are still remaining from the weapons testing era of the 1960's. This results in measurable amounts of Sr-90 and Cs-137 appearing in some milk samples. Distinguishing between this "background" of fallout activity and station effects is of prime interest for a Radiological Environmental Monitoring Program.

In reviewing the historical and present Sr-90 and Cs-137 measured in cow and goat milk in the areas around Millstone station, a casual observer could notice that in some cases the levels of these isotopes are higher at farms closer to the station than at those further away from the station. The station's effluents might at first appear to potentially be responsible. However, the investigation of the following facts proves this conclusion wrong.

(1) The stations accurately measure many fission products, including Sr-90 and Cs-137 in their releases. Based on these measurements and proven models developed by the Nuclear Regulatory Commission, concentrations in the environment can be calculated. These calculations (generally conservative, see Section 5.0) show that insufficient quantities of Sr-90 and Cs-137 have been released from the plants to yield the measured concentrations in milk.

(2) Over the many years of station operation, Sr-89 has often been released in comparable quantity to Sr-90. Since they are chemically similar, comparable levels should have been detected in milk if the Sr-90 was station related. No station related Sr-89 has ever been detected in milk samples.

(3) Similar to Sr-89, Cs-134 can be used as an indication of station related Cs-137. Although not as conclusive as Sr-89, the lack of any measurable Cs-134 in any of the milk samples suggests that the Cs-137 is not station related. This is further confirmed by the evaluation of the air particulate data. The only occurrences of detectable Cs-134 in milk resulted from the Chernobyl incident.

(4) Dairy milk sampling in Connecticut began in the 1960's, several years prior to nuclear station operation. The highest levels of weapons fallout related Sr-90 and Cs-137 (see Figures 6-1 and 6-2), were measured in the years prior to station operation. Samples taken in the immediate station areas have always shown higher levels of weapons related fallout than samples taken from the Central Connecticut Region (CT Pooled Milk). Radioactivity levels of fallout related Sr-90 and Cs-137 have decreased significantly since the 1964 Nuclear Test Ban Treaty due to decay.

(5) Local variability of Sr-90 and Cs-137 in milk is common throughout the United States. Due to the variability in soil conditions, pasturing methods, rainfall, etc., it is the rule rather than the exception. Therefore, it is not surprising that certain farms have higher levels of radioactivity than other farms. In fact, in the past there are some cases where the farms further from the station have higher Sr-90 and Cs-137 values than the farms that are closer to the station.

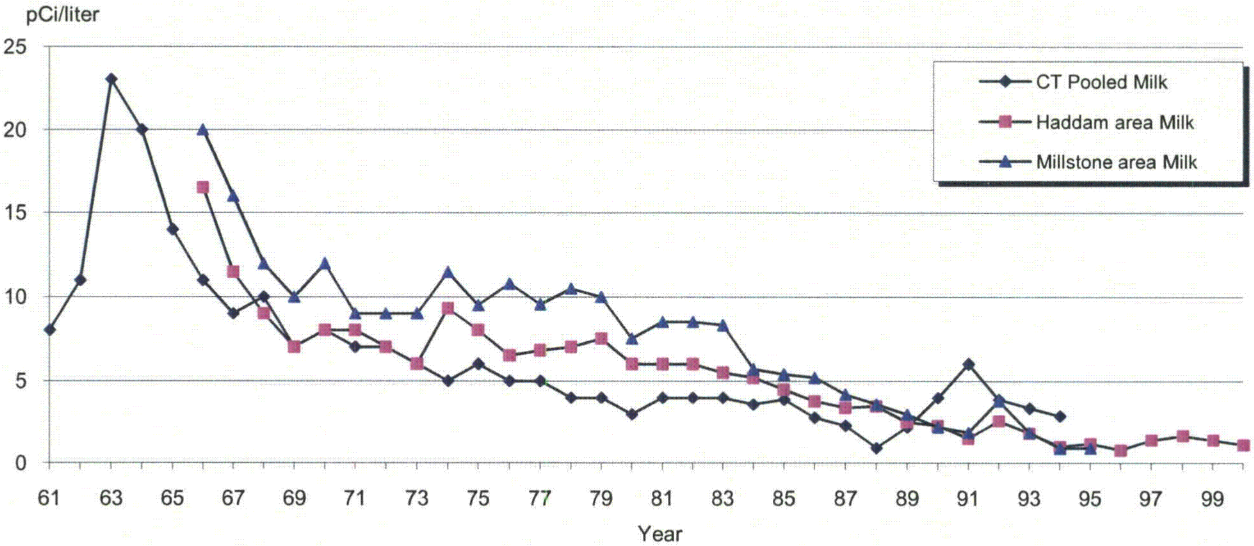
(6) In the past when a goat farm operated near Millstone (2.0 Mi - ENE), the highest levels of Sr-90 and Cs-137 were typically indicated. This same farm also experienced the highest levels of short-lived activity from the 1976 and 1977 Chinese Tests and the 1986 Chernobyl accident. This indicates that for some unknown reason this farm had the ability for higher reconcentration. Special studies performed at this and other farms failed to find any link to the station.

Based on these facts, the observation that the station effluents are responsible is evidently false. The cause must be one or more of the other variables.

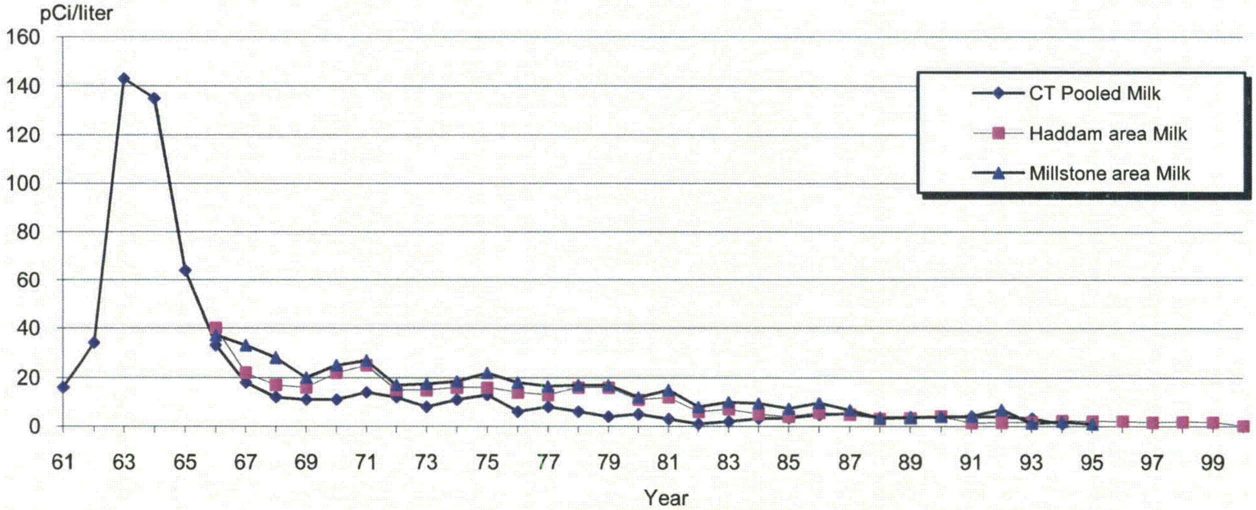
Dominion has carefully examined the data throughout the years and has presented in this report all cases where station related radioactivity could be detected. An analysis of the potential exposure to the maximum individual from any station related activity has been performed and shows that in all cases the exposure is insignificant.

The Connecticut Department of Environmental Protection (DEP) performs an independent check on certain environmental program analyses. The results of their analyses are comparable to the results from this program's analyses. These comparisons can be used as a cross-reference to verify measured station activity. DEP performed a comprehensive review of all the historical Millstone data in 2006 (reference 17). It concluded that "the collective sampling in and around Millstone Power Station show expected levels of residual fallout from weapons testing and the Chernobyl event and are unrelated to the operation of the Millstone Power Station."

**Figure 6-1 Strontium-90 in Milk**



## Figure 6-2 Cesium-137 in Milk




Dairy milk is no longer available in the Millstone area, Haddam Neck no longer collects milk, and CT Pooled milk has not been collected by the State of CT since 1994. Graphs provided to show historical trends.

| | | | |
|---|---|---|---|
| CY Start-up occurred: | July 24, 1967 | MP2 Start-up occurred: | December, 1975 |
| MP1 Start-up occurred: | October 26, 1970 | MP3 Start-up occurred: | April, 1986 |

# 7. REFERENCES

1) United States of America, Code of Federal Regulations, Title 10, Part 50, Appendix A Criteria 64.
2) Donald T. Oakley, "Natural Radiation Exposure in the United States." U. S. Environmental Protection Agency, ORP/SID 72-1, June 1972.
3) National Council on Radiation Protection and Measurements, Report No. 160, "Ionizing Radiation Exposures of the Population of the United States," March 2009.
4) National Council on Radiation Protection and Measurements, Report No. 94, "Exposure of the Population of the United States and Canada from Natural Background Radiation," December 1987.
5) United States Nuclear Regulatory Commission, Regulatory Guide 8.29, "Instructions Concerning Risks from Occupational Radiation Exposure," Revision 0, July 1981.
6) Millstone Training Brochure.
7) United States Nuclear Regulatory Commission, Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977.
8) Millstone Power Station Radiological Effluent Monitoring and Offsite Dose Calculation Manual, Revision 025-02, December 2006.
9) United States of America, Code of Federal Regulations, Title 10, Part 20.1301.
10) United States of America, Code of Federal Regulations, Title 10, Part 50, Appendix I.
11) United States of America, Code of Federal Regulations, Title 40, Part 190.
12) United States Nuclear Regulatory Commission, Regulatory Guide 4.1, "Program for Monitoring Radioactivity in the Environs of Nuclear Power Plants," Revision 1, April 1975.
13) ICN/TracerLab, "Millstone Nuclear Power Station Pre-operational Environmental Radiation Survey Program, Quarterly Reports," April 1967 to June 1970.
14) International Commission of Radiological Protection, Publication No. 43, "Principles of Monitoring for the Radiation Protection of the Population," May 1984.
15) United States Nuclear Regulatory Commission, NUREG-1301, "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors," April 1991.
16) United States Nuclear Regulatory Commission, Branch Technical Position, "An Acceptable Radiological Environmental Monitoring Program," Revision 1, November 1979.
17) Reassessment of Millstone Power Station's Environmental Monitoring Data, Connecticut Department of Environmental Protection, Division of Radiation, March 2006.
18) NRC Regulatory Guide 4.1, Radiological Environmental Monitoring for Nuclear Power Plants, Revision 2, June 2009.

# APPENDIX A

## LAND USE CENSUS FOR 2010

## INTRODUCTION

The annual land use census in the vicinity of Millstone Station was conducted as required by the Millstone REMODCM between July 15 and December 31, 2010. Typically the cow milk locations are identified by a review of the annual registration information obtained from the State of Connecticut Department of Agriculture. Gardens are located by a drive-by during the harvest season. Although broadleaf sampling was performed and may be used in lieu of a garden census, gardens were included in the 2010 census. Only vegetable gardens having an area of more than 500 square feet need to be identified. In order to reduce some of the conservatism of the dose modeling, a more detailed census was initiated in 2010 to identify locations of fruits and meats. Due to the difficulty of measuring individual gardens, the nearest garden within each directional sector identified by a drive-by survey is listed. Goat locations are more difficult to determine, but best efforts are made to consult goat association records, contact previous owners and or drive-bys, if necessary.

## RESULTS

Tables A-1 through A-3 indicate information from the latest land use census. No new dairy animals within 10 miles of the Station were located during the census. Several changes were identified, these include:

- Several locations changed since the distances were more accurately determined
- several new dairies were identified in the 10 to 20 mile range (see Table A-1)
- several new gardens were identified
- fruit and meat locations were identified

These changes indicate that no changes were required in the current sampling locations. However, due to the interest in obtaining more milk samples, a farm approximately 10.5 miles from the site will be considered for 2011. The dose modeling incorporates the above listed changes.

## TABLE A-1

### Dairy Cows Within 20 miles of Millstone Point - 2010

| Direction | Distance (Miles) | Location |
|---|---|---|
| N | 15 | Norwich |
| N | 18 | Bozrah |
| N | 19 | Norwich |
| N | 19.5 | North Franklin |
| N | 19.5 | Franklin |
| N | 19.5 | North Franklin |
| NNE | 15 | Preston |
| NNE | 16 | Preston |
| NNE | 16 | Preston |
| NNE | 16.5 | Norwich |
| NNE | 17.5 | Preston |
| NNE | 18 | Preston |
| NNE | 18 | Preston |
| NE | 13.5 | Ledyard |
| NE | 13.5 | Ledyard |
| NE | 14.5 | Ledyard |
| NE | 14.5 | North Stonington |
| NE | 14.5 | Preston |
| NE | 19 | North Stonington |
| NE | 19 | North Stonington |
| ENE | 18 | North Stonington |
| WNW | 10.5 | Lyme |
| NW | 10.5 | Lyme |
| NW | 12.5 | Salem |
| NW | 15 | Moodus |
| NNW | 12 | Salem |
| NNW | 19.5 | Lebanon |
| NNW | 19.5 | Lebanon |

Note: None of these cow farms are used for sampling since all farms are greater than ten miles from plant (NUREG 1301, Reference 15, uses a cutoff distance of 5 miles)

## TABLE A-2

### Dairy Goats Within 20* miles of Millstone Point- 2010

| Direction | Distance (Miles) | Location (Sample Location) |
|---|---|---|
| N | 2.1 | Waterford **(LOCATION 21)**** |
| N | 11 | Oakdale |
| NE | 2.8 | Waterford (**LOCATION 22)***** |
| ENE | 12 | Stonington |
| ENE | 13 | Stonington |
| WNW | 18 | Haddam |
| NW | 17 | East Haddam |
| NNW | 12 | Salem |
| NNW | 18 | Colchester |
| NNW | 21 | Colchester |
| NNW | 29 | Hebron **(LOCATION 24)** |

* and beyond for potential control locations

** primarily for cheese, occasionally milk for drinking

*** not milking, raised for meat only, pigs also at this location

## TABLE A-3

### 2010 Resident/Garden/Meat Survey

### Closest Distance

| Downwind Direction | Resident | | Garden | | Fruit | | Meat Source | |
|---|---|---|---|---|---|---|---|---|
| | miles | meters | miles | meters | miles | meters | miles | meters |
| N | 0.97 * | 1,570 | 0.97 * | 1,550 | 1.9 | 2,980 | – | – |
| NNE | 0.53 * | 850 | 0.55 * | 890 | 12 | 19,750 | SB | SB |
| NE | 0.47 * | 760 | 0.50 * | 800 | 12 | 19,830 | SB | SB |
| ENE | 0.99 * | 1,600 | 0.96 ** | 1,550 | 9.6 | 15,510 | – | – |
| E | 0.90 * | 1,450 | 0.90 ** | 1,450 | – | – | – | – |
| ESE | 1.1 * | 1,700 | 1.2 | 1,970 | – | – | – | – |
| SE | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| SSE | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| S | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| SSW | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| SW | 2.3 * | 3,680 | 2.3 * | 3,760 | – | – | – | – |
| WSW | 2.0 * | 3,300 | 2.3 * | 3,670 | – | – | – | – |
| W | 1.9 * | 3,030 | 1.8 * | 2,940 | 11 | 17,830 | – | – |
| WNW | 1.6 * | 2,540 | 1.7 ** | 2,810 | 5.3 | 8,450 | – | – |
| NW | 0.52 * | 840 | 1.4 * | 2,210 | 5.5 | 8,770 | 10.4 | 16,800 |
| NNW | 0.51 * | 820 | 0.76 * | 1,220 | – | – | – | – |

* distances have been recalculated

** new location for 2010

SB deer (meat) at Site Boundary

N/A not applicable (over water sectors)

– no locations found

# APPENDIX B

## DNC QA PROGRAM

## INTRODUCTION

Dominion Nuclear Connecticut (DNC) maintains an independent non-required quality assurance (QA) program as part of the radiological environmental monitoring program (REMP). The QA program consists of contractor appraisals and quality control samples. This independent program is applicable to all Dominion nuclear facilities because they share a joint contract with Teledyne Brown Engineering Laboratory.

*DNC QA PROGRAM*

The DNC independent QA Program includes spikes of various sample media and duplicate samples. Sample spikes are a check on the accuracy of results of the contractor's radioanalyses. Duplicate samples test the contractor's precision, or reproducibility of results, by comparing analytical results of split samples. The number and type of DNC QA Program quality control samples are defined in Millstone Nuclear Power Station Procedure REMP 1.4, "Quality Control of Radiological Environmental Monitoring Program." An investigation is conducted on any result or trend that does not satisfy acceptance criteria.

*OTHER QA PROGRAMS*

The DNC Independent QA Program is not the only QA Program which monitors REMP radioanalysis performance. Other programs include:

1. Contractor lab's internal QA program. In addition to the Millstone quality control samples, the radioanalysis contractor has its own quality control samples. In total, at least five percent of the contractor's sample analyses include quality control samples.

2. Contractor lab's interlaboratory comparison program with an independent third party, Eckert & Ziegler Analytics, Inc. Results of the Eckert & Ziegler Analytics intercomparison are contained in Appendix C. Primary contractor participation in an interlaboratory comparison program is required by station Technical Specifications. The Eckert & Ziegler Analytics comparison satisfied this requirement for AREVA-NP.

3. Contractor labs also participate in the National Institute of Standards and Technology (NIST) Measurement Assurance Program (MAP), the Environmental Resource Associates (ERA) Proficiency Test (PT) Program, the Department of Energy (DOE) Quality Assessment Program (QAP), and the Mixed Analyte performance Evaluation Program (MAPEP). Laboratories typically participate in these interlaboratory QA programs because of other clients' needs, not because of nuclear power station environmental sample analyses. However, several of these intercomparison samples are also applicable to nuclear power environmental samples. Teledyne Brown Engineering's participation in the Eckert & Ziegler Analytics and the other programs listed above satisfy the interlaboratory comparison program as required by station Technical Specifications.

## RESULTS OF DNC QA PROGRAM FOR CONTRACTOR RADIOANALYSES

Criteria for passing QA sample analysis is that the result be within 20% of the known spike except in the case of Sr-89 or Sr-90 spikes in milk which have to be within 30% of the known spike. To allow more tolerance for lower activity spikes the following alternate criterion may be used: If the two sigma error range of the analyzed result includes the known spike value the result passes.

Table 1 lists the numbers of QC and routine samples for various sample media for 2009. The results of the QC samples are shown on Table 2. All of the TLD spike tests satisfied the procedural criteria. Of the 54 individual nuclide analysis results on QA samples, 6 need to be discounted because the tape was removed from the spiked filters, causing a significant loss of activity from the filters. Of the remaining 48 spikes, 44 passed the acceptance criteria, a 91.7% success rate. Of the 2 Sr-90 in milk failures, one was low by 22 % and the other low by 30%. However, both also indicated false positives for Sr-89 and there was a sample control issue. The 2 Cs-137 spikes on air particulate filters were high by 21-23 % (just outside the acceptance criteria and conservative). Based upon investigation of the results for these spikes, the Millstone QA Program indicated that the contractor lab's environmental radiological analysis program was adequate in 2010.

TABLE 1
2010 QUALITY CONTROL SAMPLES

| SAMPLE TYPE | QC SAMPLES (Note 1) | ROUTINE SAMPLES |
|---|---|---|
| TLD Spike | 16 | 160 |
| Milk - Strontium | 2 | 6 |
| Milk - Iodine | 0 | ~30 |
| Milk - Gamma | (Note 2) | ~30 |
| Pasture Grass/Hay – Gamma (Milk Substitute) | 0 | ~30 |
| Water - Gamma | 6 | 60 |
| Water - Tritium | 4 | 60 |
| Fish/Invertebrate - Gamma | 4 | 80 |
| Vegetation/Aquatic Flora/Sediment/Soil - Gamma | 0 | 74 |
| Air Particulate - Gross Beta<br>- Iodine<br>- Gamma | 6<br>0<br>2 | 416<br>416<br>32 |

FOOTNOTES (Table 1):
1. All samples are spikes except fish/invertebrate which are duplicate oyster samples.
2. Gamma in water QA spikes are treated as milk surrogates.

TABLE 2
RESULTS OF 2010 QUALITY CONTROL SAMPLE ANALYSES*

| SAMPLE TYPE | ANALYSES PASSED | ANALYSES FAILED |
|---|---|---|
| TLD Spike | 16 | 0 |
| Milk - Strontium | 0 | 2 (Note 1) |
| Milk - Iodine | 0 | 0 (Note 2) |
| Water - Gamma | 30 | 0 |
| Water - Tritium | 4 | 0 |
| Oysters - Gamma | 4 | 0 |
| Air Particulate - Gross Beta | 6 | 6 (Note 3) |
| - Iodine | 0 | 0 (Note 2) |
| - Gamma | 10 | 2 (Note 4) |
| TOTALS | TLDs: 16<br>Individual Nuclides: 54 | TLDs: 0<br>Individual Nuclides: 10 |

FOOTNOTES (Table 2):

* To provide a more detailed comparison of pass versus failure, each nuclide was considered for the gamma and strontium analyses.

1. One Sr-90 spike low just above the 30% cutoff, however false positives of Sr-89 indentified on both samples and sample control issue also noted – CR generated by vendor to investigate issue.
2. Due to the difficulty of obtaining an I-131 spike, none of these samples were spiked
3. Results originally low by 20 – 45%; samples typically covered with tape to insure spike is retained on the samples. Teledyne personnel mistakenly removed the tape which resulted in a low bias on the analyses.
4. High by 21 - 23% (just outside the 20% acceptance criteria) – no action necessary.

# APPENDIX C

## SUMMARY OF INTERLABORATORY COMPARISONS

## INTRODUCTION

This appendix covers the Intercomparison Program of the AREVA-NP Environmental Laboratory and Teledyne Brown Engineering Laboratory as required by technical specifications for each Millstone unit. AREVA-NP uses QA/QC samples provided by Eckert & Ziegler Analytics to monitor the quality of analytical processing associated with the Radiological Environmental Monitoring Program (REMP). The suite of Eckert & Ziegler Analytics QA/QC samples are designed to be comparable with the pre-1996 US EPA Interlaboratory Cross-Check Program in terms of sample number, matrices, and nuclides. It was modified to more closely match the media mix presently being processed by AREVA-NP and includes:

- milk for gamma (10 nuclides) and low-level (LL) Iodine-131 analyses once per quarter
- water for gamma (10 nuclides) and low-level (LL) Iodine-131 analyses during the 1st and 3rd quarters
- water for Sr-89 and Sr-90 analyses during the 1st and 4th quarters
- water tritium analysis during the 2nd and 4th quarters
- air filter for gamma (9 nuclides) analyses during the 2nd quarter
- air filter for gross beta analysis during the 1st and 3rd quarters
- charcoal filter for I-131 during the 1st and 3rd quarters
- air filter for Sr-89 and Sr-90 analyses during the 2nd and 4th quarters

In addition to the Eckert & Ziegler Analytics Intercomparison Program, AREVA-NP also participates in other intercomparison programs which include radionuclides and media similar to those required by the Millstone program. These programs are the National Institute of Standards and Technology (NIST) Measurement Assurance Program (MAP), the Environmental Resource Associates (ERA) Proficiency Test (PT) Program, the Department of Energy (DOE) Quality Assessment Program (QAP), and the Mixed Analyte Performance Evaluation Program (MAPEP).

Teledyne Brown Engineering Laboratory also uses QA/QC samples provided by Eckert & Ziegler Analytics and the other intercomparison programs listed above. Since Teledyne's participation in the Eckert & Ziegler Analytics is not as intensive as AREVA's, the results from the other programs are reviewed and shown on the following tables.

## RESULTS

Intercomparison program results are evaluated using each laboratory's internal bias acceptance criterion. The AREVA-NP criterion is defined as within 25% of the known strontium value for samples containing both Sr-89 and Sr-90 and within 15% of the known value for other radionuclides, or within two sigma of the known value. Teledyne Brown's criteria is similar for the Analytics samples but uses a range for the other QC samples. Any sample analysis result which does not pass the criteria is investigated by each laboratory. AREVA-NP Intercomparison Program results are included on pages C-4 through C-6 for 2010. Since the Fourth Quarter Analytics results are not usually available until mid April, the previous year's results are listed for AREVA-NP. Teledyne Brown Engineering Intercomparison Program results are included on pages C-7 through C-9 for the second half of 2010.

A total of 110 analysis results were obtained by AREVA-NP with 108 passing the acceptance criteria, a 98% success rate. The low bias for gross alpha on a water sample (E6908-162) and the high Sr-90 on a milk sample (E7012-162) were investigated by AREVA. Gross alpha analyses are not performed on any Millstone REMP samples.

A total of 112 analysis results were obtained by Teledyne Brown Engineering with 100 passing the acceptance criteria, a 89% success rate. Of these 12, 7 were false positives (conservative results) and the remaining 5 were on transuranic analyses (not routine REMP analyses).

CONCLUSION

The QC results indicate that both laboratories are providing quality analytical analyses.

**AREVA NP ENVIRONMENTAL LABORATORY
ANALYTICS RADIOLOGICAL ENVIRONMENTAL CROSS-CHECK
PERFORMANCE EVALUATION**

| QUARTER/ YEAR | SAMPLE NUMBER | SAMPLE MEDIA | NUCLIDE | UNITS | REPORTED VALUE | KNOWN VALUE | RATIO AREVA/ ANALYTICS |
|---|---|---|---|---|---|---|---|
| 4th/2009 | E6908-162 | Water | Gross Alpha | pCi/L | 2.14E+02 | 2.58E+02 | 0.83 |
| 4th/2009 | E6908-162 | Water | Gross Beta | pCi/L | 2.30E+02 | 2.30E+02 | 1.00 |
| 4th/2009 | E6909-162 | Water | I-131LL | pCi/L | 9.56E+01 | 9.61E+01 | 0.99 |
| 4th/2009 | E6909-162 | Water | I-131 | pCi/L | 9.95E+01 | 9.61E+01 | 1.04 |
| 4th/2009 | E6909-162 | Water | Ce-141 | pCi/L | 2.04E+02 | 2.04E+02 | 1.00 |
| 4th/2009 | E6909-162 | Water | Cr-51 | pCi/L | 5.85E+02 | 5.54E+02 | 1.06 |
| 4th/2009 | E6909-162 | Water | Cs-134 | pCi/L | 2.33E+02 | 2.55E+02 | 0.91 |
| 4th/2009 | E6909-162 | Water | Cs-137 | pCi/L | 1.90E+02 | 1.81E+02 | 1.05 |
| 4th/2009 | E6909-162 | Water | Co-58 | pCi/L | 2.19E+02 | 2.13E+02 | 1.03 |
| 4th/2009 | E6909-162 | Water | Mn-54 | pCi/L | 1.90E+02 | 1.79E+02 | 1.06 |
| 4th/2009 | E6909-162 | Water | Fe-59 | pCi/L | 1.94E+02 | 1.79E+02 | 1.08 |
| 4th/2009 | E6909-162 | Water | Zn-65 | pCi/L | 3.60E+02 | 3.48E+02 | 1.03 |
| 4th/2009 | E6909-162 | Water | Co-60 | pCi/L | 2.58E+02 | 2.58E+02 | 1.00 |
| 4th/2009 | E6910-162 | Water | Sr-89 | pCi/L | 9.26E+01 | 1.11E+02 | 0.83 |
| 4th/2009 | E6910-162 | Water | Sr-90 | pCi/L | 1.27E+01 | 1.53E+01 | 0.83 |
| 4th/2009 | E6911-162 | Water | H-3 | pCi/L | 1.41E+04 | 1.40E+04 | 1.01 |
| 4th/2009 | E6912-162 | Charcoal | I-131 | pCi | 8.73E+01 | 9.03E+01 | 0.97 |
| 4th/2009 | E6913-162 | Filter | Gross Alpha | pCi | 1.21E+02 | 1.29E+02 | 0.94 |
| 4th/2009 | E6913-162 | Filter | Gross Beta | pCi | 1.27E+02 | 1.15E+02 | 1.10 |
| 4th/2009 | E6914-162 | Filter | Ce-141 | pCi | 1.09E+02 | 1.13E+02 | 0.97 |
| 4th/2009 | E6914-162 | Filter | Cr-51 | pCi | 3.08E+02 | 3.05E+02 | 1.01 |
| 4th/2009 | E6914-162 | Filter | Cs-134 | pCi | 1.35E+02 | 1.40E+02 | 0.96 |
| 4th/2009 | E6914-162 | Filter | Cs-137 | pCi | 1.05E+02 | 9.95E+01 | 1.05 |
| 4th/2009 | E6914-162 | Filter | Co-58 | pCi | 1.20E+02 | 1.17E+02 | 1.02 |
| 4th/2009 | E6914-162 | Filter | Mn-54 | pCi | 9.90E+01 | 9.87E+01 | 1.00 |
| 4th/2009 | E6914-162 | Filter | Fe-59 | pCi | 9.65E+01 | 9.87E+01 | 0.98 |
| 4th/2009 | E6914-162 | Filter | Zn-65 | pCi | 1.90E+02 | 1.92E+02 | 0.99 |
| 4th/2009 | E6914-162 | Filter | Co-60 | pCi | 1.34E+02 | 1.42E+02 | 0.94 |
| 4th/2009 | E6915-162 | Milk | I-131LL | pCi/L | 8.97E+01 | 8.73E+01 | 1.03 |
| 4th/2009 | E6915-162 | Milk | I-131 | pCi/L | 8.75E+01 | 8.73E+01 | 1.00 |
| 4th/2009 | E6915-162 | Milk | Ce-141 | pCi/L | 2.09E+02 | 2.02E+02 | 1.03 |
| 4th/2009 | E6915-162 | Milk | Cr-51 | pCi/L | 5.56E+02 | 5.48E+02 | 1.01 |
| 4th/2009 | E6915-162 | Milk | Cs-134 | pCi/L | 2.35E+02 | 2.53E+02 | 0.93 |
| 4th/2009 | E6915-162 | Milk | Cs-137 | pCi/L | 1.91E+02 | 1.79E+02 | 1.07 |
| 4th/2009 | E6915-162 | Milk | Co-58 | pCi/L | 2.22E+02 | 2.11E+02 | 1.05 |
| 4th/2009 | E6915-162 | Milk | Mn-54 | pCi/L | 1.87E+02 | 1.78E+02 | 1.05 |
| 4th/2009 | E6915-162 | Milk | Fe-59 | pCi/L | 1.92E+02 | 1.78E+02 | 1.08 |
| 4th/2009 | E6915-162 | Milk | Zn-65 | pCi/L | 3.59E+02 | 3.45E+02 | 1.04 |
| 4th/2009 | E6915-162 | Milk | Co-60 | pCi/L | 2.57E+02 | 2.56E+02 | 1.01 |

AREVA NP ENVIRONMENTAL LABORATORY
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PERFORMANCE EVALUATION

| QUARTER/ YEAR | SAMPLE NUMBER | SAMPLE MEDIA | NUCLIDE | UNITS | REPORTED VALUE | KNOWN VALUE | RATIO AREVA/ ANALYTICS |
|---|---|---|---|---|---|---|---|
| 1st/2010 | E7010-162 | Water | Gross Alpha | pCi/L | 154 | 156 | 0.99 |
| 1st/2010 | E7010-162 | Water | Gross Beta | pCi/L | 287 | 293 | 0.98 |
| 1st/2010 | E7011-162 | Water | I-131LL | pCi/L | 68.4 | 72.2 | 0.95 |
| 1st/2010 | E7011-162 | Water | I-131 | pCi/L | 73.5 | 72.2 | 1.02 |
| 1st/2010 | E7011-162 | Water | Ce-141 | pCi/L | 248 | 263 | 0.94 |
| 1st/2010 | E7011-162 | Water | Cr-51 | pCi/L | 336 | 364 | 0.92 |
| 1st/2010 | E7011-162 | Water | Cs-134 | pCi/L | 158 | 179 | 0.88 |
| 1st/2010 | E7011-162 | Water | Cs-137 | pCi/L | 156 | 159 | 0.98 |
| 1st/2010 | E7011-162 | Water | Co-58 | pCi/L | 136 | 144 | 0.94 |
| 1st/2010 | E7011-162 | Water | Mn-54 | pCi/L | 200 | 209 | 0.96 |
| 1st/2010 | E7011-162 | Water | Fe-59 | pCi/L | 144 | 138 | 1.04 |
| 1st/2010 | E7011-162 | Water | Zn-65 | pCi/L | 255 | 256 | 1.00 |
| 1st/2010 | E7011-162 | Water | Co-60 | pCi/L | 177 | 185 | 0.96 |
| 1st/2010 | E7012-162 | Water | Sr-89 | pCi/L | 74.5 | 89.8 | 0.83 |
| 1st/2010 | E7012-162 | Water | Sr-90 | pCi/L | 20.1 | 12.3 | 1.63 |
| 1st/2010 | E7013-162 | Water | H-3 | pCi/L | 11,700 | 12,000 | 0.97 |
| 1st/2010 | E7014-162 | Charcoal | I-131 | pCi | 84.1 | 85.7 | 0.98 |
| 1st/2010 | E7015-162 | Filter | Gross Alpha | pCi | 92.9 | 102 | 0.91 |
| 1st/2010 | E7015-162 | Filter | Gross Beta | pCi | 218 | 191 | 1.14 |
| 1st/2010 | E7016-162 | Milk | I-131LL | pCi/L | 71.0 | 74.0 | 0.96 |
| 1st/2010 | E7016-162 | Milk | I-131 | pCi/L | 80.6 | 74.0 | 1.09 |
| 1st/2010 | E7016-162 | Milk | Ce-141 | pCi/L | 273 | 261 | 1.04 |
| 1st/2010 | E7016-162 | Milk | Cr-51 | pCi/L | 368 | 361 | 1.02 |
| 1st/2010 | E7016-162 | Milk | Cs-134 | pCi/L | 166 | 178 | 0.94 |
| 1st/2010 | E7016-162 | Milk | Cs-137 | pCi/L | 171 | 158 | 1.09 |
| 1st/2010 | E7016-162 | Milk | Co-58 | pCi/L | 151 | 143 | 1.06 |
| 1st/2010 | E7016-162 | Milk | Mn-54 | pCi/L | 219 | 207 | 1.05 |
| 1st/2010 | E7016-162 | Milk | Fe-59 | pCi/L | 155 | 137 | 1.13 |
| 1st/2010 | E7016-162 | Milk | Zn-65 | pCi/L | 272 | 254 | 1.07 |
| 1st/2010 | E7016-162 | Milk | Co-60 | pCi/L | 187 | 183 | 1.02 |
| 1st/2010 | E7017-162 | Milk | Sr-89 | pCi/L | 76.6 | 92.8 | 0.83 |
| 1st/2010 | E7017-162 | Milk | Sr-90 | pCi/L | 12.3 | 12.7 | 0.97 |

**AREVA NP ENVIRONMENTAL LABORATORY**
**ANALYTICS RADIOLOGICAL ENVIRONMENTAL CROSS-CHECK**
**PERFORMANCE EVALUATION**

| QUARTER/ YEAR | SAMPLE NUMBER | SAMPLE MEDIA | NUCLIDE | UNITS | REPORTED VALUE | KNOWN VALUE | RATIO AREVA/ ANALYTICS |
|---|---|---|---|---|---|---|---|
| 2nd/2010 | E7075-162 | Water | Gross Alpha | pCi/L | 99.3 | 102 | 0.98 |
| 2nd/2010 | E7075-162 | Water | Gross Beta | pCi/L | 294 | 266 | 1.10 |
| 2nd/2010 | E7076-162 | Water | I-131LL | pCi/L | 74.7 | 78.9 | 0.95 |
| 2nd/2010 | E7076-162 | Water | I-131 | pCi/L | 79.5 | 78.9 | 1.01 |
| 2nd/2010 | E7076-162 | Water | Ce-141 | pCi/L | 163 | 161 | 1.02 |
| 2nd/2010 | E7076-162 | Water | Cr-51 | pCi/L | 505 | 494 | 1.02 |
| 2nd/2010 | E7076-162 | Water | Cs-134 | pCi/L | 168 | 183 | 0.92 |
| 2nd/2010 | E7076-162 | Water | Cs-137 | pCi/L | 233 | 218 | 1.07 |
| 2nd/2010 | E7076-162 | Water | Co-58 | pCi/L | 151 | 147 | 1.03 |
| 2nd/2010 | E7076-162 | Water | Mn-54 | pCi/L | 257 | 246 | 1.04 |
| 2nd/2010 | E7076-162 | Water | Fe-59 | pCi/L | 185 | 173 | 1.07 |
| 2nd/2010 | E7076-162 | Water | Zn-65 | pCi/L | 312 | 300 | 1.04 |
| 2nd/2010 | E7076-162 | Water | Co-60 | pCi/L | 289 | 286 | 1.01 |
| 2nd/2010 | E7077-162 | Water | Sr-89 | pCi/L | 86.6 | 100 | 0.87 |
| 2nd/2010 | E7077-162 | Water | Sr-90 | pCi/L | 18.9 | 17.9 | 1.05 |
| 2nd/2010 | E7078-162 | Water | H-3 | pCi/L | 9,160 | 9,630 | 0.95 |
| 2nd/2010 | E7079-162 | Charcoal | I-131 | pCi | 79.6 | 80.0 | 1.00 |
| 2nd/2010 | E7080-162 | Filter | Gross Alpha | pCi | 84.3 | 87.8 | 0.96 |
| 2nd/2010 | E7080-162 | Filter | Gross Beta | pCi | 233 | 231 | 1.01 |
| 2nd/2010 | E7081-162 | Filter | Ce-141 | pCi | 80.3 | 84.0 | 0.96 |
| 2nd/2010 | E7081-162 | Filter | Cr-51 | pCi | 257 | 259 | 0.99 |
| 2nd/2010 | E7081-162 | Filter | Cs-134 | pCi | 93.7 | 95.9 | 0.98 |
| 2nd/2010 | E7081-162 | Filter | Cs-137 | pCi | 123 | 114 | 1.07 |
| 2nd/2010 | E7081-162 | Filter | Co-58 | pCi | 78.8 | 77.1 | 1.02 |
| 2nd/2010 | E7081-162 | Filter | Mn-54 | pCi | 129 | 129 | 1.00 |
| 2nd/2010 | E7081-162 | Filter | Fe-59 | pCi | 91.0 | 90.5 | 1.01 |
| 2nd/2010 | E7081-162 | Filter | Zn-65 | pCi | 155 | 157 | 0.99 |
| 2nd/2010 | E7081-162 | Filter | Co-60 | pCi | 145 | 150 | 0.97 |
| 2nd/2010 | E7082-162 | Milk | I-131LL | pCi/L | 105.1 | 96.9 | 1.08 |
| 2nd/2010 | E7082-162 | Milk | I-131 | pCi/L | 94.0 | 96.9 | 0.97 |
| 2nd/2010 | E7082-162 | Milk | Ce-141 | pCi/L | 105 | 110 | 0.95 |
| 2nd/2010 | E7082-162 | Milk | Cr-51 | pCi/L | 333 | 339 | 0.98 |
| 2nd/2010 | E7082-162 | Milk | Cs-134 | pCi/L | 114 | 126 | 0.90 |
| 2nd/2010 | E7082-162 | Milk | Cs-137 | pCi/L | 150 | 150 | 1.00 |
| 2nd/2010 | E7082-162 | Milk | Co-58 | pCi/L | 99.8 | 101 | 0.99 |
| 2nd/2010 | E7082-162 | Milk | Mn-54 | pCi/L | 172 | 169 | 1.02 |
| 2nd/2010 | E7082-162 | Milk | Fe-59 | pCi/L | 123 | 119 | 1.03 |
| 2nd/2010 | E7082-162 | Milk | Zn-65 | pCi/L | 204 | 206 | 0.99 |
| 2nd/2010 | E7082-162 | Milk | Co-60 | pCi/L | 196 | 197 | 1.00 |

**TELEDYNE BROWN ENGINEERING, INC. ENVIRONMENTAL LABORATORY
RADIOLOGICAL ENVIRONMENTAL CROSS-CHECK
PERFORMANCE EVALUATION**

| QUARTER/ YEAR | SAMPLE NUMBER | SAMPLE MEDIA | NUCLIDE | UNITS | REPORTED VALUE | KNOWN VALUE | RATIO for Teledyne/known or Range |
|---|---|---|---|---|---|---|---|
| 3rd/2010 | E7233-396 | Water | Fe-55 | pCi | 1620 | 1790 | 0.91 |
| 3rd/2010 | 10-MaW23 | Water | Am-241 | Bq/L | 0.009 | false positive test | |
| 3rd/2010 | 10-MaW23 | Water | Cs-134 | Bq/L | 27.1 | 31.4 | 22.0 - 40.8 |
| 3rd/2010 | 10-MaW23 | Water | Cs-137 | Bq/L | 41.8 | 44.2 | 30.9 - 57.5 |
| 3rd/2010 | 10-MaW23 | Water | Co-57 | Bq/L | 33.2 | 36.0 | 25.2 - 46.8 |
| 3rd/2010 | 10-MaW23 | Water | Co-60 | Bq/L | 26.5 | 28.3 | 19.8 - 36.8 |
| 3rd/2010 | 10-MaW23 | Water | H-3 | Bq/L | 500 | 453.4 | 317.4 - 589.4 |
| 3rd/2010 | 10-MaW23 | Water | Mn-54 | Bq/L | 0.024 | false positive test | |
| 3rd/2010 | 10-MaW23 | Water | Ni-63 | Bq/L | 51.6 | 56.1 | 39.3 - 72.9 |
| 3rd/2010 | 10-MaW23 | Water | Pu-238 | Bq/L | 1.25 | 1.81 | 1.27 - 2.35 |
| 3rd/2010 | 10-MaW23 | Water | Pu-239/240 | Bq/L | 0.925 | 1.350 | 0.95 - 1.76 |
| 3rd/2010 | 10-MaW23 | Water | Sr-90 | Bq/L | 8.10 | 8.3 | 5.8 - 10.8 |
| 3rd/2010 | 10-MaW23 | Water | Tc-99 | Bq/L | 36.4 | 33.6 | 23.5 - 43.7 |
| 3rd/2010 | 10-MaW23 | Water | U-234/233 | Bq/L | 2.02 | 2.01 | 1.41 - 2.61 |
| 3rd/2010 | 10-MaW23 | Water | U-238 | Bq/L | 2.01 | 2.07 | 1.45 - 2.69 |
| 3rd/2010 | 10-MaW23 | Water | Zn-65 | Bq/L | 30.8 | 31.0 | 21.7 - 40.3 |
| 3rd/2010 | 10-GrW23 | Water | Gr-A | Bq/L | 2.36 | 1.92 | 0.58 - 3.26 |
| 3rd/2010 | 10-GrW23 | Water | Gr-B | Bq/L | 6.37 | 4.39 | 2.20 - 6.59 |
| 3rd/2010 | E7231-396 | Charcoal | I-131 | pCi/L | 62.3 | 59.9 | 1.04 |
| 3rd/2010 | E7232-396 | AP | Ce-141 | pCi | 122 | 119 | 1.03 |
| 3rd/2010 | E7232-396 | AP | Cr-51 | pCi | 228 | 214 | 1.07 |
| 3rd/2010 | E7232-396 | AP | Cs-134 | pCi | 79.9 | 85.3 | 0.94 |
| 3rd/2010 | E7232-396 | AP | Cs-137 | pCi | 93.8 | 86.7 | 1.08 |
| 3rd/2010 | E7232-396 | AP | Co-58 | pCi | 71.5 | 67.6 | 1.06 |
| 3rd/2010 | E7232-396 | AP | Mn-54 | pCi | 113 | 110 | 1.03 |
| 3rd/2010 | E7232-396 | AP | Fe-59 | pCi | 73.8 | 83.6 | 0.88 |
| 3rd/2010 | E7232-396 | AP | Zn-65 | pCi | 186 | 187 | 0.99 |
| 3rd/2010 | E7232-396 | AP | Co-60 | pCi | 163 | 157 | 1.04 |
| 3rd/2010 | 10-RdF23 | AP | Am-241 | Bq/sample | 0.125 | 0.115 | 0.081 - 0.150 |
| 3rd/2010 | 10-RdF23 | AP | Cs-134 | Bq/sample | 2.31 | 2.98 | 2.09 - 3.87 |
| 3rd/2010 | 10-RdF23 | AP | Cs-137 | Bq/sample | -0.025 | false positive test | |
| 3rd/2010 | 10-RdF23 | AP | Co-57 | Bq/sample | 0.0056 | 3.64 | 4.08 |
| 3rd/2010 | 10-RdF23 | AP | Co-60 | Bq/sample | 2.81 | 2.92 | 2.04 - 3.80 |
| 3rd/2010 | 10-RdF23 | AP | Mn-54 | Bq/sample | 3.19 | 3.18 | 2.23- 4.13 |
| 3rd/2010 | 10-RdF23 | AP | Pu-238 | Bq/sample | 0.048 | 0.0489 | 0.0342 - 0.0636 |
| 3rd/2010 | 10-RdF23 | AP | Pu-239/240 | Bq/sample | 0.080 | 0.082 | 0.057 - 0.107 |
| 3rd/2010 | 10-RdF23 | AP | Sr-90 | Bq/sample | 1.01 | 1.01 | 0.71 - 1.31 |
| 3rd/2010 | 10-RdF23 | AP | U-234/233 | Bq/sample | 0.123 | 0.122 | 0.085 - 0.159 |
| 3rd/2010 | 10-RdF23 | AP | U-238 | Bq/sample | 0.111 | 0.127 | 0.089 - 0.165 |
| 3rd/2010 | 10-RdF23 | AP | Zn-65 | Bq/sample | 0.0310 | false positive test | |

**TELEDYNE BROWN ENGINEERING, INC. ENVIRONMENTAL LABORATORY**
**RADIOLOGICAL ENVIRONMENTAL CROSS-CHECK**
**PERFORMANCE EVALUATION**

| QUARTER/ YEAR | SAMPLE NUMBER | SAMPLE MEDIA | NUCLIDE | UNITS | REPORTED VALUE | KNOWN VALUE | RATIO for Teledyne/known or Range |
|---|---|---|---|---|---|---|---|
| 3rd/2010 | 10-GrF23 | AP | Gr-A | Bq/sample | 0.004 | false positive test | |
| 3rd/2010 | 10-GrF23 | AP | Gr-B | Bq/sample | 0.473 | 0.50 | 0.25 - 0.75 |
| 3rd/2010 | E7229-396 | Milk | Sr-89 | pCi/L | 85.0 | 92.8 | 0.92 |
| 3rd/2010 | E7229-396 | Milk | Sr-90 | pCi/L | 12.6 | 14.7 | 0.86 |
| 3rd/2010 | E7230-396 | Milk | I-131 | pCi/L | 80.2 | 94.1 | 0.85 |
| 3rd/2010 | E7230-396 | Milk | Ce-141 | pCi/L | 130 | 130 | 1.00 |
| 3rd/2010 | E7230-396 | Milk | Cr-51 | pCi/L | 235 | 234 | 1.00 |
| 3rd/2010 | E7230-396 | Milk | Cs-134 | pCi/L | 83.2 | 93.0 | 0.89 |
| 3rd/2010 | E7230-396 | Milk | Cs-137 | pCi/L | 95.1 | 94.5 | 1.01 |
| 3rd/2010 | E7230-396 | Milk | Co-58 | pCi/L | 77.3 | 73.7 | 1.05 |
| 3rd/2010 | E7230-396 | Milk | Mn-54 | pCi/L | 121 | 119 | 1.02 |
| 3rd/2010 | E7230-396 | Milk | Fe-59 | pCi/L | 96.4 | 91.1 | 1.06 |
| 3rd/2010 | E7230-396 | Milk | Zn-65 | pCi/L | 216 | 204 | 1.06 |
| 3rd/2010 | E7230-396 | Milk | Co-60 | pCi/L | 172 | 171 | 1.01 |
| 3rd/2010 | 10-MaS23 | Soil | Am-241 | Bq/kg | NCR 11-01 initiated to investigate failure | | |
| 3rd/2010 | 10-MaS23 | Soil | Cs-134 | Bq/kg | 837 | 940 | 658 - 1222 |
| 3rd/2010 | 10-MaS23 | Soil | Cs-137 | Bq/kg | 680 | 670 | 469 - 871 |
| 3rd/2010 | 10-MaS23 | Soil | Co-57 | Bq/kg | 2.78 | false positive test | |
| 3rd/2010 | 10-MaS23 | Soil | Co-60 | Bq/kg | 350 | 343 | 240 - 446 |
| 3rd/2010 | 10-MaS23 | Soil | Mn-54 | Bq/kg | 853 | 820 | 574 - 1066 |
| 3rd/2010 | 10-MaS23 | Soil | Ni-63 | Bq/kg | 938 | 1058 | 741 - 1375 |
| 3rd/2010 | 10-MaS23 | Soil | Pu-238 | Bq/kg | NCR 11-01 initiated to investigate failure | | |
| 3rd/2010 | 10-MaS23 | Soil | Pu-239/240 | Bq/kg | NCR 11-01 initiated to investigate failure | | |
| 3rd/2010 | 10-MaS23 | Soil | K-40 | Bq/kg | 721 | 699 | 489 - 909 |
| 3rd/2010 | 10-MaS23 | Soil | Sr-90 | Bq/kg | 2.24 | false positive test | |
| 3rd/2010 | 10-MaS23 | Soil | Tc-99 | Bq/kg | 297 | 325 | 228 - 423 |
| 3rd/2010 | 10-MaS23 | Soil | U-234/233 | Bq/kg | NCR 11-01 initiated to investigate failure | | |
| 3rd/2010 | 10-MaS23 | Soil | U-238 | Bq/kg | NCR 11-01 initiated to investigate failure | | |
| 3rd/2010 | 10-MaS23 | Soil | Zn-65 | Bq/kg | 287 | 265 | 186 - 345 |
| 3rd/2010 | 10-RdV23 | Vegetation | Cs-134 | Bq/sample | 4.90 | 4.79 | 3.35 - 6.23 |
| 3rd/2010 | 10-RdV23 | Vegetation | Cs-137 | Bq/sample | 6.78 | 5.88 | 4.12 - 7.64 |
| 3rd/2010 | 10-RdV23 | Vegetation | Co-57 | Bq/sample | 10.2 | 8.27 | 5.79 - 10.75 |
| 3rd/2010 | 10-RdV23 | Vegetation | Co-60 | Bq/sample | 0.00 | false positive test | |
| 3rd/2010 | 10-RdV23 | Vegetation | Mn-54 | Bq/sample | 7.36 | 6.287 | 4.401 - 8.173 |
| 3rd/2010 | 10-RdV23 | Vegetation | Sr-90 | Bq/sample | 2.53 | 2.63 | 1.84 - 3.42 |
| 3rd/2010 | 10-RdV23 | Vegetation | Zn-65 | Bq/sample | 6.40 | 5.3900 | 3.77 - 7.01 |

**TELEDYNE BROWN ENGINEERING, INC. ENVIRONMENTAL LABORATORY**
**RADIOLOGICAL ENVIRONMENTAL CROSS-CHECK**
**PERFORMANCE EVALUATION**

| QUARTER/ YEAR | SAMPLE NUMBER | SAMPLE MEDIA | NUCLIDE | UNITS | REPORTED VALUE | KNOWN VALUE | RATIO for Teledyne/ known or Range |
|---|---|---|---|---|---|---|---|
| 4th/2010 | E7375-396 | Milk | Sr-89 | pCi/L | 92.7 | 98.0 | 0.95 |
| 4th/2010 | E7375-396 | Milk | Sr-90 | pCi/L | 13.5 | 13.5 | 1.00 |
| 4th/2010 | E7376-396 | Milk | I-131 | pCi/L | 87.9 | 96.9 | 0.91 |
| 4th/2010 | E7376-396 | Milk | Ce-141 | pCi/L | not provided by Analytics for this study | | |
| 4th/2010 | E7376-396 | Milk | Cr-51 | pCi/L | 389 | 456 | 0.85 |
| 4th/2010 | E7376-396 | Milk | Cs-134 | pCi/L | 137 | 157 | 0.87 |
| 4th/2010 | E7376-396 | Milk | Cs-137 | pCi/L | 172 | 186 | 0.92 |
| 4th/2010 | E7376-396 | Milk | Co-58 | pCi/L | 84.3 | 90.2 | 0.93 |
| 4th/2010 | E7376-396 | Milk | Mn-54 | pCi/L | 120 | 120 | 1.00 |
| 4th/2010 | E7376-396 | Milk | Fe-59 | pCi/L | 134 | 131 | 1.02 |
| 4th/2010 | E7376-396 | Milk | Zn-65 | pCi/L | 162 | 174 | 0.93 |
| 4th/2010 | E7376-396 | Milk | Co-60 | pCi/L | 284 | 301 | 0.94 |
| 4th/2010 | E7378-396 | AP | Ce-141 | pCi | not provided by Analytics for this study | | |
| 4th/2010 | E7378-396 | AP | Cr-51 | pCi | 387 | 365 | 1.06 |
| 4th/2010 | E7378-396 | AP | Cs-134 | pCi | 135 | 126.0 | 1.07 |
| 4th/2010 | E7378-396 | AP | Cs-137 | pCi | 157 | 149.0 | 1.05 |
| 4th/2010 | E7378-396 | AP | Co-58 | pCi | 73.6 | 72.3 | 1.02 |
| 4th/2010 | E7378-396 | AP | Mn-54 | pCi | 88.7 | 96.0 | 0.92 |
| 4th/2010 | E7378-396 | AP | Fe-59 | pCi | 127 | 105.0 | 1.21 |
| 4th/2010 | E7378-396 | AP | Zn-65 | pCi | 151 | 139 | 1.09 |
| 4th/2010 | E7378-396 | AP | Co-60 | pCi | 249 | 241 | 1.03 |
| 4th/2010 | E7377-396 | Charcoal | I-131 | pCi | 79.6 | 84.2 | 0.95 |
| 4th/2010 | E7379-396 | Water | Fe-55 | pCi | 1720 | 1880 | 0.91 |
| 4th/2010 | RAD-83 | Water | Sr-89 | pCi/L | 77.8 | 68.5 | 55.8 - 76.7 |
| 4th/2010 | RAD-83 | Water | Sr-90 | pCi/L | 39.3 | 43.0 | 31.7 - 49.3 |
| 4th/2010 | RAD-83 | Water | Ba-133 | pCi/L | 70.3 | 68.9 | 57.5 - 75.8 |
| 4th/2010 | RAD-83 | Water | Cs-134 | pCi/L | 39.9 | 43.2 | 34.5 - 47.5 |
| 4th/2010 | RAD-83 | Water | Cs-137 | pCi/L | 117 | 123 | 111 - 138 |
| 4th/2010 | RAD-83 | Water | Co-60 | pCi/L | 53.5 | 53.4 | 48.1 - 61.3 |
| 4th/2010 | RAD-83 | Water | Zn-65 | pCi/L | 11.0 | 102 | 91.8 - 122 |
| 4th/2010 | RAD-83 | Water | Gr-A | pCi/L | 35.1 | 42.3 | 21.9 - 53.7 |
| 4th/2010 | RAD-83 | Water | Gr-B | pCi/L | 35.5 | 36.6 | 24.0 - 44.2 |
| 4th/2010 | RAD-83 | Water | I-131 | pCi/L | 27.9 | 27.5 | 22.9 - 32.3 |
| 4th/2010 | RAD-83 | Water | U-Nat | pCi/L | 36.8 | 36.8 | 29.8 - 41.0 |
| 4th/2010 | RAD-83 | Water | H-3 | pCi/L | 13233 | 12900 | 11200 - 14200 |
| 4th/2010 | MRAD-13 | Filter | Gr-A | pCi/filter | 40.1 | 52.3 | 27.1 - 78.7 |

# APPENDIX D

## 2009 Radiological Environmental Operating Report ERRATA

## Table 10, Well Water (pCi/L)

| Location | Collection Date | Isotope | | | | | |
|---|---|---|---|---|---|---|---|
| 71 | | **Ba-140** | **Be-7** | **Co-58** | **Co-60** | **Cr-51** | **Cs-134** |
| | 03/20/09 | -1.3 ± 7.5 | 3.0 ± 23.0 | -2.0± 3.0 | 0.2± 2.7 | -9.0 ± 24.0 | -0.8 ± 2.5 |
| | 06/17/09 | 0.6 ± 6.0 | 26.0± 30.0 | -2.3± 3.3 | 0.6± 3.6 | -39.0 ± 31.0 | 0.0 ± 2.5 |
| | 09/21/09 | -6.4 ± 7.2 | -6.0 ± 19.0 | -1.2± 2.4 | -0.4 ± 2.6 | 16.0 ± 23.0 | 0.7 ± 1.9 |
| | 12/14/09 | -3.2 ± 4.7 | 12.0± 26.0 | -0.4± 3.3 | -0.8 ± 3.7 | -29.0 ± 28.0 | 1.0 ± 2.4 |
| | | **Cs-137** | **Fe-59** | **H-3** | **I-131** | **K-40** | **La-140** |
| | 03/20/09 | -0.6 ± 3.0 | 2.0± 6.6 | **570 ± 840** | 0.9± 6.1 | 19.0 ± 47.0 | -1.3 ± 7.5 |
| | 06/17/09 | -0.2 ± 3.7 | -0.5 ± 7.6 | 40.0 ± 870.0 | 1.1± 7.1 | 21.0 ± 49.0 | 0.6 ± 6.0 |
| | 09/21/09 | -0.8 ± 2.5 | 0.0± 5.3 | -410.0± 820.0 | 1.0± 7.3 | 10.0 ± 37.0 | -6.4 ± 7.2 |
| | 12/14/09 | -0.9 ± 3.4 | 4.4± 7.0 | -50.0 ± 890.0 | 0.7± 6.4 | -13.0 ± 55.0 | -3.2 ± 4.7 |
| | | **Mn-54** | **Nb-95** | **Ru-103** | **Ru-106** | **Sb-125** | **Sr-89** |
| | 03/20/09 | -1.4 ± 2.7 | -0.7 ± 3.3 | -1.7± 2.9 | 10.0± 25.0 | 2.4 ± 6.7 | 1.6 ± 4.7 |
| | 06/17/09 | 0.4 ± 2.9 | 0.7± 4.2 | -0.2± 3.8 | -21.0 ± 32.0 | -5.0 ± 8.9 | -3.8 ± 2.2 |
| | 09/21/09 | -1.5 ± 2.0 | -0.1 ± 2.7 | -0.9± 2.6 | -15.0 ± 21.0 | 0.3 ± 5.5 | -3.3 ± 2.3 |
| | 12/14/09 | -0.2 ± 3.4 | -2.1 ± 4.3 | 0.9 ± 3.5 | -18.0 ± 27.0 | -2.1 ± 9.2 | -2.1 ± 2.4 |
| | | **Sr-90** | **Th-228** | **Zn-65** | **Zr-95** | | |
| | 03/20/09 | -0.4 ± 1.1 | 11.0± 14.0 | 0.0 ± 11.0 | 1.6± 4.5 | | |
| | 06/17/09 | -0.6 ± 0.8 | -19.0 ± 14.0 | -4.9± 9.3 | -1.1 ± 6.3 | | |
| | 09/21/09 | -0.8 ± 0.7 | 12.3 ± 8.5 | 0.0 ± 4.9 | -0.9 ± 4.0 | | |
| | 12/14/09 | -0.3 ± 0.7 | 3.0 ± 14.0 | 10.0 ± 14.0 | 6.9± 6.5 | | |
| 72 | | **Ba-140** | **Be-7** | **Co-58** | **Co-60** | **Cr-51** | **Cs-134** |
| | 03/18/09 | -1.8 ± 5.2 | 10.0± 33.0 | 4.8 ± 4.6 | -1.5 ± 5.0 | -25.0 ± 39.0 | 0.5 ± 3.7 |
| | 06/11/09 | 6.4 ± 7.5 | 20.0± 26.0 | -0.6± 3.1 | 1.4± 3.3 | 9.0 ± 30.0 | -0.2 ± 2.7 |
| | 09/16/09 | -4.5 ± 7.0 | -38.0 ± 36.0 | 2.0 ± 4.0 | 0.4± 3.8 | -10.0 ± 37.0 | -0.6 ± 3.7 |
| | 12/14/09 | 1.4 ± 7.4 | 12.0± 24.0 | 1.6 ± 3.1 | 0.8± 3.6 | -1.0 ± 24.0 | 1.0 ± 3.2 |
| | | **Cs-137** | **Fe-59** | **H-3** | **I-131** | **K-40** | **La-140** |
| | 03/18/09 | -1.7 ± 4.2 | -2.7 ± 9.3 | 1250.0 ± 860.0 | 3.9± 8.0 | -25.0 ± 52.0 | -1.8 ± 5.2 |
| | 06/11/09 | -0.9 ± 2.9 | -4.9 ± 7.1 | -280.0± 860.0 | 0.0± 8.5 | 2.0 ± 50.0 | 6.4 ± 7.5 |
| | 09/16/09 | 1.6 ± 4.1 | -4.5 ± 7.4 | -520.0± 840.0 | 2.6± 8.0 | -22.0 ± 55.0 | -4.5 ± 7.0 |
| | 12/14/09 | -1.8 ± 3.2 | -3.3 ± 7.8 | -40.0 ± 890.0 | 0.7± 4.5 | -9.0 ± 50.0 | 1.4 ± 7.4 |
| | | **Mn-54** | **Nb-95** | **Ru-103** | **Ru-106** | **Sb-125** | **Sr-89** |
| | 03/18/09 | 0.0 ± 4.1 | 1.1± 5.0 | -2.9± 4.6 | -23.0 ± 40.0 | -7.0 ± 12.0 | 0.1 ± 3.8 |
| | 06/11/09 | 1.0 ± 3.0 | 0.4± 3.9 | -1.0± 3.7 | -16.0 ± 28.0 | 1.4 ± 7.3 | 1.2 ± 2.6 |
| | 09/16/09 | 2.2 ± 3.3 | -1.2 ± 4.5 | -3.2± 4.7 | -18.0 ± 33.0 | -4.0 ± 11.0 | 1.1 ± 2.7 |
| | 12/14/09 | -2.8 ± 3.2 | 2.5± 3.4 | -3.7± 3.0 | -1.0 ± 30.0 | -0.7 ± 7.7 | 2.4 ± 3.3 |
| | | **Sr-90** | **Th-228** | **Zn-65** | **Zr-95** | | |
| | 03/18/09 | 0.9 ± 1.0 | -16.0 ± 18.0 | -3.0 ± 11.0 | -3.3 ± 7.5 | | |
| | 06/11/09 | -0.1 ± 0.9 | -5.0 ± 12.0 | -7.8± 7.7 | -0.6 ± 5.8 | | |
| | 09/16/09 | -0.5 ± 0.8 | 17.0± 15.0 | 5.0 ± 16.0 | 0.0± 6.4 | | |
| | 12/14/09 | 0.0 ± 0.9 | 5.0 ± 13.0 | -16.2 ± 9.5 | 3.7± 4.9 | | |

**TABLE A-1**

**Dairy Cows Within 20 Miles of Millstone Point - 2009***

| Direction | Distance miles | Location |
|---|---|---|
| N | 14 | Preston |
| N | 15 | Norwich |
| N | 20 | Norwich |
| NNE | 16 | Norwich |
| NNE | 16 | Preston |
| NNE | 16 | Preston |
| NNE | 17 | Preston |
| NNE | 18 | Preston |
| NE | 13.5 | Ledyard |
| NE | 14 | Ledyard |
| NE | 14.5 | Ledyard |
| NE | 18 | Preston |
| NE | 18 | North Stonington |
| NE | 19 | Preston |
| NE | 19 | North Stonington |
| ENE | 17.5 | North Stonington |
| ENE | 20 | North Stonington |
| WNW | 10.4 | Lyme |
| NW | 10.4 | Lyme |
| NW | 19 | East Haddam |
| NNW | 12.3 | Salem |

* previous years the data included the number of cows at each location; this is no longer tracked in the census records since 2007

Note: None of these cow farms are used for sampling since all farms are greater than ten miles from plant (NUREG 1301, Reference 15, uses a cutoff distance of 5 miles).