CENTERIOR ENERGY

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VICE PRESIDENT - NUCLEAR

April 27, 1992
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U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
Annual Environmental Operating Report

Gentlemen:

We are hereby submitting the Annual Environmental Operating Report for the Perry Nuclear Power Plant, Unit 1, for the period of January 1, 1990 through December 31, 1990. This report includes both the radiological environmental operating report, to meet the requirements of the PNPP Technical Specification, Section 6.9.1.6, and the non-radiological environmental operating report, to meet the requirements of Section 5.4.1 of the Environmental Protection Plan, Appendix B of the PNPP Operating License.

Please call if you have any questions.

Sincerely,

Michael D. Lyster

MDL:LKB:ss

Attachment

cc: NRC Project Manager
NRC Resident Inspector
USNRC, Region III

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ANNUAL ENVIRONMENTAL OPERATING REPORT FOR PERRY NUCLEAR POWER PLANT

January 1, 1991 to December 31, 1991

Prepared by:
Environmental Monitoring Element
Perry Nuclear Power Plant
Cleveland Electric Illuminating Company
Perry, Ohio

April 1992

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SUMMARY

This Annual Environmental Operating Report details the results of Environmental Monitoring Programs conducted at the Perry Nuclear Power Plant (PNPP) from January 1 through December 31, 1991. Report topics include Radiological Environmental Monitoring, Land Use Census, Clam/mussel Monitoring, Herbicide Use, and Special Reports. The operation of the PNPP did not result in any significant adverse environmental impact in 1991.

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

The Radiological Environmental Monitoring Program (REMP) was established approximately ten years ago to monitor the radiological conditions in the environment around PNPP. It originally provided data on background radiation and radioactivity which is normally present in the area. PNPP has continued to monitor the environment by sampling precipitation, air, milk, produce, animal feed, soil, vegetation, water, fish and shoreline sediments, as well as by measuring radiation directly.

Over 1200 radiological environmental samples were collected in 1991. The results of the REMP indicate that radioactive releases in effluents have been well controlled. They also indicate that PNPP complies with all applicable federal regulations. Results are divided into four sections: atmospheric monitoring, terrestrial monitoring, aquatic monitoring and direct radiation monitoring.

- Samples of air and precipitation are collected to monitor the atmosphere. The 1991 results are similar to those observed in preoperational and previous operational programs. Only normal background environmental radioactivity was detected.
- Terrestrial monitoring includes analysis of milk, produce, vegetation, animal feed and soil samples. The results of the sample analyses indicate concentrations of radioactivity similar to previous years, and that no build-up of radioactivity attributable to the operation of PNPP has occurred.
- Aquatic monitoring includes the collection and analysis of water, fish, and shoreline sediments. The 1991 results of these analyses indicate normal background concentrations of radionuclides.
- Direct radiation measurements averaged 16.6 mrem/91 days at indicator locations and 15.5 mrem/91 days at control locations, showing that, in 1991, radiation in the area of PNPP was similar to radiation at locations greater than 5 miles away from the Plant.

INTRODUCTION

Coal, oil, natural gas, and hydropower are used to run most of the nation's electric generation stations; however, each method has its drawbacks. Coal-fired power can affect the environment through mining, acid rain, and airborne discharges. Oil and natural gas are in limited supply and are therefore, costly; hydropower is limited due to the environmental impact of damming our water ways and the scarcity of suitable sites in our country.

Nuclear energy provides an alternate source of energy which is readily available. The operation of nuclear power stations has a very small impact on the environment. In fact, PNPP is surrounded by hundreds of acres of woods and meadows that are home to a wide variety of plant and animal life.

In order to more fully understand this unique source of energy, background information on the Perry site, basic radiation, reactor operation, and effluent control is provided in the next two chapters.

PHYSICAL AND ECOLOGICAL FEATURES OF THE SITE

The Perry Nuclear Power Plant is located in North Perry Village of Lake County, Ohio. It is on the south shore of Lake Erie. The site is located north of Ohio State Route 20, approximately 35 miles northeast of Cleveland, Ohio.

The site occupies approximately 1100 acres and is relatively flat. The land has a very gentle slope toward Lake Erie, and is crossed by two streams that drain into the lake. About 45% of the site area is covered by woodland. The remainder is grasslands and land that had been used for farms and nurseries before plant construction. This variety of habitats provides food and shelter for a variety of amphibians, reptiles, birds and mammals. Deer, beaver and fox are some of the common woodland mammals. Avian species include red tailed hawks, kingfishers, great blue heron, and a variety of songbirds and seagulls. The spotted turtle (*clemmys guttata*), which is a state-listed endangered species, has an established breeding population on site.

Aside from woodland, most of the land around the site is used for agriculture and pasture. Favorable conditions along Lake Erie have encouraged the growth of a highly productive nursery industry. The major residential areas are the villages of Perry, North Perry, and Madison.

PNPP is a boiling water reactor with the capacity to generate 1205 Megawatts electric. The main circulating water system uses a natural draft cooling tower to remove excess

Nuclear Fuel

The fissioning of one uranium atom releases approximately 50 million times more energy than the combustion of a single carbon atom common to all fossil fuels. Since a single small reactor fuel pellet contains trillions of atoms, each pellet can release an extremely large amount of energy. The amount of electricity that can be generated from three small fuel pellets, each about 5/8 inch long and 3/8 inch in diameter, would require about 2.7 tons of coal or 9 barrels of oil to generate.

Nuclear fission occurs spontaneously in nature, but these natural occurrences cannot sustain themselves because the freed neutrons are absorbed by non-fissionable atoms. In contrast, a nuclear reactor minimizes neutron losses, thus sustaining the fission process by several means:

- o using fuel that is free of impurities that might absorb the freed neutrons;
- o increasing the concentration of the rarer fissionable isotope of uranium (U-235) relative to the concentration of U-238, a more common isotope that does not fission easily; and
- o increasing the probability of fission by slowing down neutrons by using a "moderator" such as water.

Natural uranium contains less than one percent U-235 when it is mined. Before it can be economically used in a nuclear reactor, it is enriched to approximately three percent U-235 relative to U-238. In contrast, the nuclear material used in nuclear weapons has been enriched to over 97 percent. Because of the low levels of U-235 in nuclear fuel, a nuclear power station cannot explode like a bomb. Nor could the fuel, as it exists at a power station, be used to make a bomb.

After the uranium is separated from the earth and rock in the ore, it is concentrated by a milling process. After milling the ore to a granular form and dissolving out the uranium with acid, the uranium is converted to uranium hexafluoride (UF_6), a chemical form of uranium that exists as a gas at temperatures slightly above room temperature. The uranium is then highly purified and shipped to a facility where it is enriched by gaseous diffusion to increase the concentration of U-235 in the fuel. The enriched gaseous UF_6 is converted into powdered uranium dioxide (UO_2), a highly stable ceramic material. The UO_2 powder is put under high pressure to form fuel pellets. Approximately five pounds of these pellets are placed into a long metal tube made of zirconium alloy. The tubes constitute the fuel cladding. The fuel cladding is highly resistant to heat, radiation and corrosion. When the tubes are filled with fuel pellets, they are called fuel rods.

Boiling Water Reactor System

Sixty-four fuel rods comprise a single fuel bundle. The reactor core at PNPP contains 748 of these fuel bundles, each approximately 13 feet tall. The reactor vessel weighs 805 tons, is 20 feet in diameter and 70 feet high, and has 6-inch thick steel walls.

Perry uses a Boiling Water Reactor (BWR) to generate electricity (see Figure 2). The heat released by nuclear fission in the CORE causes water to boil. The steam passes through the MAIN STEAM pipes to the TURBINE-GENERATOR. The turbine's blades spin due to the high temperature steam striking the blades. The turbine spins a magnetic field inside the generator, causing electricity to be produced.

Low-temperature steam exhausts from the turbine, into the CONDENSER where it is cooled back into water. This water is then pumped back to the reactor and reused.

Perry has five automatic pumping systems that will supply emergency cooling water to the reactor fuel. HIGH PRESSURE CORE SPRAY (HPCS) uses a single pump, LOW PRESSURE CORE SPRAY (LPCS) uses a single pump, and LOW PRESSURE COOLANT INJECTION (LPCI) utilizes three pumps. Each pump can move 6000 gallons of water per minute.

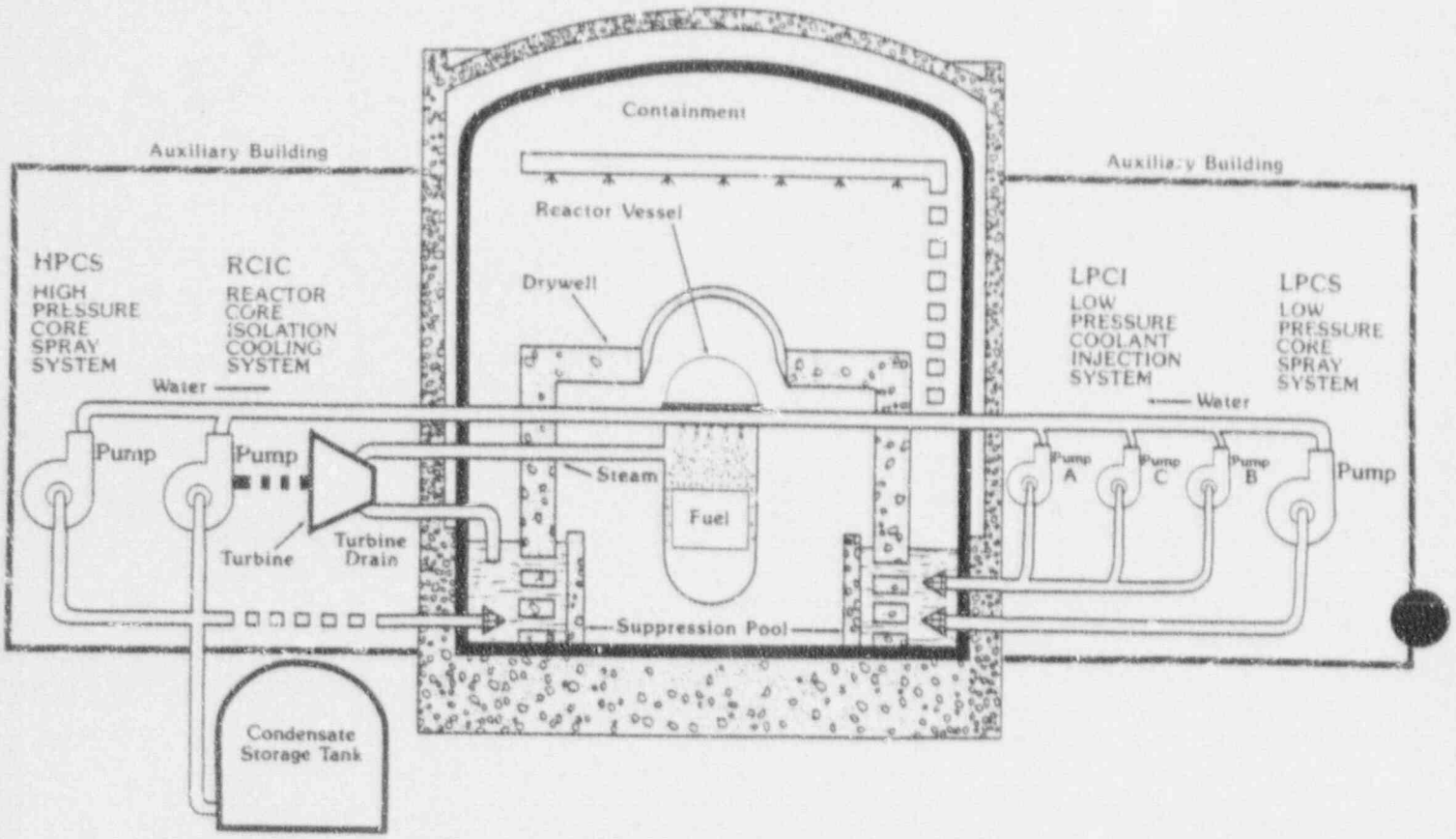


Figure 3: Emergency Cooling Systems

There are two main reservoirs of pure water for the 5 pumps. The CONDENSATE STORAGE TANK holds 1,000,000 gallons for HPCS, LPCS, and LPCI. The SUPRESSION POOL is a large donut shaped pool in the containment building which contains approximately one million gallons of water, also used for for HPCS, LPCS, and LPCI. An additional 1,400,000 gallons of pure water are stored elsewhere at Perry in case the CONDENSATE STORAGE TANK or SUPPRESSION POOL need to be replenished.

The REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) may be used by the reactor operator if the automatic systems fail. The operator starts RCIC by admitting STEAM to the RCIC TURBINE. The TURBINE runs the RCIC pump which moves water into the reactor at 850 gallons per minute.

If all cooling systems fail, the containment building itself can be flooded with water from Lake Erie.

FUNDAMENTALS OF RADIATION

THE ATOM

The world is made up of atoms. Atoms consist of two basic parts: the core, or nucleus, and the electrons orbiting the nucleus. The nucleus is made up of protons, which are positively charged, and neutrons, which have no charge. The electrons circling the nucleus have a negative charge. The electrical charge of an atom is very important. Since ordinary matter has a natural tendency to be stable, the atoms that make up matter must also be electrically neutral. To keep the atom electrically neutral, the number of electrons in an atom must equal the number of protons.

The number of protons in the nucleus is referred to as the atomic number. The atomic number is the identifier of the atom. If it changes, the number of electrons and the chemical properties of the atom change. For example, for an atom to be hydrogen, it must have one proton and one electron. If a hydrogen atom were to gain a proton, it would no longer be hydrogen; it would be helium, which has two protons and two electrons. Uranium must have 92 protons. Since protons are positively charged, the uranium atom must also have 92 electrons, which are negatively charged, for it to be electrically neutral.

Protons and neutrons are similar in size, and both of them are considerably larger than electrons (about 1,800 times heavier). Therefore the weight (mass) of the atom is principally determined by the nucleus. The sum of the protons and neutrons in the atom is called the mass number or atomic weight.

Unlike protons, the number of neutrons a specific atom contains can vary since they have no charge and don't need to be balanced by electrons. Therefore the mass number can vary. For example, a hydrogen atom always has one proton, but it can have either zero, one, or two neutrons. The different hydrogen atoms are called isotopes of hydrogen. Isotopes are labeled with their mass number. A hydrogen atom without a neutron is referred to as hydrogen-1 where 1 is the mass number. The hydrogen isotope with one neutron is referred to as hydrogen-2 (deuterium), and the isotope with two neutrons is referred to as hydrogen-3 (tritium). In nature, 99.985% is H1, 0.015% is H-2, and a small trace is H-3.

RADIATION AND RADIOACTIVITY

Radioactive decay is a process in which a nucleus of an unstable atom becomes more stable by spontaneously emitting energy, or disintegrating. Radiation refers to the energy that is released in the form of particles or waves when the disintegration or decay of the

Interaction with Matter

When radiation interacts with other materials, it affects the atoms of those materials principally by knocking the negatively charged electrons out of orbit. This causes the atom to lose its electrical neutrality and become positively charged. An atom that is charged, either positively or negatively, is called an ion. Anything that creates an ion is said to be ionizing. Ions are chemically reactive.

UNITS OF MEASUREMENT

To measure the effect of radiation, scientists have developed ways to measure levels and intensity of radiation. Some of these measurement units require some explanation.

Activity

Activity is the number of atoms in a material that decay per unit of time. Each time an atom decays, radiation is emitted. The curie (Ci) is the unit used to describe the activity of a material and indicates the rate at which the atoms are decaying. One curie of activity indicates the decay of 37 billion atoms per second.

Smaller units of the curie are often used in this report. Two common units are the microcurie (μCi), one millionth of a curie, and the picocurie (pCi), one trillionth of a curie. The mass, or weight, of radioactive material which would result in one curie of activity depends on the disintegration rate. For example, one gram of radium-226 is one curie of activity, but it would require about 1.5 million grams of natural uranium to equal one curie since radium-226 is more radioactive than natural uranium.

Dose

Biological damage due to alpha, beta, gamma and neutron radiation may result from the ionization caused by these radiations. Some types of radiation, especially alpha particles which cause dense local ionization, can result in up to 20 times the amount of biological damage for the same energy imparted as do gamma or X rays. Therefore, a quality factor must be applied to account for the different ionizing capabilities of various types of ionizing radiation. When the quality factor is multiplied by the absorbed dose, the result is the dose equivalent, which is an estimate of the possible biological damage resulting from exposure to any type of ionizing radiation. The dose equivalent is measured in rem (roentgen equivalent man).

In terms of environmental radiation, the rem is a large unit. Therefore, a smaller unit, the millirem (mrem) is often used. One millirem is equal to 1/1000 of a rem.

EXPOSURE TO BACKGROUND RADIATION

We are constantly exposed to what is called background radiation. This includes the decay of radioactive elements in the earth's crust, a steady stream of high-energy particles from space called cosmic radiation, naturally-occurring radioactive isotopes in the human body like potassium-40, medical procedures, man-made phosphate fertilizers (phosphates and uranium are often found together in nature), and even household items

like televisions. In the United States, a person's average annual exposure from background radiation is 360 mrem.

As the Background Radiation Chart (Figure 1) shows, radon is the largest contributor to background radiation. At an average of 200 mrem per year, naturally-occurring radon accounts for more than half of the background dose in the United States. Radon is a colorless, odorless, radioactive gas that results from the decay of radium-226. Radon atoms are produced in soil and migrate through air spaces to the atmosphere. Radon occurs indoors as a result of radon in the soil or rock under the building, or radon in building materials, water supplies, natural gas, or outdoor air. It may enter buildings through walls, floors, vents and other openings, as well as through cracked foundations and slabs, and openings for pipes and sumps.

Further information on radon can be obtained by contacting the state radon program office at the following address:

Radiological Health Program
Ohio Department of Health
1224 Kinnear Road, Suite 120
Columbus, Ohio 43212
(614) 481-5800
(800) 523-4439 (in Ohio)

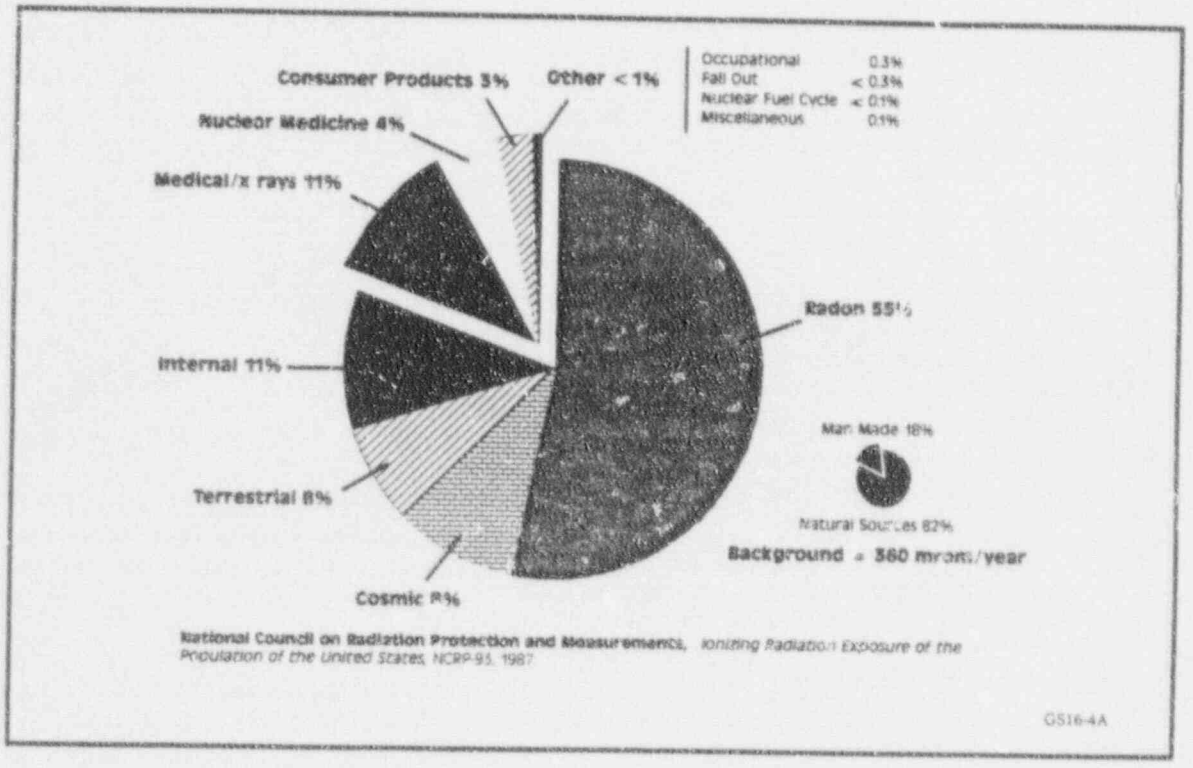


Figure 1: Background Radiation Chart

Certain somatic effects have been documented only at high radiation levels. These include cataracts, lowered fertility rate, and a reduction of the number of white cells in the blood. Therefore, the most likely somatic effect of low-level radiation is believed to be some increased risk of cancer.

Genetic Effects

A single ionizing event has the potential to cause a genetic effect. To understand why this is true, it is helpful to look at the structure of a human cell. Human cells normally contain 46 chromosomes; 23 transmitted from the mother, and 23 from the father. These 46 chromosomes contain about 10,000 genes which are passed on to the next generation and which determine many physical characteristics of the individual.

Radiation can cause changes or mutations in these genes. Chromosome fibers can break and rearrange causing interference with the normal cell division of chromosomes, affecting the number and structure. A cell can rejoin the ends of a broken chromosome but, if there are two breaks close enough together in space and time, the broken ends from one break may join incorrectly with those from another. This can cause translocations, ...versions, rings, and other types of structural rearrangement. Radiation is not the only mechanism by which such changes can occur. Spontaneous mutations and nonradiation-induced mutations have also been observed.

The mutated genes from one parent can then be passed on to offspring. They typically have no effect on the offspring as long as the genes from the other parent are not mutated in the same way. However, the genes stay in the body of the offspring and are passed on to following generations. If they meet similar genes when reproducing, they could then become present in the characteristics of the offspring.

There is no evidence that there are radiation levels below which chromosomes are not affected, but the number of occurrences drops dramatically at lower levels of radiation.

HEALTH RISKS

Risks can be defined, in general, as the probability or chance of injury, illness, or death resulting from some activity. However, the perception of risk is affected by how one views the probability, severity, and the benefits gained from accepting the risk. Perhaps the most useful unit for comparing health risks is the average number of days of life expectancy lost each time one performs an activity that includes a health risk. Estimates are calculated by looking at a large number of people, recording their ages at death from apparent causes, and estimating the number of days of life lost. The total number of days of life lost is then averaged over the total group observed. Several studies have compared the projected lower life expectancy resulting from exposure to radiation with other health risks. Some representative numbers are presented in Table 1 (information from E.L. Cohen, *Health Physics*, Vol. 36, 1976 and Vol. 61, 1991).

In decision making, one should consider the risk in each action. The risk of crossing a street is based on pedestrian fatalities and the assumption that the average person crosses five streets per day. It may be noted that smoking a cigarette has the risk equal to receiving about 5 mrem of radiation, and an overweight person eating a piece of pie a-la-mode runs a risk equal to that of receiving about 25 mrem.

DOSE ASSESSMENT

Dose is the energy deposited by radiation in an exposed individual. Whole body radiation exposure involves the exposure of all organs. Most background exposures are of this form. Both radioactive and non-radioactive elements can enter the body through inhalation (breathing) or ingestion (eating, drinking). When they do, they are usually not distributed evenly. For example, iodine selectively concentrates in the thyroid gland, while cesium collects in muscle and liver tissue, and strontium collects in bone tissue.

The total dose to organs from a given radionuclide depends on the radioactivity present in the organ and the amount of time that the radionuclide remains in the organ. Some radionuclides remain for very short times due to their rapid radioactive decay and/or elimination rate from the body, while other radionuclides may remain in our bodies for longer periods of time.

The dose to people in the area surrounding PNPP is calculated using factors such as effluent measurements, weather conditions, the locations of important pathways (cow milk, goat milk, vegetable gardens, and residences), usage factors (inhalation, food consumption), and dilution factors. Some of these factors are determined on an annual basis by making a thorough evaluation of land around the PNPP. This evaluation is called the Land Use Census, and is discussed in a later chapter.

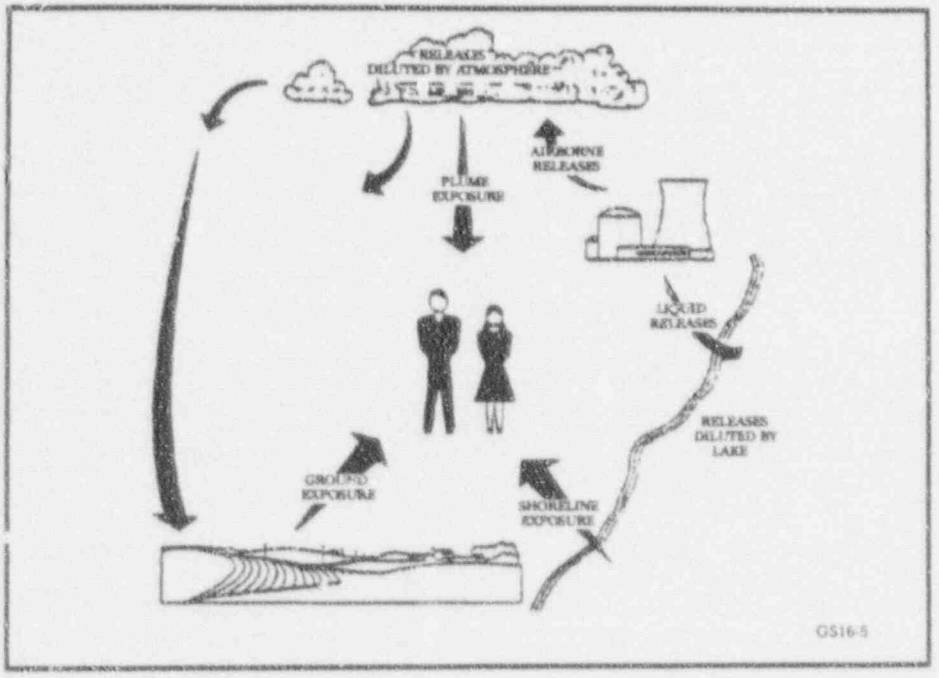


Figure 5: The external exposure pathways, shown here, are monitored thoroughly by the Radiological Environmental Monitoring Program (REMP), and are considered when calculating doses to the public.

RADIOLOGICAL ENVIRONMENTAL

MONITORING PROGRAM

Table 1: REMP Sampling Locations

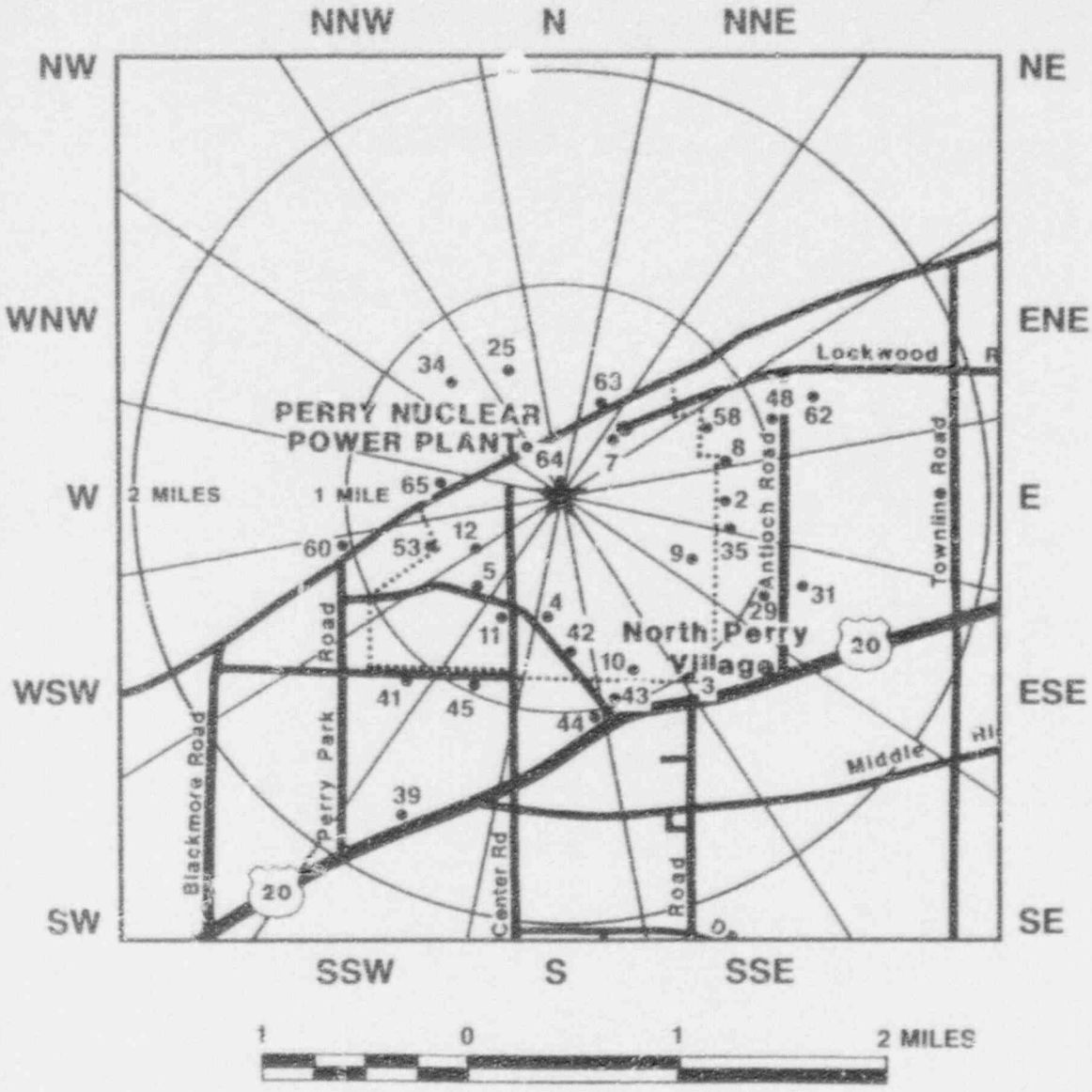
#	*Description*	*Distance (Miles)*	*Direction*	*Media*(1)
1	Redbird	3.4	ENE	APT, AI, TLD, SO
2	Site boundary tree line	0.7	E	TLD, SO
3	Meteorological tower	1.0	SE	APT, AI, TLD, PR
4	Site boundary Parmly Rd	0.7	S	APT, AI, TLD, SO, PR
5	Quincy Substation	0.6	SW	APT, AI, TLD
6	Concord Service Center (Control)	11.0	SSW	APT, AI, TLD, PR, SO, VL
7	Site boundary Lockwood Rd	0.6	NE	TLD, VL, PR, APT, AI
8	Site boundary tree line	0.8	E	TLD
9	Site boundary transmission tower	0.7	ESE	TLD
10	Auxiliary gate off Parmly Rd	0.8	SSE	TLD
11	SW corner Center and Parmly Rd	0.6	SSW	TLD
12	Site boundary transmission tower	0.6	WSW	TLD, PR, SO
13	Madison-on-the-Lake	4.7	ENE	TLD
14	Hubbard Rd	4.9	E	TLD, SO
15	Madison Substation (Eagle St)	5.1	ESE	TLD
16	Dayton Rd north of I-90	5.0	SE	TLD
17	Chadwick Rd south of I-90	5.2	SSE	TLD
18	Blair Rd	5.0	S	TLD, SO
19	Lane Rd near South Ridge Rd	5.3	SSW	TLD
20	Nursery Rd at Rt 2 overpass	5.3	SW	TLD, SO
21	Hardy Rd at Painesville Township Pk	5.1	WSW	TLD
22	Main St across from cemetary	6.9	SW	TLD
23	Corner High St and New St	7.9	WSW	TLD
24	St. Clair Ave Substation (Control)	15.1	SW	TLD
25	Offshore at PNPP Discharge	0.6	NNW	SED, FSH
26	Offshore at Redbird	4.2	ENE	SED
27	Offshore at Fairport Harbor	7.9	WSW	SED
28	CEI Ashtabula Plant intake	22.0	ENE	WTR

63	Minor stream outlet at Lake Erie	0.08	NNE	SED
64	Northwest Drain outlet at Lake Erie	0.09	NW	SED
65	Major Stream outlet at Lake Erie	0.18	W	SED
66	Sewage Lift Station (Deleted)	0.07	W	WTR
67	Sabo Farm	2.9	E	PD
68	Ohio-American Water Co (Control)	19.5	ENE	WTR
69	Rhoades Farm (Control)	18.7	SSW	MLK, FS
70	H&H Farm Stand	16.2	SSW	PD
71	Mosley Farm	7.9	SE	MLK

(1)

AI = Air Iodine
FS = Feed/Silage
MLK = Milk
PR = Precipitation (Snow)
SO = Soil
VL = Vegetation
WW = Wastewater

AFT = Air Particulate
FSH = Fish
PD = Produce
SED = Sediment
TLD = Thermoluminescent Dosimeters
WTR = Water



RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
SAMPLING LOCATIONS APPROXIMATELY 2 MILES FROM SITE

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

FIGURE 1

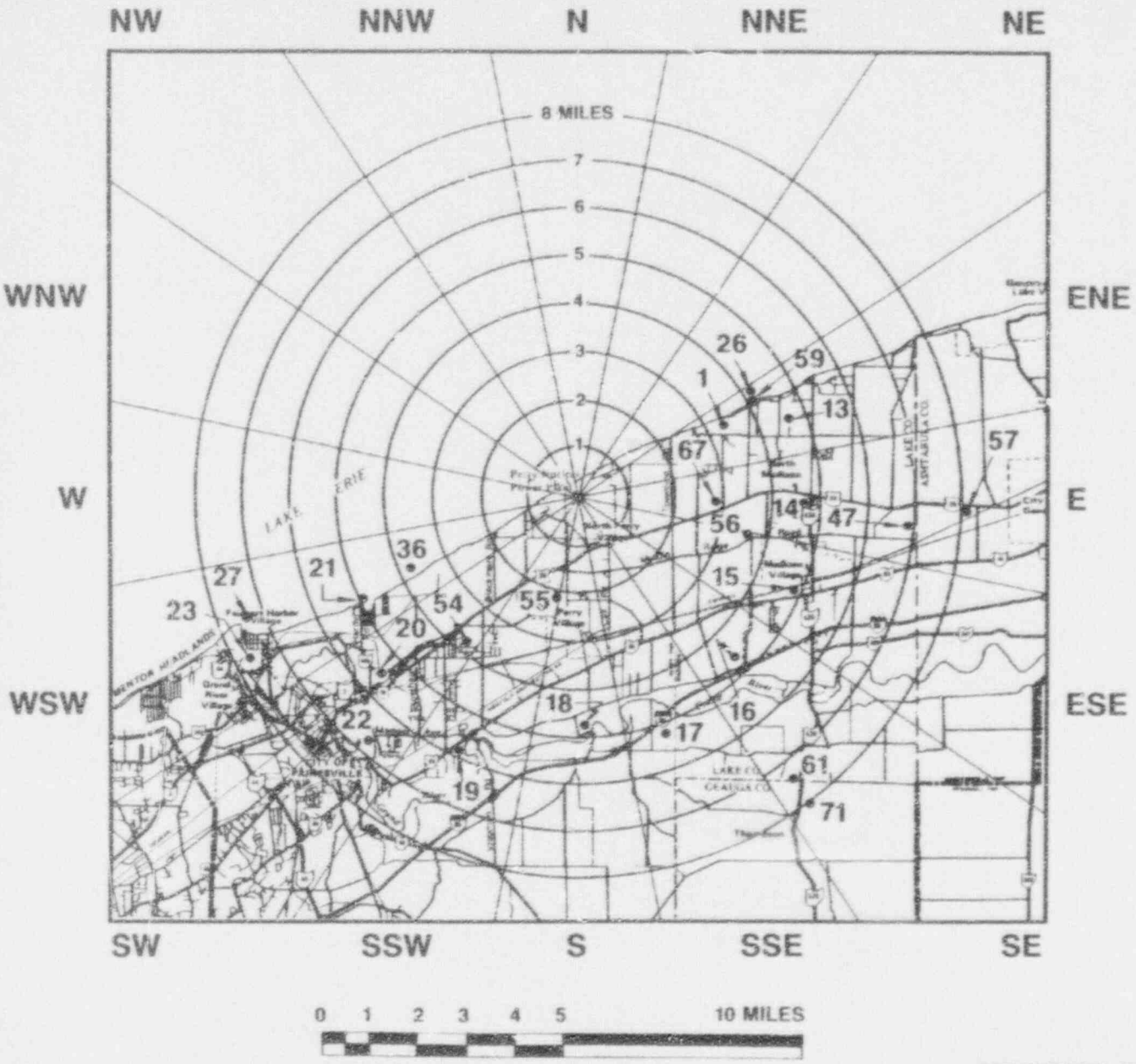
LEGEND:

STATION NO.	MEDIA	DIRECTION
2	TLD, SO	E
3	APT, AI, TLD, PR	SE
4	APT, AI, TLD, SO, PR	S
5	APT, AI, TLD	SW
7	APT, AI, TLD, PR	NE
8	TLD	ENE
9	TLD	ESE
10	TLD	SSE
11	TLD	SSW
12	TLD, PR, SO	WSW
25	SED, FSH	NNW
29	MILK, FEED/SILAGE	ESE
31	MILK, FEED/SILAGE	ESE
34	WTR	NW
35	APT, AI, TLD, PR	E
39	PD	SSW
41	TLD	SW
42	TLD	S
43	TLD	SSE
44	VL	SSE
45	TLD	SSW
48	VL	ENE
53	TLD	WSW
58	TLD	ENE
60	WTR	WSW
62	PD	ENE
63	SE	NNE
64	SE	NW
65	SE	W

APPROXIMATELY TWO MILES

FIGURE 1

GS15-1



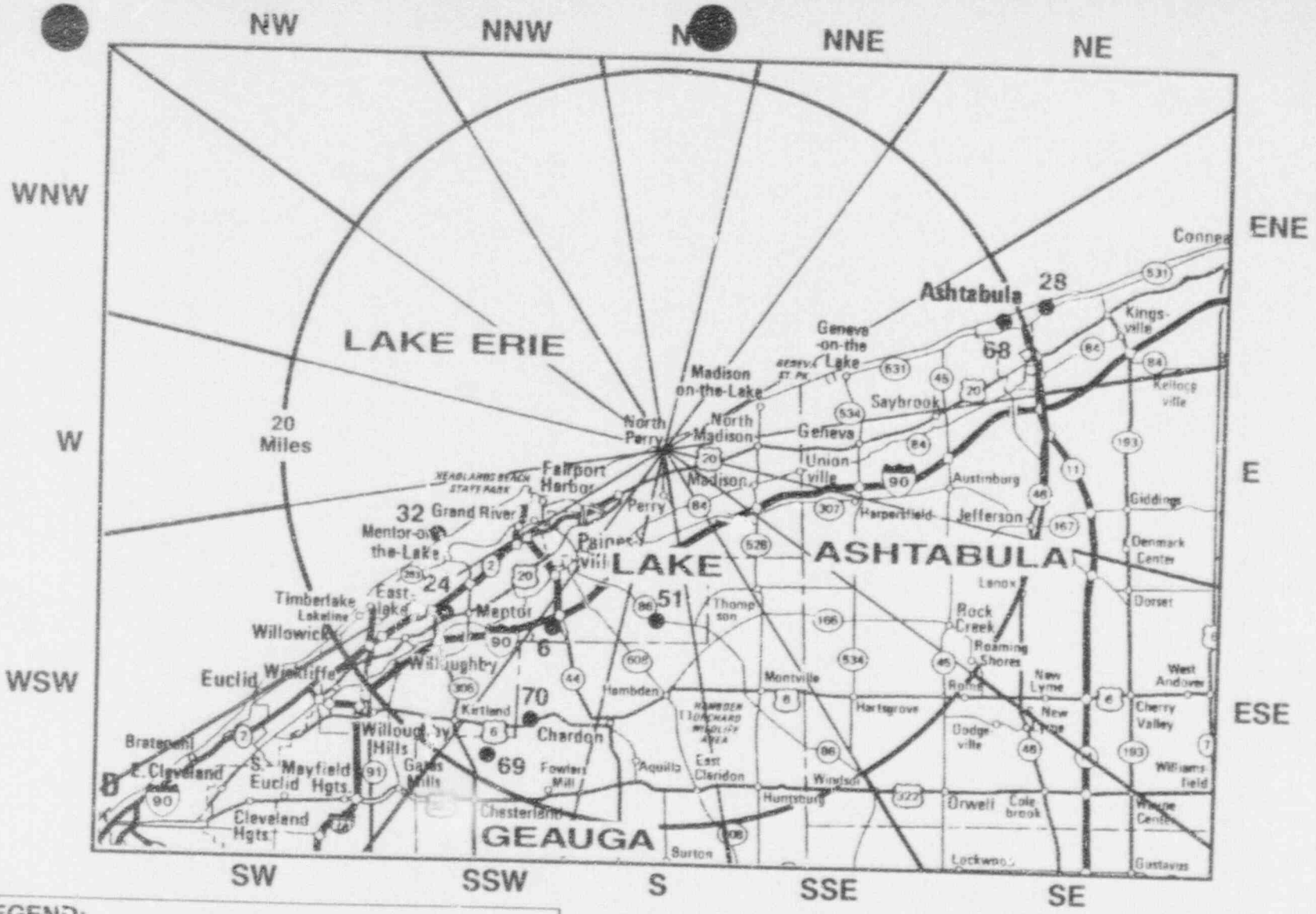
LEGEND:

STATION NO.	MEDIA	DIRECTION
1	APT, A , TLD, SO	ENE
13	TLD	ENE
14	TLD, SO	E
15	TLD	ESE
16	TLD	SE
17	TLD	SSE
18	TLD, SO	S
19	TLD	SSW
20	TLD, SO	SW
21	TLD	WSW
22	TLD	SW
23	TLD	WSW
26	SEDIMENT	ENE
27	SEDIMENT	WSW
36	WATER, TLD	WSW
47	MILK, FEED/SILAGE	E
54	TLD	SW
55	TLD	S
56	TLD	ESE
57	MILK, FEED/SILAGE	E
59	WTR	ENE
61	MILK, FEED/SILAGE	SE
67	PD	E
71	MILK, FEED/SILAGE	SE

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
SAMPLING LOCATIONS APPROXIMATELY 2 TO 8 MILES FROM SITE

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

FIGURE 2



LEGEND:		
STATION NO.	MEDIA	DIRECTION
6	APT, AI, TLD, PR, SO, VL	SSW
24	TLD	SW
28	WATER	ENE
32	FISH/SEDIMENT	WSW
51	MILK, FEED/SILAGE	S
68	WATER	ENE
69	MILK, FEED/SILAGE	SSW
70	FP	SSW

5 0 5 10 15 20 MILES

1/8" = 1 MILE

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
CONTROL SAMPLING LOCATIONS
GREATER THAN 8 MILES FROM SITE

PERRY NUCLEAR POWER PLANT
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

FIGURE 3

GS15-3

Atmospheric Monitoring

Air sampling is conducted to detect any increase in the concentration of airborne radionuclides that may be inhaled by humans or serve as an external radiation source. Air sampling pumps are used to draw continuous samples at a rate of approximately one cubic foot per minute, which is roughly the same rate as human respiration. The air is drawn through glass fiber filters, to collect particulates, and charcoal cartridges, to trap iodine. The samples are collected on a weekly basis, 52 weeks a year, from each of seven air sampling stations. Six of the locations are within four miles of the plant site; the seventh is used as a control location and is eleven miles from PNPP.

Precipitation provides a mechanism to sample for radionuclide deposition from the atmosphere. Precipitation in the form of rain, snow, sleet or hail provides a surface on which airborne radionuclides can be deposited. Samples are collected from six locations using passive collection containers. Containers are removed monthly or when full, strained to remove debris, and shipped to the laboratory for analysis. There are six indicator locations and one control location, which is located eleven miles from PNPP.

Terrestrial Monitoring

Collecting and analyzing samples of milk, food products and vegetation provides data to assess the buildup of radionuclides that may be ingested by humans. Animal feed and silage samples provide additional information on radionuclides that may be present in the food chain. The data from soil samples provides information on the deposition of radionuclides from the atmosphere.

Milk sampling is particularly important because it provides a direct basis for assessing the buildup of radionuclides in the environment that may be ingested by humans. Milk is one of the few foods consumed soon after production. The milk pathway involves the deposition of radionuclides from atmospheric releases onto forage consumed by cows. The radionuclides present in the forage can become incorporated into the milk which is then consumed by humans.

Samples of milk are collected once each month from November through April, and twice each month from May through October. Sampling is increased during the summer because animals are usually outside on pasture and not on stored feed. There are two control locations for milk sampling. One is Rettger Farm, located 9.6 miles from site; the other is Rhoades' Farm, 18.7 miles from site.

Food products can provide a direct pathway to humans by ingestion. Fruits and vegetables can become contaminated from atmospheric deposition from airborne sources or irrigation water drawn from a lake receiving airborne or liquid effluents. Also, radionuclides in the soil may be absorbed by the roots of the plants and become incorporated into the edible portions. Edible fruits and vegetables are collected once each year during the growing season from three farms in the vicinity of PNPP. The control location for food products is 15.2 miles from PNPP.

Vegetation (grass and leaves) is collected monthly during the growing season from five locations. Grass is clipped from open areas using standard lawn trimming equipment. Leaves are collected as close to the grass samples as possible, from staghorn sumac trees (*Rhus typhina*). The control location for vegetation is 11 miles away.

As with vegetation and food products, samples of animal feed and silage provide an indication of airborne radionuclides deposited in the vicinity of the plant. Sample analyses also provide data for determining radionuclide concentrations in the food chain. Animal feed and silage are collected annually from milk sampling locations.

Soil samples are collected quarterly from eight locations. The control location is eleven miles away. Only the top layer of soil is sampled in an effort to identify possible trends in the local environmental nuclide concentrations.

Aquatic Monitoring

Radionuclides may be present in Lake Erie from many sources including atmospheric deposition, run-off/soil erosion, and releases of radioactivity in liquid effluents from hospitals or nuclear facilities. These sources provide two forms of potential radiation exposure, external and internal. External exposure can occur from the surface of the water, shoreline sediments, and from swimming. Internal exposure can occur from ingestion of radionuclides, either directly from drinking the water, or as a result of the transfer of radionuclides through the aquatic food chain to the eventual consumption of aquatic organisms, such as fish. To monitor these pathways, PNPP samples water, shoreline sediments, and fish.

Water is sampled from six locations along Lake Erie in the vicinity of the PNPP. Samples from four locations are collected using composite sample pumps. The pumps are designed to collect water at regular intervals and composite it in a sample container. The containers are removed monthly and the samples shipped to the laboratory for analysis. Samples from two locations are collected weekly and combined. Each month the combined sample is shipped for analysis.

Sampling lake bottom sediments can provide an indication of the accumulation of undissolved radionuclides which may lead to internal exposure to humans through the ingestion of fish, through resuspension into drinking water, or as an external radiation source from shoreline exposure to fisherman and swimmers. Sediment is sampled twice each year from seven locations, two of which are also fish sampling locations.

Sediment samples from offshore are collected using a hand dredge. Near shore samples are collected using a scoop.

Fish are analyzed primarily to quantify the dietary radionuclide intake by humans, and secondarily to serve as indicators of radioactivity in the aquatic ecosystem. Fish are collected from two locations, twice each year. Important sport and commercial species are targeted, and only the fillets are sent to the laboratory for analysis. A scientific collecting permit is obtained annually from the Ohio Department of Natural Resources for fish sampling.

Direct Radiation Monitoring

Environmental radiation is measured directly at thirty-five locations around the PNPP site. The locations are positioned in two rings around the plant as well as along the site boundary. The inner ring is within a one mile radius of the plant site; the outer ring is four to five miles from the plant. Control locations are approximately ten miles from the plant in the two least prevalent wind directions. Each location is equipped with three thermoluminescent dosimeters (TLD's). One is changed quarterly, one is changed annually, and the third acts as a backup in case of lost or stolen TLD's, or an emergency. TLD's are described in more detail in the next section, under "gamma doses".

SAMPLE ANALYSIS

When environmental samples are analyzed for radioactivity, several types of measurements may be performed to provide information about the types of radiation and radionuclides present. The major analyses that are performed include:

- o *Gross beta analysis*
- o *Gamma spectral analysis*
- o *Iodine analysis*
- o *Tritium analysis*
- o *Strontium analysis*
- o *Gamma dose*

Gross beta analysis measures the total amount of beta emitting radioactivity present in a sample. Beta radiation may be released by many different radionuclides. Since beta decay gives a continuous energy spectrum rather than the discreet lines or "peaks" associated with gamma radiation, identification of specific beta emitting nuclides is much more difficult. Therefore, gross beta analysis only indicates whether the sample contains normal or abnormal concentrations of beta emitting radioactivity; it does not identify specific radionuclides. Gross beta analysis primarily acts as a tool to identify samples that may require further analysis.

Gamma spectral analysis provides more specific information than does gross beta analysis. Gamma spectral analysis identifies each radionuclide present in the sample that emits gamma radiation, and the amount of radioactivity emitted by each. No two radionuclides emit the same energy gamma rays. Therefore, each radionuclide has a very specific "fingerprint" that allows for accurate identification. For example, gamma spectral analysis can be used to identify the presence and amount of iodine-131 in a sample. Iodine-131 is a man-made radioactive isotope of iodine that may be present in the environment as a result of fallout from nuclear weapons testing, routine medical uses in diagnostic tests, and routine releases from nuclear power plants.

Iodine analysis measures the amount of radioiodine present in a sample. For air samples, charcoal cartridges are analyzed directly. In other media, iodine is extracted by chemical separation.

Tritium analysis indicates whether a sample contains the radionuclide tritium (H-3) and the amount of radioactivity present as a result. Tritium is a natural or man-made isotope of hydrogen that emits low energy beta particles.

Strontium analysis identifies the presence and amount of strontium-89 and strontium-90 in a sample. These man-made radionuclides are found in the environment as a result of fallout from nuclear weapons testing and from nuclear power plants. Strontium is usually incorporated into the calcium pool of the biosphere. In other words, strontium tends to replace calcium in living organisms and becomes incorporated in bone tissue. The principle strontium exposure pathway is via milk.

Gamma doses received by thermoluminescent dosimeters (TLD) while in the field are determined by a special laboratory procedure. Thermoluminescence is a process by which ionizing radiation interacts with the sensitive material in the TLD, the phosphor. Energy is trapped in the TLD material and can be stored for months or years. This provides an excellent method to measure the dose received over long periods of time.

The amount of energy that was stored in the TLD as a result of interaction with radiation is removed and measured by a controlled heating process in a calibrated reading system. As the TLD is heated, the phosphor releases the stored energy as light. The amount of light is directly proportional to the amount of radiation to which the TLD was exposed. The reading process zeroes the TLD and prepares it for reuse.

Table 2 provides a list of the type(s) and frequency of analyses performed on environmental samples collected for the PNPP REMP.

Sample Type	*Frequency*	*Analyses Performed*
Atmospheric Monitoring		
Airborne Particulates	Weekly	Gross Beta
	Quarterly	Gamma Spectral
Airborne Radioiodine	Weekly	Iodine-131
Precipitation	Monthly	Gross Beta
		Gamma Spectral
		Tritium
Terrestrial Monitoring		
Milk	Monthly/Bimonthly	Gamma Spectral
		Iodine-131
	Quarterly	Strontium-89
		Strontium-90
Food Products	Annually	Gamma Spectral
Vegetation	Monthly	Gamma Spectral
Soil	Quarterly	Gamma Spectral
Animal Feed/Silage	Annually	Gamma Spectral
Aquatic Monitoring		
Water	Monthly	Gross Beta
		Gamma Spectral
		Tritium
	Quarterly	Strontium-89
	Quarterly	Strontium-90
Fish	Biannually	Gross Beta
		Gamma Spectral
Sediment	Biannually	Gamma Spectral
Direct Radiation Monitoring		
Thermoluminescent Dosimeters	Quarterly	Gamma Dose

Table 2: Analyses performed on REMP samples

Samples often contain radioactivity that is below the lower limit of detection (LLD). The LLD is the smallest amount of activity that will show a positive result for which there can be confidence that radioactivity is present. When a measurement is reported as less than the LLD, it means that the radioactivity is so low it cannot be accurately measured with any degree of confidence. The Nuclear Regulatory Commission, as part of the PNPP Operating License, has established values for the lower limit of detection for REMP sample analysis. The vendor laboratory was able to comply with those values in 1991.

1991 SAMPLING PROGRAM

The Radiological Environmental Monitoring Program is conducted in accordance with the PNPP Operating License, Appendix A, Technical Specifications. The Environmental Technical Specifications, or REMP requirements, have been established by the Nuclear Regulatory Commission.

Many radionuclides are present in the environment due to sources such as cosmic radiation and fallout from nuclear weapons testing. Some of the radionuclides normally present are

- o *tritium*, present as a result of the interaction of cosmic radiation in the upper atmosphere.
- o *beryllium-7*, present as a result of the interaction of cosmic radiation with the upper atmosphere.
- o *potassium-40*, a naturally occurring radionuclide normally found in humans and throughout the environment, and
- o *fallout radionuclides* from nuclear weapons testing, including tritium, cesium-137, strontium-89, and strontium-90. These radionuclides may also be released in minute amounts from nuclear facilities.

These radionuclides are expected to be present in many of the environmental samples collected in the vicinity of PNPP.

The contribution of radionuclides from the operation of PNPP is assessed by comparing sample results with preoperational data, operational data from previous years, control location data, and the types and amounts of radioactivity normally released from the station in liquid and gaseous effluents.

The results for each sample type are discussed below and compared to historical data to determine if there are any observable trends. All results are expressed as activity. Refer to Appendix A: 1991 Radiological Environmental Monitoring Program Data for more detailed results.

Program Changes

There were several changes to the program in 1991. These changes include the addition and deletion of sample locations as follows:

January	H&H Farm Stand was added to the program. This is a control location for food product sampling, and is located approximately 16.2 miles SSW of the PNPP.
February	The CEI Ashtabula Generating Station was added to the water sampling program. It is located 22 miles ENE of PNPP and to serve as a control location, replacing the Ohio-American Water Company.
May	The Arthur Mosley Farm, 7.9 miles SE of PNPP, was added as an indicator location for milk sampling.
September	The vegetation sampling location on Antioch Road was deleted due to home construction.

On occassion, samples cannot be collected. This can be due to equipment malfunction, animal husbandry practices, lost shipments, or vandalism. Table 3 provides a list of missed samples, the sample location, and the reason the sample was missed.

Table 3: Missed REMP samples

MEDIA	LOCATION NO.	DATE	REASON MISSED
Water	*59,60*	*02/28/91*	*Collection site frozen*
Water	*34*	*11/29/91*	*Lost in shipment*
Milk	*29,31,47,57,61*	*01/07/91*	*Drying period*
Milk	*29,31,47,57,61*	*02/04/91*	*Drying period*
Milk	*29,31,47,57,61*	*03/04/91*	*Drying period*
Milk	*31,57*	*04/08/91*	*Dropped out of REMP*
Milk	*29*	*05/06/91*	*Drying period*
Milk	*29*	*05/20/91*	*Drying period*
Milk	*69*	*07/08/91*	*Farmer unavailable*
Milk	*29,47*	*10/21/91*	*Drying period*
Milk	*29/47*	*11/11/91*	*Drying period*
Milk	*29,31,47,61*	*12/02/91*	*Drying period*
TLD	*1,22*	*1st Qtr*	*Lost in field*
TLD	*11*	*2nd Qtr*	*Lost in field*
TLD	*54,55*	*3rd Qtr*	*Lost in field*
TLD	*1,23*	*4th Qtr*	*Lost in field*
TLD	*1,15,23*	*Annual*	*Lost in field*
Soil	*1*	*02/21/91*	*Inadvertently missed*
Precipitation	*3,4,6,7,12,35*	*June*	*Insufficient precip.*
Precipitation	*3,4,6,7,12,35*	*July*	*Insufficient precip.*
Vegetation	*48*	*June*	*Leaves unavailable*
Grass	*7,48*	*July*	*Resources depleted*
Grass	*48*	*September*	*Resources depleted*

Atmospheric Monitoring

AIR

A total of 364 of each type of air sample (particulate and iodine) was collected in 1991. The 1991 annual average gross beta activity for all air sampling locations compared to 1990 and preoperational data is as follows:

YEAR	ACTIVITY (pCi/m^3) +/- 2 sigma
1991	*19.17E-3 +/- 11.33E-3*
1990	*19.30E-3 +/- 13.08E-3*
Preoperational	*17.44E-3 +/- 13.74E-3*

The gross beta concentration ranged from 7E-3 pCi/m^3 to 34E-3 pCi/m^3. The location with the highest annual average concentration, 20.13E-3 pCi/m^3, was on site, approximately one mile from the plant.

The comparison of annual average gross beta concentrations between indicator and control locations, expressed in pCi/m^3, is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
Gross beta	*19.11E-3 +/- 11.35E-3*	*19.52E-3 +/- 11.33E-3*

There is no statistical difference in gross beta concentrations between the indicator and control locations.

Beryllium-7 (Be-7) which occurs naturally, was detected in all quarterly composited air samples. The 1991 and 1990 annual average concentrations for all locations (both indicator and control) are shown below, along with preoperational data. Historically, Be-7 concentrations have ranged from 30E-3 pCi/m^3 to 140E-3 pCi/m^3.

YEAR	ACTIVITY (pCi/m^3) +/- 2 Sigma
1991	*52.07E-3 +/- 14.50E-3*
1990	*49.29E-3 +/- 19.18E-3*
Preoperational	*7^.90E-3 +/- 41.40E-3*

In 1991, Be-7 concentrations ranged from 42E-3 pCi/m^3 to 68E-3 pCi/m^3. The location with the highest annual average concentration, 57.5E-3 pCi/m^3, was on site, approximately one mile from the plant.

The comparison of Be-7 concentrations between indicator and control locations, expressed in pCi/m^3, is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
Be-7	*52.37E-3 +/- 15.32E-3*	*50.25E-3 +/- 8.52E-3*

There is no statistical difference between the results for indicator and control locations.

PRECIPITATION

A total of 60 precipitation samples were collected and analyzed in 1991. The annual average gross beta activity for all precipitation locations for 1991 and 1990 (no preoperational data are available) are as follows:

YEAR	ACTIVITY (pCi/L) +/- 2 Sigma
1991	*3.81 +/- 5.08*
1990	*5.68 +/- 11.44*

The gross beta activity ranged from 0.8 pCi/L to 12.7 pCi/L for all locations. The location with the highest annual average gross beta activity, 5.44 +/- 3.86 pCi/L, was on site, approximately 1.0 miles from the plant.

The comparison of the 1991 annual average gross beta concentration (pCi/L) in precipitation between indicator and control locations is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
Gross beta	*4.03 +/- 5.24*	*2.71 +/- 3.66 pCi/L*

Although the indicator locations show a higher activity than the control location, the high standard deviation makes it difficult to draw a significant conclusion. It is also important to consider the fact that precipitation has a "washing" influence on the atmosphere. Precipitation and average monthly gross beta concentrations were compared over a three year period for PNPP. The results indicated that as precipitation increases, the gross beta concentration decreases. This phenomena was observed during the Chernobyl incident in 1986. Weekly air samples analyzed for gross beta exhibited high concentrations when precipitation was low; when precipitation was high, the air sample gross beta was low.

A total of 60 samples were analyzed for tritium in 1991. The 1991, 1990 and 1988 (no preoperational data are available) annual average concentrations are shown below.

YEAR	ACTIVITY (pCi/L) +/- 2 Sigma
1991	*151.5 +/- 93.9*
1990	*175.8 +/- 99.4*
1988	*202.3 +/- 129.2*

Tritium results in 1991 ranged from 91 pCi/L to 315 pCi/L. This is consistent with previous years.

The comparison of tritium concentration (pCi/L) between indicator and control locations in 1991 is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
H-3	*158.8 +/- 96*	*115.0 +/- 31.6*

Although the indicator location concentration is slightly higher than the control location, this relationship has been reversed in past years. The location with the highest tritium activity was at the site boundary, 0.6 miles from the plant. The concentration was 170.4 +/- 63.8 pCi/L.

Terrestrial Monitoring

MILK

Ninety-two milk samples were collected and analyzed for radioiodine and by gamma spectrometry. Samples were also analyzed quarterly for strontium. The predominant radionuclide identified by gamma spectrometry was naturally occurring K-40.

The annual average concentration of K-40 in milk for all locations in 1991, 1990 and preoperational data is as follows:

YEAR	ACTIVITY (pCi/L) +/- 2 Sigma
1991	*1511 +/- 421*
1990	*1522 +/- 508*
Preoperational	*1537 +/- 546*

The concentration of K-40 in milk ranged from 1060 pCi/L to 1970 pCi/L. This wide range can be attributed to the differences between goat milk and dairy cow milk. Goat milk naturally contains higher concentrations of K-40. For example, the preoperational K-40 concentration in goat milk was 1655 +/- 468 pCi/L; in dairy cow milk it was 1320 +/- 373 pCi/L.

The location with the highest annual average concentration for K-40, 1706 +/- 124 pCi/L, was located 7.9 miles from the plant. The comparison between indicator and control location K-40 concentrations (pCi/L) is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATIONS
K-40	*1624 +/- 340*	*1334 +/- 278*

The difference between indicator and control locations is attributable to the fact that indicator locations have goats and control locations have cows. However, since all local farms with milk producing animals are currently part of the PNPP REMP program, this location distribution cannot be avoided.

Twenty-eight samples were analyzed for strontium. The annual average concentrations of Sr-90 in milk for all locations in 1991, 1990 and preoperational data are shown below.

YEAR	ACTIVITY (pCi/L) +/- 2 Sigma
1991	*2.51 +/- 1.66*
1990	*2.28 +/- 1.14*
Preoperational	*1.80 +/- 2.12*

The annual average Sr-90 level in milk was at its highest in 1988, 3.24 +/- 1.94 pCi/L, and decreased through 1990. The concentration during plant operation has ranged from 1.10 pCi/L to 4.6 pCi/L; the preoperational concentration ranged from 0.47 pCi/L to 3.5 pCi/L. The location with the highest annual average concentration, 3.60 +/- 0.87 pCi/L, is 7.9 miles from the plant.

The comparison between indicator and control locations for Sr-90 concentration (pCi/L) is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATIONS
Sr-90	*2.55 +/- 1.85*	*2.43 +/- 1.25*

There is no statistical difference between indicator and control locations.

Strontium-90 has been detected every year since 1983. Low level, trace amounts are found uniformly throughout the area. This suggests that its source is universal, such as fallout. The presence of Sr-90 can also be related to fertilizer use as well as specific soil characteristics.

FOOD PRODUCTS

A total of four different types of food products were collected from three locations in 1991. Broadleaf vegetables, such as lettuce and cabbage, were collected when available. The predominant radionuclide found in food products sampled was the naturally occurring potassium-40 (K-40). The 1991, 1989 (1990 data is not available), and preoperational annual annual average concentrations for K-40 for all locations are shown below:

YEAR	ACTIVITY (pCi/Kg) +/- 2 Sigma
1991	*1971 +/- 1226*
1989	*2142 +/- 1002*
Preoperation	*2296 +/- 2160*

The activity ranged from 1530 pCi/Kg to 3280 pCi/Kg in 1991. The comparison of K-40 concentrations (pCi/Kg) between indicator and control location results for 1991 is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
K-40	*1742.5 +/- 624.6 pCi/Kg*	*2276.7 +/- 1725.6 pCi/kg*

Based on historical data, control locations have produced higher concentrations than indicator locations. The 1991 comparison agrees with past results.

VEGETATION

A total of 52 grass and leaf samples were collected and analyzed in 1991. Two naturally occurring radionuclides were detected: beryllium-7 (Be-7) and potassium-40 (K-40). Cesium-137 (Cs-137) was detected in samples from two grass sample locations.

The 1991, 1990, and preoperational annual average Be-7 and K-40 concentrations for all vegetation sampling locations are shown below:

	YEAR	ACTIVITY (pCi/Kg) +/- 2 Sigma
Be-7	*1991*	*1692 +/- 2981*
	1990	*2940 +/- 6206*
	Preoperational	*2306 +/- 1688*
K-40	*1991*	*5417 +/- 2698*
	1990	*5176 +/- 2278*
	Preoperational	*4273 +/- 3949*

The concentration of Be-7 ranged from 245 pCi/kg to 7481 pCi/Kg in 1991; the concentration of K-40 ranged from 2509 pCi/kg to 10100 pCi/Kg. A sampling location in Redbird, 1.1 miles from the plant had the highest annual average concentration of both Be-7 and K-40.

The comparison of results between indicator and control locations, in pCi/Kg, is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
Be-7	*1653 +/- 3132*	*1842 +/- 2419*
K-40	*5365 +/- 2823*	*5609 +/- 2250*

Grass was found to have greater variation and higher concentrations of Be-7 than leaves. The Be-7 concentration in grass for all locations was 1886.7 +/- 1318.4 pCi/Kg; the concentration in leaves was 901.4 +/- 436.5 pCi/Kg.

The Cs-137 was detected in samples from two indicator locations, each approximately one mile from the plant. The average concentration was 27.2 +/- 8.0 pCi/Kg. Cs-137 had been found in one grass sample in 1990, at a different location than this year. The origin is not known.

FEED/SILAGE

Feed and silage samples were collected from six milk sampling locations. Naturally occurring Be-7 and K-40 were detected; Cs-137 was also detected in three of the six samples.

The 1991, 1990 and preoperational annual average concentrations (pCi/Kg wet) for K-40 for all locations is shown below:

YEAR	ACTIVITY +/- 2 Sigma
1991	*7281 +/- 3093*
1990	*8451 +/- 6821*
Preoperational	*7715 +/- 8590*

The K-40 concentrations ranged from 5560 pCi/Kg to 9870 pCi/Kg in 1991. A comparison of average annual concentrations (pCi/Kg) between indicator and control locations is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
K-40	*7626 +/- 2923*	*5560*

Historically, K-40 concentrations vary widely from year to year and from location to location with no observable pattern.

Be-7 was detected in two indicator location feed samples. The average concentration was 685.5 +/- 1298.0 pCi/Kg. This value is slightly lower than the average values from previous years.

Cs-137 was detected in two feed samples and one silage sample. It had not been detected prior to 1990. In 1991, Cs-137 was detected in samples from locations more than five miles from PNPP. No activity was measured at the nearest sampling location, 1.3 miles from the plant.

SOIL

Thirty-one soil samples were collected in 1991. Two naturally occurring radionuclides, K-40 and Radium-226 (Ra-226) were detected in the samples. There were also two fission product radionuclides, Cs-137 and Strontium-90 (Sr-90).

The 1991, 1990, and preoperational annual average concentrations for all locations for K-40 and Ra-226 are shown below:

	YEAR	ACTIVITY (pCi/Kg dry) +/- 2 Sigma
K-40	*1991*	*11204 +/- 6690*
	1990	*10490 +/- 6962*
	Preoperational	*12391 +/- 6174*
Ra-226	*1991*	*792 +/- 668*
	1990	*1886 +/- 1509*
	Preoperational	*758 +/- 596*

The activity for K-40 ranged from 6860 pCi/Kg to 21560 pCi/Kg; the Ra-226 concentration ranged from 260 pCi/Kg to 1574 pCi/Kg. A comparison of the annual average concentrations (pCi/Kg) for K-40 and Ra-226 between indicator and control locations is shown below:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
K-40	*10854 +/- 6764*	*13566 +/- 4098*
Ra-226	*717 +/- 564*	*1297 +/- 385*

Historically, the Ra-226 concentration has been higher at the control location than at the indicator locations. The K-40 concentrations fluctuate widely.

Cs-137 was detected in 29 of the 31 soil samples. The average annual concentration of Cs-137 for all locations for 1991, 1990, and preoperational is shown below.

YEAR	ACTIVITY (pCi/Kg dry) +/- 2 Sigma
1991	*344.9 +/- 453.8*
1990	*392.4 +/- 737.5*
Preoperational	*867.0 +/- 1855*

The Cs-137 activity ranged from 44 pCi/Kg to 854 pCi/Kg in 1991. This large variation was also observed in preoperational data, which ranged from 109 pCi/Kg to 3940 pCi/Kg. The overall reduction of Cs-137 concentrations suggests that its presence in the environment

is not impacted by the plant. The following is a comparison of Cs-137 concentrations (pCi/Kg) between control and indicator locations:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
Cs-137	*327.8 +/- 477.6*	*452.0 +/- 162.5*

The location with the highest annual average concentration, 703.7 +/- 379.6 pCi/Kg, for Cs-137 was at the site boundary, 0.3 miles from the plant.

Sr-90 was detected in thirteen out of fifteen samples. The annual average concentration for 1991 and 1990 is as follows (no preoperational data is available):

YEAR	ACTIVITY (pCi/Kg dry) +/- 2 Sigma
1991	*47.99 +/- 71.8*
1990	*70.24 +/- 218.26*

Activity for Sr-90 ranged from 10.5 pCi/Kg to 135.3 pCi/Kg. The lower limit of detection for Sr-90 has improved since 1988, allowing measurement of much lower quantities.

The comparison of 1991 annual average concentration (pCi/Kg) between indicator and control locations is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
Sr-90	*42.7 +/- 72.7*	*77.1 +/- 36.4*

The location with the highest annual average concentration, 135.3 +/- 16.6 pCi/Kg, was Redbird, approximately 3.4 miles from the plant.

Aquatic Monitoring

WATER

Sixty-three water samples were collected and analyzed for gross beta activity and by gamma spectrometry. From these samples, 22 were composited and analyzed for tritium. Twenty samples were analyzed for Sr-89 and Sr-90.

The 1991, 1990 and preoperational annual average gross beta activity (pCi/L) is as follows:

YEAR	ACTIVITY (pCi/L) +/- 2 Sigma
1991	*2.50 +/- 0.96*
1990	*2.46 +/- 1.13*
Preoperational	*5.26 +/- 6.78*

The significant difference between preoperational values and operational data is due to a change in vendor laboratories in 1987/1988. Although investigated, no explanation for the decrease in activity was found.

The gross beta ranged from 1.6 pCi/L to 3.7 pCi/L for all locations. The sampling point, a control location at the CEI Ashtabula Generating Station had the highest annual average gross beta, 2.80 +/- 0.66 pCi/L.

The comparison of gross beta (pCi/L) between indicator and control locations is shown below:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
Gross beta	*2.47 +/- 0.85*	*2.58 +/- 1.22*

There is no significant difference between indicator and control locations.

Strontium-90 was detected in five of the 20 samples analyzed. The 1991 annual average for all locations was 0.62 +/- 0.38 pCi/L. The range was 0.40 pCi/L to 0.90 pCi/L. Preoperational strontium concentrations ranged from 0.55 pCi/L to 1.9 pCi/L, which indicates that strontium was present prior to plant operation.

Tritium (H-3) was detected in 22 composited samples. The 1991, 1990, and preoperational annual average concentrations for all locations are as follows:

YEAR	ACTIVITY (pCi/L) +/- 2 Sigma
1991	*179.9 +/- 98.4*
1990	*180.5 +/- 108.1*
Preoperational	*333.6 +/- 341.0*

The tritium values ranged from 99 pCi/L to 263 pCi/L. The location with the highest annual average value, 210 +/- 40.1 pCi/L, was a water plant located 3.9 miles from the plant site.

The comparison of H-3 concentrations (pCi/L) between indicator and control locations is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
H-3	*179.9 +/- 100*	*180.7 +/- 103.3*

These values are not significantly different.

SEDIMENT

Fourteen sediment samples were collected in 1991. The predominant radionuclide was potassium-40 (K-40), which is naturally occurring. K-40 has been detected in all samples since the program began in 1981.

The 1991, 1990, and preoperational average annual concentrations of K-40 for all locations are as follows:

YEAR	ACTIVITY (pCi/Kg dry) +/- 2 Sigma
1991	*9902 +/- 6580*
1990	*11685 +/- 7720*
Preoperational	*13317 +/- 7914*

The K-40 concentration ranged from 4656 pCi/Kg to 14850 pCi/Kg. A comparison of the annual average concentration (pCi/Kg) for K-40 between indicator and control locations is shown below:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
K-40	*10090 +/- 6188*	*8773 +/- 11412*

Other radionuclides detected in sediment samples include Cs-137 and Sr-90, both fission products. However, these have been detected in most sediment samples since 1981, five

years before PNPP began operation. In 1991, Cs-137 was detected in six of the fourteen samples. The 1991, 1990, and preoperational annual average concentrations for Cs-137 are as follows:

YEAR	ACTIVITY (pCi/Kg dry) +/- 2 Sigma
1991	*197 +/- 254*
1990	*357 +/- 347*
Preoperational	*243 +/- 310*

Concentration of Cs-137 ranged from 43.5 pCi/Kg to 350 pCi/Kg. The location with the highest annual average concentration, 273.5 +/-108.2 pCi/Kg, was offshore of Redbird, 4.2 miles from the plant.

The comparison of annual average concentrations (pCi/Kg) of Cs-137 between indicator and control locations is as follows:

RADIONUCLIDE	INDICATOR LOCATIONS	CONTROL LOCATION
Cs-137	*227 +/- 232*	*43.5 +/- 0*

The Cs-137 concentration at the control sampling point has been as high as 799 +/- 9.9 pCi/Kg in 1987. The indicator sampling points have ranged from a low of 148.5 +/- 111.1 pCi/Kg in 1989 to a high of 362 +/- 359 in 1990. Therefore, this disparity between the indicator and control locations is consistent with historical data.

Strontium-90 was detected in five out of fourteen samples. The 1991 and 1990 annual average concentrations for Sr-90 for all locations is shown below (no preoperational data is available).

YEAR	ACTIVITY (pCi/Kg dry) +/- 2 Sigma
1991	*11.10 +/- 3.78*
1990	*15.58 +/- 9.67*

The 1991 concentrations ranged from 9.20 pCi/Kg to 13.6 pCi/Kg. The highest annual average concentration, 13.15 +/- 0.64 pCi/Kg, was offshore of Redbird, 4.2 miles from the plant.

On December 22, 1991, a 36 inch fiberglass pipe from the circulating water system ruptured, releasing approximately 2.9 million gallons of water. The flooding in plant buildings resulted in a discharge of slightly contaminated water to a storm drain system on the south and west side of the plant.

A variety of samples were collected from the discharge path, including water and sediment. All water sample results were reported as the lower limit of detection. Twenty-five sediment samples were collected from the storm drain system and the receiving stream. The stream samples showed no activity above the lower limit of detection.

Ten samples from the storm drain system were found to be contaminated with one or more of manganese-54 (Mn-54), cobalt-60 (Co-60), zinc-65 (Zn-65) and/or cesium-137 (Cs-137). The ranges in activity are shown below.

The portions of the storm drain system that were found to be contaminated were cleaned by hydrolazing and collecting the sediment, which was disposed of as radioactive waste.

RADIONUCLIDE	ACTIVITY (pCi/Kg dry)
Mn-54	*58.5 to 4630*
Co-60	*146.0 to 29800*
Zn-65	*447.7 to 2500*
Cs-137	*35.2 to 586*

FISH

Thirty fish samples were collected in 1991 and analyzed by gamma spectroscopy. Thirteen species of fish were represented, including walleye, rock bass, freshwater drum, catfish, smallmouth bass, carp, white sucker, white perch, white bass, yellow perch, red horse, quillback, and rainbow trout.

The 1991, 1990, and preoperational annual average K-40 concentrations for all locations are shown below:

YEAR	ACTIVITY (pCi/Kg wet) +/- 2 Sigma
1991	*2221 +/- 905*
1990	*2940 +/- 868*
Preoperational	*3722 +/- 2454*

The 1991 value is lower than values reported in previous operational years and much lower than the preoperational value. The reason for the decrease is not certain. The concentration of K-40 ranged from 1230 pCi/Kg to 3050 pCi/Kg. The location with the highest annual average concentration, 2241 pCi/Kg, was offshore 0.6 miles from the plant.

The comparison of the annual average concentration (pCi/Kg) for K-40 between indicator and control locations is as follows:

RADIONUCLIDE	INDICATOR LOCATION	CONTROL LOCATION
K-40	*2241 +/- 892*	*2198 +/- 953*

These values are not significantly different.

Cesium-137 has been found periodically in fish samples since the preoperational program began in 1981. In 1991, Cs-137 was reported in one of the 30 samples.

The 1991, 1990, and preoperational annual average concentrations of Cs-137 for all locations are as follows:

YEAR	ACTIVITY (pCi/Kg wet) +/- 2 Sigma
1991	*25.1 +/- 0.0*
1990	*42.0 +/- 11.6*
Preoperational	*38.9 +/- 46.6*

The single fish sample (walleye) with Cs-137 was found offshore, 0.6 miles from the plant. Since this radionuclide was found in preoperational samples and continues to be detected periodically with no substantial increases, it is suspected that this activity is the result of fallout.

Direct Radiation Monitoring

THERMOLUMINESCENT DOSIMETERS

A total of 135 thermoluminescent dosimeters (TLD's) were collected and analyzed in 1991. Seven quarterly and three annual TLD's were missing.

The average quarterly dose for 1991, 1990, and preoperational data for all TLD's and the equivalent annual dose per year are as follows:

YEAR	AVERAGE QUARTERLY DOSE	EQUIVALENT ANNUAL DOSE
1991	*16.55 +/- 5.15 mR/Std Qtr*	*66.20 mR/Yr*
1990	*14.94 +/- 4.56 mR/Std Qtr*	*59.76 mR/Yr*
Preoperational	*18.90 +/- 3.80 mR/Std Qtr*	*75.60 mR/Yr*

The preoperational TLD results are higher than 1990 and 1991 due to a change in vendor laboratory services. A comprehensive explanation of the difference is provided in the 1989 Annual Environmental Operating Report.

The quarterly exposure rates for 1991 ranged from 11.7 mR/Std Qtr to 26.0 mR/Std Qtr. The location with the highest quarterly average for the year, 24.6 +/- 2.2 mR/Std Qtr, is 5.0 miles from the plant. This location has always had the highest average quarterly dose.

The comparison between indicator and control locations for annual average dose (mR/Std Qtr) in 1991 is as follows:

	INDICATOR LOCATIONS	CONTROL LOCATIONS
TLD	*16.6 +/- 5.2*	*15.5 +/- 4.2*

There is no statistical difference in exposure levels between the indicator and control locations.

The sum of the quarterly TLD's compared well to the annual TLD's. These values are shown below.

ANNUAL TLD AVERAGE	SUM OF ALL QUARTERLY TLD AVERAGE
64.1 +/- 20.2 mR	*66.2 +/- 17.4 mR*

SEMIANNUAL EFFLUENT RELEASE REPORT COMPARISON

A dose comparison between actual release results from the Semiannual Radioactive Effluent Release Report (SRERR) and the PNPP REMP results is compiled for each half of 1991. Specifically, the calculated air gamma dose from plant gaseous effluents going to the site boundary is compared to the actual readings from the REMP TLD in the corresponding locations.

The following is a comparison of the calculated air gamma dose (mrem/Qtr) based on the SRERR and the actual REMP TLD results (mR/Std Qtr):

	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Calculated Dose	*1.24 E-3*	*4.35 E-3*	*1.12 E-3*	*1.51 E-2*
Actual TLD Results	*18.9 +/- 0.5*	*17.5 +/- 1.2*	*13.9 +/- 0.9*	*17.4 +/- 0.9*

The expected exposure from plant effluents is far too small to be identified above normal background levels of radiation and were below the limits of detection for environmental TLD's.

QUALITY ASSURANCE

An important part of the REMP at PNPP is quality assurance (QA). QA consists of all the planned and systematic actions that are necessary to provide adequate confidence in the results of the program. QA is a program which checks the adequacy and validity of the monitoring program through routine audits, strict adherence to written procedures, and attention to good record keeping practices.

The QA program is designed to identify possible deficiencies in the REMP so that corrective actions can be initiated promptly. PNPP's QA program also provides confidence in the REMP through:

- o performing regular audits of the REMP, including a careful examination of sample collection techniques and recordkeeping,
- o performing audits of vendor laboratories which analyze PNPP environmental samples,
- o requiring the vendor laboratory to participate in the United States Environmental Protection Agency Cross-Check Program,
- o requiring the vendor laboratory to analyze spiked samples (TLDs).

QA audits and inspections of the PNPP REMP are performed by groups such as PNPP's QA Department and representatives from the Nuclear Regulatory Commission (NRC). In addition, the NRC and Ohio Department of Health (ODH) also perform independent environmental monitoring in the vicinity of the plant. The analytical results from the different programs are compared in the *Ohio Department of Health Annual Environmental Monitoring Report*. This provides a valuable tool to verify the quality of both the laboratories' analytical procedures and the data generated.

The purpose of the interlaboratory Cross-Check comparison program is to provide an independent check on the vendor laboratory's analytical procedures and to alert it to any possible problems. The vendor laboratory measures and reports the concentration of specified radionuclides. The known values are then compared to the reported values. Results consistently outside established acceptance criteria indicates a need to check instruments or procedures.

In 1991, the vendor laboratory analyzed 83 EPA samples of milk, water, or air filters for the The Environmental Protection Agency (EPA) Cross-Check Intercomparison Program. Three (3.61%) results were outside the EPA's control limit and one sample was lost. This is a slight improvement from the 3.75% in 1990. The results of this program are shown in Table 4.

To implement the TLD spiking program, TLD's with a known dose were sent to the laboratory for analysis. The results are shown in Table 5. Results were within acceptance criteria; a comparison of the delivered (known) dose to the dose reported by the vendor laboratory shows good agreement.

Table 4: EPA Cross-Check Intercomparison Program. Results are expressed in pCi/L for liquid samples, pCi/filter for filter samples, and mg/L for potassium results. Results shown in **BOLD** were outside the control limits.

DATE	SAMPLE	ANALYSIS TYPE	VENDOR RESULTS MEAN +/- 2 SIGMA	EPA RESULTS MEAN +/- 1 SIGMA
Jan.	Water	Strontium-89	4.3 +/- 1.2	5.0 +/- 5.0
Jan.	Water	Strontium-90	4.7 +/- 1.2	5.0 +/- 5.0
Jan.	Water	Pu-239 (Chem Sep)	3.6 +/- 0.2	3.3 +/- 0.3
Jan.	Water	Gross Alpha	6.7 +/- 3.0	5.0 +/- 5.0
Jan.	Water	Gross Beta	6.3 +/- 1.2	5.0 +/- 5.0
Feb.	Water	Co-60 (Gamma Spec)	41.3 +/- 8.4	40.0 +/- 5.0
Feb.	Water	Zn-65 (Gamma Spec)	166.7 +/- 19.7	149.0 +/- 15.0
Feb.	Water	Ru-106 (Gamma Spec)	209.7 +/- 18.6	186.0 +/- 19.0
Feb.	Water	Cs-134 (Gamma Spec)	9.0 +/- 2.0	8.0 +/- 5.0
Feb.	Water	Cs-137 (Gamma Spec)	9.7 +/- 1.2	8.0 +/- 5.0
Feb.	Water	Ba-133 (Gamma Spec)	85.7 +/- 9.2	75.0 +/- 8.0
Feb.	Water	Iodine-131	81.3 +/- 6.1	75.0 +/- 8.0
Feb.	Water	H-3 (Liq Scint)	4310.0 +/-144.2	4418.0 +/-442.0
Mar.	Water	Ra-226 (Chem Sep)	31.4 +/- 3.2	31.8 +/- 4.8
Mar.	Water	Ra-228 (Chem Sep)	No Data	21.1 +/- 5.3
Mar.	Water	Uranium	6.7 +/- 0.4	7.6 +/- 3.0
Mar.	**Filter**	**Gross Alpha**	**38.7 +/- 1.2**	**25.0 +/- 6.0**
Mar.	Filter	Gross Beta	130.0 +/- 4.0	124.0 +/- 6.0
Mar.	Filter	Strontium-90	35.7 +/- 1.2	40.0 +/- 5.0
Mar.	Filter	Cs-137 (Gamma Spec)	33.7 +/- 4.2	40.0 +/- 5.0
Apr.	Water Blind A			
		Gross Alpha	51.0 +/- 6.0	54.0 +/- 14.0
		Ra-226 (Chem Sep)	7.0 +/- 0.8	8.0 +/- 1.2
		Ra-228 (Chem Sep)	9.7 +/- 1.9	15.2 +/- 3.8
		Uranium	27.7 +/- 2.4	29.8 +/- 3.0
Apr.	Water Blind B			
		Gross Beta	93.3 +/- 6.4	115.0 +/- 17.0
		Strontium-89	21.0 +/- 3.5	28.0 +/- 5.0
		Strontium-90	23.0 +/- 0.0	26.0 +/- 5.0
		Cs-134 (Gamma Spec)	27.3 +/- 1.2	24.0 +/- 5.0
		Cs-137 (Gamma Spec)	29.0 +/- 2.0	25.0 +/- 5.0
Apr.	Milk	Strontium-89	24.0 +/- 8.7	32.0 +/- 5.0
Apr.	Milk	Strontium-90	28.0 +/- 2.0	32.0 +/- 5.0
Apr.	Milk	Iodine-131	65.3 +/- 14.7	60.0 +/- 6.0
Apr.	Milk	Cs-137 (Gamma Spec)	54.7 +/- 11.0	49.0 +/- 5.0
Apr.	Milk	Potassium	1591.7 +/-180.1	1650.0 +/- 33.0
May	Water	Strontium-89	40.7 +/- 2.3	39.0 +/- 5.0
May	Water	Strontium-90	23.7 +/- 1.2	24.0 +/- 5.0
May	Water	Gross Alpha	27.7 +/- 5.8	24.0 +/- 6.0
May	Water	Gross Beta	46.0 +/- 0.0	46.0 +/- 0.0
June	Water	Co-60 (Gamma Spec)	11.3 +/- 1.2	10.0 +/- 5.0
June	Water	Zn-65 (Gamma Spec)	119.3 +/- 16.3	108.0 +/- 11.0
June	Water	Ru-106 (Gamma Spec)	162.3 +/- 19.0	149.0 +/- 15.0
June	Water	Cs-134 (Gamma Spec)	15.3 +/- 1.2	15.0 +/- 5.0
June	Water	Cs-137 (Gamma Spec)	16.3 +/- 1.2	14.0 +/- 5.0
June	Water	Ba-133 (Gamma Spec)	74.0 +/- 6.9	62.0 +/- 6.0

June	Water	H-3 (Liq Scint)	13470.0 +/-385.8	12480.0 +/-1248.0
July	Water	Ra-226 (Chem Sep)	14.9 +/- 0.4	15.9 +/- 2.4
July	Water	Ra-228 (Chem Sep)	17.6 +/- 1.8	16.7 +/- 4.2
July	Water	Uranium	12.8 +/- 0.1	14.2 +/- 3.0
Aug.	Water	Iodine-131	19.3 +/- 1.2	20.0 +/- 6.0
Aug.	Water	Pu-239 (Chem Sep)	21.4 +/- 0.5	19.4 +/- 1.9
Aug.	Filter	Gross Alpha	33.0 +/- 2.0	25.0 +/- 6.0
Aug.	Filter	Gross Beta	88.7 +/- 1.2	92.0 +/- 10.0
Aug.	Filter	Strontium-90	27.0 +/- 4.0	30.0 +/- 5.0
Aug.	Filter	Cs-137 (Gamma Spec)	26.3 +/- 1.2	30.0 +/- 5.0
Sep.	Water	Strontium-89	47.0 +/- 10.4	49.0 +/- 5.0
Sep.	Water	Strontium-90	24.0 +/- 2.0	25.0 +/- 5.0
Sep.	Water	Gross Alpha	12.0 +/- 4.0	10.0 +/- 5.0
Sep.	Water	Gross Beta	20.3 +/- 1.2	20.0 +/- 5.0
Sep.	Milk	Strontium-89	20.3 +/- 5.0	25.0 +/- 5.0
Sep.	Milk	Strontium-90	19.7 +/- 3.1	25.0 +/- 5.0
Sep.	**Milk**	**Iodine-131**	**130.7 +/- 16.8**	**108.0 +/- 11.0**
Sep.	Milk	Cs-137 (Gamma Spec)	33.7 +/- 3.2	30.0 +/- 5.0
Sep.	Milk	Potassium	1743.3 +/-340.8	1740.0 +/- 87.0
Oct.	Water	Co-60 (Gamma Spec)	29.7 +/- 1.2	29.0 +/- 5.0
Oct.	Water	Zn-65 (Gamma Spec)	75.7 +/- 8.3	73.0 +/- 7.0
Oct.	Water	Ru-106 (Gamma Spec)	196.3 +/- 15.1	199.0 +/- 20.0
Oct.	Water	Cs-134 (Gamma Spec)	9.7 +/- 1.2	10.0 +/- 5.0
Oct.	Water	Cs-137 (Gamma Spec)	11.0 +/- 2.0	10.0 +/- 5.0
Oct.	Water	Ba-133 (Gamma Spec)	94.7 +/- 3.1	98.0 +/- 10.0
Oct.	Water	H-3 (Liq Scint)	2640.0 +/-106.2	2454.0 +/-352.0
Oct.	Water Blind A			
		Gross Alpha	73.0 +/- 13.1	82.0 +/- 21.0
		Ra-226 (Chem Sep)	20.9 +/- 2.0	22.0 +/- 3.3
		Ra-228 (Chem Sep)	19.6 +/- 2.3	22.2 +/- 5.6
		Uranium	13.5 +/- 0.6	13.5 +/- 3.0
Oct.	Water Blind B			
		Gross Beta	55.3 +/- 3.1	65.0 +/- 10.0
		Strontium-89	9.7 +/- 3.1	10.0 +/- 5.0
		Strontium-90	8.7 +/- 1.2	10.0 +/- 5.0
		Co-60 (Gamma Spec)	20.3 +/- 1.2	20.0 +/- 5.0
		Cs-134 (Gamma Spec)	9.0 +/- 5.3	10.0 +/- 5.0
		Cs-137 (Gamma Spec)	14.7 +/- 5.0	11.0 +/- 5.0
Nov.	Water	Ra-226 (Chem Sep)	5.6 +/- 1.2	6.5 +/- 1.0
Nov.	Water	Ra-228 (Chem Sep)	9.6 +/- 0.5	8.1 +/- 2.0
Nov.	Water	Uranium	24.7 +/- 2.3	24.9 +/- 3.0

Table 5: Environmental TLD Spiking Program Results.

	SECOND QUARTER			FOURTH QUARTER	
	ACTUAL	REPORTED	PERFORMANCE	ACTUAL	REPORTED	PERFORMANCE
1.	14.3	14.1	-0.01	17.7	16.1	-0.09
2.	14.3	15.6	0.09	17.7	16.8	-0.05
3.	14.3	15.9	0.11	17.7	15.8	-0.11
4.	14.3	15.8	0.10	17.7	15.4	-0.13
5.	14.3	26.0	0.12	17.7	17.3	-0.02
6.	14.3	14.4	0.01	17.7	16.3	-0.08
7.	14.3	14.0	-0.02	17.7	15.9	-0.10
8.	14.3	13.7	-0.04	17.7	15.8	-0.11
9.	14.3	15.4	0.08	17.7	15.4	-0.13
10.	14.3	24.8	0.03	17.7	16.3	-0.08
11.	14.3	14.5	0.01	17.7	17.7	0.00
12.	14.3	15.1	0.06	17.7	17.2	-0.03
13.	14.3	14.1	-0.01	17.7	16.9	-0.05
14.	14.3	14.1	-0.01	17.7	17.9	0.01
15.	14.3	13.9	-0.03	17.7	17.4	-0.02
				18.9	17.2	-0.09
Average Performance (P)			0.03			-0.07
Standard Deviation (S)			0.06			0.05
Performance Criteria (P + S)			0.09			0.12

The Performance Criteria is acceptable if it is below 0.30.

Table 5: Environmental TLD Spiking Program Results

CONCLUSION

No changes in radionuclide concentrations or exposure levels were detected in 1991 when compared to 1990. Atmospheric monitoring results were consistent with or lower than 1990 results for all analyses. The two prevalent radionuclides were Be-7 (in air) and tritium (in precipiataion), both of which are naturally occurring.

The dominant radionuclide detected in terrestrial samples was K-40. This is also naturally occurring. There were no significant changes in concentration from last year. Both Sr-90 and Cs-137 were detected in milk and soil, but the concentrations were relativley unchanged from 1990. These radionuclides are products of nuclear weapons testing from the 1950's and 60's and are prevalent in the environment. The naturally occurring Be-7 was detected periodically in vegetation and feed/silage in 1991.

There was either no change or a slight reduction in radionuclide concentrations in aquatic samples in 1991, with the exception of the samples collected in response to the circulating water system pipe break. The release resulted in contamination of the storm drain system with Mn-54, Co-60, Zn-64, and Cs-137. The area was cleaned and the possibility of future occurrences eliminated.

Finally, direct radiation measurements are relatively consistent with 1990 data.

LAND USE CENSUS

INTRODUCTION

Each year a land use census is conducted to gather information necessary to identify exposure pathways in the environment. The Land Use Census is required by Title 10 of the Code of Federal Regulations, Part 50, Appendix I, and the PNPP Technical Specifications, Section 12. Radiological exposure pathways, as discussed in an earlier chapter, are the methods by which people may be exposed to radioactivity, and can be divided into several groups:

- o *Inhalation Pathway* - Internal exposure as a result of breathing radioactive material in the air.
- o *Plume Exposure Pathway* - External exposure directly from a plume or cloud of radioactive material.
- o *Ground Exposure Pathway* - External exposure from radioactive material deposited on the ground.
- o *Vegetation Pathway* - Internal exposure as a result of eating vegetables, fruit, etc. which have a build up of deposited radioactive material or have absorbed radionuclides through the soil.
- o *Milk Pathway* - Internal exposure as a result of drinking milk which may contain radioactive material as a result of a cow or goat grazing on a contaminated pasture.
- o *Aquatic Pathway* - Internal exposure as a result of drinking water or eating fish which may contain radioactive material.

The information gathered during the Land Use Census is used for dose assessment and input into the Radiological Environmental Monitoring Program (REMP). This ensures that these programs are as current as possible.

The Land Use Census is conducted by traveling all roads within a five-mile radius of the plant site, and recording and mapping the locations of the nearest resident, milk animal, and vegetable garden in each of the meterological sectors around the plant that are over land. (As mentioned in the REMP report, the area around the plant is divided into sixteen radial sectors that come together at the center of the reactor building).

The 1991 Census was conducted from August 13 to August 20. Nearest residences, vegetable gardens (larger than 500 square feet), and milk producing animals were recorded in addition to agricultural growers in the area.

All the information has been tabulated below; all locations identified are plotted on the map in Figure 1. Note that the W, WNW, NW, N, and NNE sectors extend over Lake Erie and therefore are not included in the survey.

DISCUSSION AND RESULTS

The following changes were recorded in the 1991 census:

- o ENE Sector - A new garden was identified at 4591 Lockwood Road.
- o E Sector - A new garden was identified at 2600 Antioch Road.
- o WSW Sector - A new garden was identified at 3424 Parmly Road.

Table 1 lists the nearest residence by sector and dispersion (X/Q) value. The residence with the highest dispersion value (highest possible dose) is located at 3121 Center Road, in the South sector, approximately 0.9 miles from the plant. This was the same residence identified in the 1990 Land Use Survey.

Table 1: Nearest residence by sector

Sector	*Location Address*	*Miles from PNPP*	*X/Q Value (Sec/m3)*	*Map Locator*
NE	4384 Lockwood Rd.	0.8	2.17E-6	2
ENE	4602 Lockwood Rd.	1.0	1.13E-6	4
E	2684 Antioch Rd.	1.1	6.67E-7	15
ESE	2774 Antioch Rd.	1.2	4.44E-7	23
SE	4495 N. Ridge Rd.	1.2	3.89E-7	30
SSE	3119 Parmly Rd.	0.9	1.89E-6	32
S	3121 Center Rd.	0.9	2.25E-6	35
SSW	3850 Clark Rd.	0.9	1.11E-6	41
SW	3440 Clark Rd.	1.2	4.98E-7	47
WSW	2815 Perry Park	1.0	1.72E-6	52

Again this year as in the 1990 survey, only two milk animals were found within a five mile radius of the plant site. The nearest milk animal, shown in table 2, with the highest deposition value (D/Q) was at 2908 Antioch Road, approximately 1.3 miles east-southeast of the plant. This is the same location identified in the 1990 survey.

Table 2: Nearest milk animal by sector

Sector(1)	*Location Address*	*Miles from PNPP*	*D/Q Value per m2*	*Map Locator*
ESE	2908 Antioch Rd.	1.3	2.97E- 9	24
SSE	5485 River Road	4.6	1.94E-10	34

(1) The NE, ENE, E, SE, S, SSW, SW, and WSW sectors have no milk-producing animals within 5 miles.

Table 3 lists the nearest gardens that occupy at least 500 square feet. The location with the highest deposition value was 3121 Center Road, which is also the nearest residence. Three new gardens were identified in the survey this year. They are at 4591 Lockwood Road, 2600 Antioch Road, and 3424 Parmly Road.

Table 3: Nearest garden by sector

Sector	Location Address	Miles from PNPP	D/Q Value per m^2	Map Locator
NE	4398 Lockwood Rd.	0.8	1.88E-8	3
ENE	4591 Lockwood Rd.*	1.1	4.77E-9	5
E	2600 Antioch Rd.*	1.2	4.56E-9	16
ESE	2774 Antioch Rd.	1.2	3.41E-9	23
SE	4613 N. Ridge Rd.	1.2	2.90E-9	31
SSE	3119 Parmly Rd.	0.9	1.23E-8	32
S	3121 Center Rd.	0.9	1.31E-8	35
SSW	3515 N. Ridge Rd.	1.7	1.19E-9	42
SW	3440 Clark Rd.	1.2	2.24E-9	47
WSW	3424 Parmly Rd.*	1.0	5.44E-9	54

* Indicates a new location for 1991.

Produce growers are listed in Table 4, and recreational areas and drinking water facilities are listed in Table 5. These were compiled to provide information for use in emergency planning.

Table 4: Produce growers within the vicinity of PNPP

Name of Facility	Location Address	Sector/ Miles	Map Locator
Shreve Farm	2431 Antioch Rd	ENE/1.2	6
Gerlica Farm	4860 Lockwood Rd	ENE/1.5	7
Rainbow Farms	Townline Rd	ENE/1.9	8
Twins Creek Farm	2299 Haines Rd	ENE/3.2	12
Orosz Farm*	2674 Antioch Rd	E /1.2	16
Sabo Farm	5674 N. Ridge Rd	E /2.9	17
Resident	5814 N. Ridge Rd	E /3.3	18
Woodworth Farm	Middle Ridge Rd	E /4.6	19
Wayman Farm	Across from 2605 Hubbard Rd	E /4.8	20
Plant Pride	Hubbard & Middle Ridge Rd	E /4.9	22
Resident	5009 N. Ridge Rd	ESE/1.8	25
Secor Nursery	N. Ridge Rd	ESE/1.8	26
Resident*	3815 Townline Rd	ESE/2.3	27
Resident*	5674 Middle Ridge Rd	ESE/3.2	28

Resident	6030 Middle Ridge Rd	ESE/3.9	29
Leelala Farm	4830 Davis Rd	SSE/3.0	33
Resident*	3269 Center Rd	S /1.2	36
Brookside Farm	Middle Ridge Rd	S /1.7	37
84 Garden Spot	South Ridge Rd	S /3.8	38
Resident*	4648 Webb Rd	S /3.8	39
Garden Center	Corner Narrows Rd & North Ridge Rd	SW /3.6	41
Champion Nursery	North Ridge Rd	SSW/1.8	42
Golding Farm	North Ridge Rd Perry Park Rd	SSW/1.7 SW /1.5	43
Resident*	3570 Narrows Rd	NNW/2.8	44
Resident*	4332 Lane Rd	SSW/3.5	45
Resident (Ermson)	2671 Hale Rd	SSW/3.7	46
Resident (Sasu)	3191 N. Ridge Rd	SW /2.4	48
West Orchard Fruit Market	N. Ridge Rd Perry Park/Clark	SW /2.7 SW /1.6	49

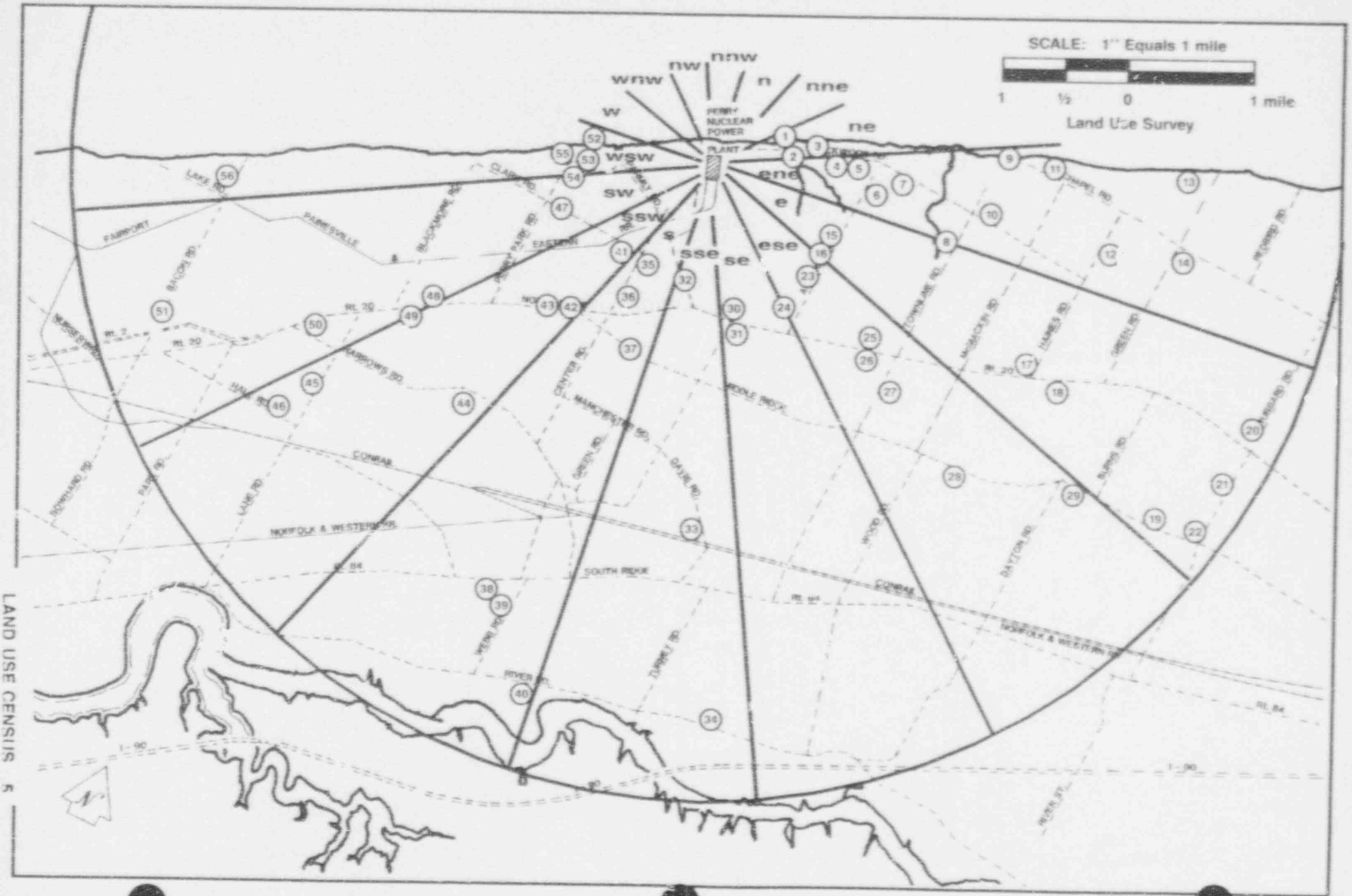
* Indicates a new location for 1991.

Table 5: Recreational areas & public drinking water facilities

Name of Facility	*Location Address*	*Sector/ Miles*	*Map Locator*
North Perry Pk	Lockwood Rd	NE /0.7	1
N. Townline Pk	Townline Rd	ENE/2.3	9
Lake Metro Pk	Lockwood Rd	ENE/1.7	10
Camp Isaac Jogues	Chapel Rd	ENE/3.2	11
Tuttle Pk	Tuttle Park Rd	ENE/3.7	13
Madison C.C.	Chapel/Green Rd	ENE/4.0	14
Madison Village Water Plant	2934 Hubbard Rd	E /4.8	21
[illegible] unty YMCA [illegible] Center	4540 River Rd	S /4.6	40
[illegible] Pines Golf Course	Corner of Blase/ Nemeth and Bacon Rd	SW /4.8	51
Perry Township Pk	Perry Park Rd	WSW/1.1	53
Camp Roosevelt	Perry Park Rd	WSW/1.4	55
Lake County Water Treatment Plant	Bacon Rd	WSW/3.9	56

LAND USE CENSUS MAP

GS15-4



LAND USE CENSUS 5

CLAM/MUSSEL MONITORING

INTRODUCTION

Clam and mussel shells can clog plant piping and components that use raw water. For this reason, sampling for these benthic macroinvertebrates has been conducted in Lake Erie in the vicinity of the Perry Nuclear Power Plant (PNPP) since 1971. The clam/mussel program currently focuses on two species: *Corbicula* (Asiatic clam) and *Dreissena* (zebra mussel).

The initial monitoring program specifically for *Corbicula* was developed by NUS Corporation for PNPP in response to an NRC bulletin and concerns of the Atomic Safety and Licensing Board. The current monitoring program was developed in conjunction with Aquatic Systems Corporation and incorporated into the Environmental Protection Plan (Operating License Appendix B) in July, 1988 by License Amendment 15. The program consists of periodic sampling of areas at both the PNPP and Eastlake Power Plants. Its purpose was to detect *Corbicula*, should it appear in the study area.

The *Dreissena* program began in 1989 with monitoring and testing. In 1990, a control program was designed and implemented. That program was continued in 1991.

CORBICULA PROGRAM

The Asiatic clam was first collected in the U.S. in 1938 in the Columbia River near Knappton, Washington. It has since spread across much of the country, infesting any suitable freshwater body. Asiatic clams have two characteristics that enhance their ability to foul power plant water systems. First, the microscopic larvae, or veliger, is easily entrained into water system piping and carried far into plant systems. Second, these clams are very hardy, their shells are extremely hard, and they grow to approximately 65 mm. Clams can block the flow of water if they develop and grow inside plant piping or components.

Shortly after an Arkansas power plant experienced flow blockage related to fouling by Asiatic clams, the NRC issued Inspection and Enforcement Bulletin 81-03. This required PNPP to determine the population status of *Corbicula* in the local environment. Although no *Corbicula* were found, an ongoing monitoring program was initiated in June 1982, that called for semi-annual sampling. The survey locations included the intake and discharge areas at both PNPP and the Eastlake Power Plant.

From program initiation through fall 1986, no *Corbicula* were found in any samples collected. Two *Corbicula* were found in a sample collected from the Eastlake plant in June, 1987. No *Corbicula* have been found in any other sample collected since that time. A more detailed program history can be found in the PNPP Annual Environmental Operating Reports, 1986 and 1987.

In July, 1988, the Nuclear Regulatory Commission approved a new monitoring program (License Amendment No. 15), which modified sampling locations at both plants. Samples are still collected from Lake Erie in the vicinity of the Eastlake Plant, but samples from PNPP are now collected from in-plant locations.

Monitoring

Samples were collected quarterly from in-plant locations at PNPP shown in Figure 1, and semi-annually from the vicinity of the Eastlake Power Plant at locations shown in Figure 2. Sample collection dates are listed in Table 1.

Table 1 - 1991 Corbicula Sampling Dates and Locations

Date	*Sample Location*
1/ 8	Service water (SW) and Emergency Service Water (ESW) forebays and trash baskets
4/11	SW and ESW forebays and trash baskets
6/13	Lake Erie in the vicinity of the Eastlake Plant
7/16	SW and ESW forebays and trash baskets
9/ 9	Lake Erie in the vicinity of the Eastlake Plant
10/25	SW and ESW forebays and trash baskets
12/28	Cooling tower basin
Weekly	Inspections of PNPP property shoreline, weather permitting

All samples were collected by Ponar hand dredge, hand scoop, or scraper. They were examined for bivalve shells and fragments, which were then identified to the lowest possible taxon.

In addition to sample collections, plant components that use raw water are inspected whenever open for maintenance or repair. Also, active communications were maintained with other agencies involved with benthic macroinvertebrate monitoring on Lake Erie. Representatives of other power plants were contacted as well as universities and the Ohio Department of Natural Resources.

Table 2 - Bivalves Collected During the 1991 Corbicula Monitoring Program

	PNPP	*EASTLAKE*
Dreissena polymorpha	X	X
Musculium transversum	X	
Pisidium casseratinum	X	
Pisidium compressum	X	X
Sphaerium striatinum	X	X
Sphaerium transversum	X	
Unionidae	X	

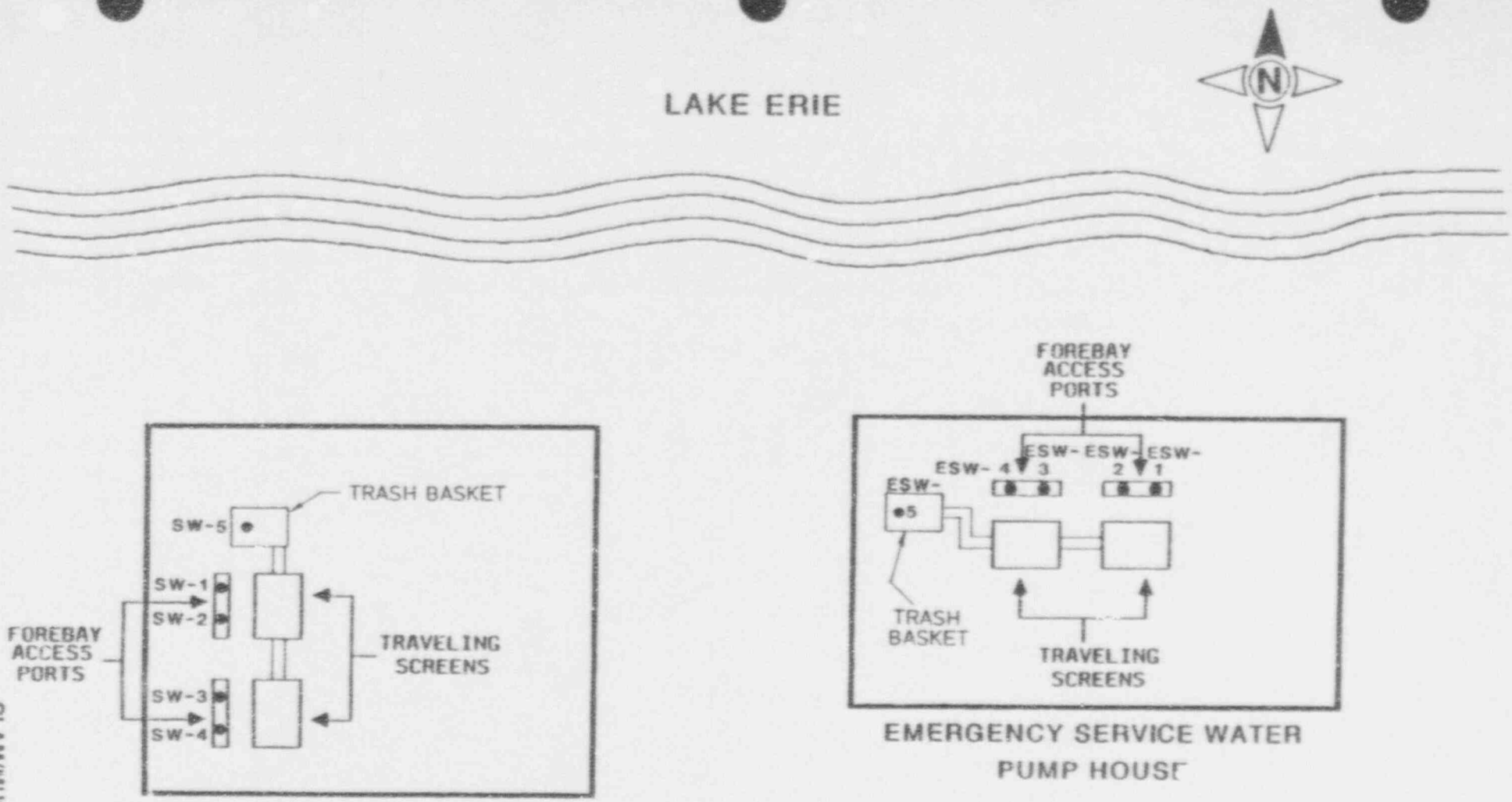


FIGURE 1: PNPP IN-PLANT SAMPLING LOCATIONS

GS16-4

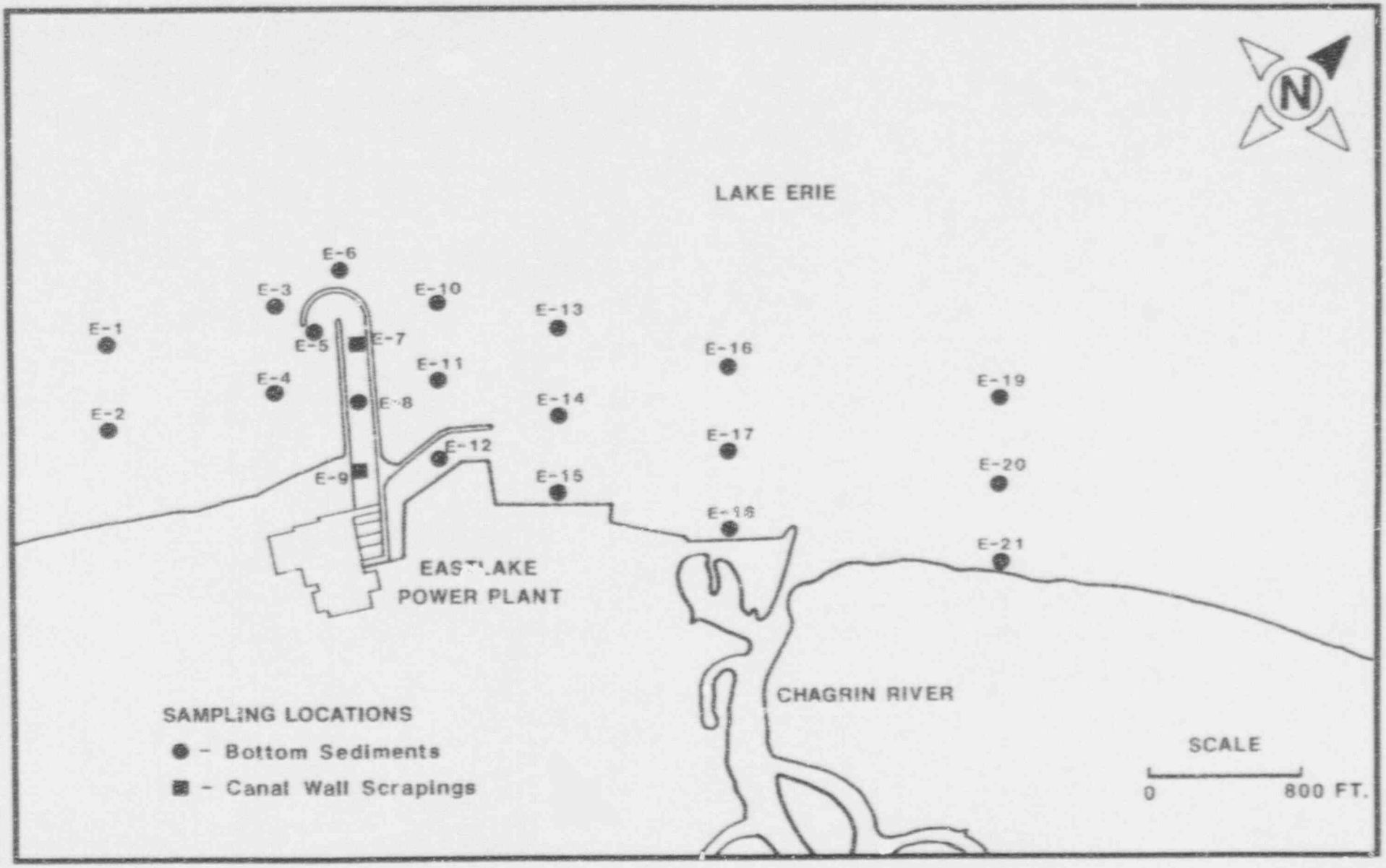


FIGURE 2: EASTLAKE PLANT SAMPLING LOCATIONS

GS16-2

Results

No *Corbicula* were found in any sample collected during the 1991 monitoring program. All bivalves collected are listed in Table 2.

Conclusions

The collection in June, 1987 was the first indication that *Corbicula* are slowly spreading into the Central Basin of Lake Erie. However, it has not been demonstrated that the presence of these clams is creating any operational problems at the Eastlake Power Plant or at PNPP.

DREISSENA PROGRAM

Zebra mussels (*Dreissena polymorpha*) were introduced into Lake St. Clair in the mid-1980's. They have spread into all the Great Lakes and as far south as St. Louis, MO. Zebra mussels have several characteristics that enhance their ability to reduce or block flow in systems that use raw water. First, the microscopic veliger stage is easily entrained into power plant raw water systems. Second, zebra mussels develop a series of tough elastic fibers called a byssus. The byssus allows them to attach to any surface that is relatively smooth and hard, including the inner surfaces of any water system with velocities under 2 m/s (Lyakhov, 1968). Third, mussels will attach to other mussels, forming layers of accumulation up to 30 cm thick in large pipes (Clarke, 1952).

Three types of problems have been identified with zebra mussel fouling in power plant raw water systems. Initially, layers of attached mussels reduce or block flow through piping and intake trash racks. Eventually, shells or clumps of shells breaking free of their attachments block openings in downstream piping, heat exchangers, or strainers. Finally, attachment points accumulate other debris and serve as sites for corrosion.

Zebra mussels were first discovered at PNPP in September 1988. The initial collection of 19 mussels was made as part of the *Corbicula* monitoring program. Zebra mussels were found attached to the samplers which had been installed in the plant service water pumphouse. The samplers, constructed of plastic, wire mesh, and rope, were in place between May 1988 and the September collection.

By fall 1989, the zebra mussel population at PNPP had increased. Mussel densities in pumphouse forebays averaged approximately 1076/m^2. None were found on intake screens, though, and no operational problems were experienced. In February, 1990, a video was taken of the 30.5 m of the intake tunnel nearest the pumphouse. Mussel coverage was 100%, and roughly 2.5 to 3.8 cm thick. Subsequently, a zebra mussel program was implemented that included monitoring and treatment.

Monitoring

In addition to visually inspecting plant raw water systems when they are opened for maintenance or repair, monitoring methods include the use of commercial divers, artificial substrates, sidestream monitors, and plankton nets.

Commercial divers are currently used to collect mussel samples and monitor mussel infestation. They have also been used to take underwater videotapes of the water basins and intake tunnel. Artificial substrates include concrete blocks and plastic baskets suspended by rope into intakes or water basins. Substrates are kept in place all year and are designed so that they can be easily removed weekly for inspection for settlement.

Slipstream monitors are flow-through containers that receive water diverted from plant systems. PNPP uses them in four in-plant locations during the mussel season, May through October. They are fitted with slides and inspected weekly for veliger settlement. Vertical tows with a plankton net are used to obtain weekly samples of incoming service water that are subsequently examined for veligers.

Results of the veliger monitoring program for 1990 and 1991 are shown in Table 3. Samples were collected from the service water basin using vertical tows with an 80 micron mesh plankton net. Newly settled mussles were first detected in 1990 on August 23. Density at that time was 12 - 14/cm^2. Settlement was first detected in 1991 on July 31.

Table 3 - Results of the 1990 and 1991 Perry Nuclear Power Plant veliger sampling program

1990			*1991*		
Date	*#/liter*	*Temp. (C)*	*Date*	*#/liter*	*Temp. (C)*
			5/20/91	0	13.3
			5/29/91	<1	17.8
			6/ 6/91	<1	10.6
			6/12/91	<1	21.1
6/18/90	0	20.0	6/19/91	<1	16.1
6/25/90	0	18.9	6/26/91	<1	12.2
7/ 3/90	2-3	20.6	7/ 3/91	<1	13.9
			7/10/91	1	22.8
7/18/90	<1	19.4	7/17/91	5	23.4
			7/24/91	180	25.6
8/ 2/90	35	20.6	7/31/91	140	22.8
8/ 7/90	98	20.6	8/ 7/91	14	23.3
8/14/90	40	21.7	8/14/91	15	23.3
8/21/90	13	21.7	8/21/91	16	22.2
8/28/90	15	23.3	8/28/91	23	23.3
9/ 4/90	3	22.2	9/ 4/91	8	20.6
9/11/90	3	22.2	9/11/91	5	22.8
9/17/90	6	19.4	9/18/91	<1	22.8
9/25/90	3	16.1	9/25/91	0	18.9
10/ 2/90	3	17.2			
10/ 9/90	3	17.2			
10/16/90	1	15.6			

Treatment

Once zebra mussels were detected in the plant water supply, immediate attention was given to treatment programs. Physical, mechanical, and chemical alternatives were evaluated in order to select and implement the most effective treatment strategy.

Although mechanical methods, such as scraping and hydroblasting, were available to be used on system components if required, a chemical method to control mussels was selected. Chemicals used for mussel control include chlorine as well as two commercial molluscicides. PNPP had a chlorination and dechlorination system already in place prior to the arrival of zebra mussels. It was used to treat plant water systems for slime and algae. The chlorination system does not treat plant components upstream of the service water pumps, which includes the offshore intake structures, the intake tunnel, service water and emergency service water forebays and basins. In these areas, commercial molluscicides are used for control.

The chlorination system provides chlorine to plant service water, emergency service water, and circulating water systems. It is injected for 30 minutes once every twelve hours. It is important to note that dechlorination pumps deliver sodium sulfite to plant discharge water before it is discharged into Lake Erie.

The effectiveness of this treatment has been determined in several ways. First, over 40 visual inspections of raw water system components were conducted in 1990 and 1991. In addition, settlement monitors were inspected weekly for new settlement. No live settlement has been found in any plant component or in the settlement monitors to date.

The use of commercial molluscicides requires approval of the Ohio Environmental Protection Agency (EPA). The chemicals selected for use at Perry Nuclear Power Plant include a blend of alkyl dimethyl benzyl ammonium chloride and dodecylguanidine hydrochloride, and didecyl dimethyl ammonium chloride. Depending on the product and the water temperature, six-to-twelve-hour applications are required, at 2.5 - 15 ppm. Only one treatment is applied annually at the end of the settlement period. The chemical is injected into the intake cribs and allowed to travel through plant water systems. The active ingredients are detoxified by adsorption onto bentonite clay prior to discharge into Lake Erie.

Results

The effectiveness of each application is first measured by observing mortality of mussels placed in a flow-through container of plant service water and subject to the chemical treatment. Two to three weeks after each treatment, divers inspect service water basins and intake tunnel. Both treatments done to date have been successful. Mortality observed both in the flow-through containers and in the system has been over 90%. To date, PNPP has had no problems related to zebra mussels.

Conclusions

Perry Nuclear Power Plant has taken the approach that the best method for avoiding problems with zebra mussels is early detection followed by preventative treatment of plant water systems. The current program of monitoring and chemical treatments will be continued to minimize the possibility that PNPP will experience problems due to zebra mussels in the future.

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PY-CEI/NRR-0691 L, August 10, 1987. Notification to the NRC of the collection of *Corbicula*.

HERBICIDE USAGE

Because the PNPP site is home to several special habitat areas, like that for the spotted turtle, herbicides and pesticides are used sparingly on site. An application must be made to the PNPP Environmental Monitoring Element prior to spraying to ensure that only approved chemicals are being used, and only in approved areas.

The following is a compilation of herbicide usage at the PNPP for 1991. All usage was in compliance with Ohio Environmental Protection Agency regulations. No adverse environmental impacts as a result of this usage were noted during weekly site environmental inspections. Surflan AS and Round Up were used in equal portions to make up the total quantity.

Table 4 - *Herbicide Usage*

Date Applied	Location	Acres	Total Gallons
5/20	Fire training ground and laydown area	5.0	10.0
7/16-17	Unit #1 misc. gravel areas	5.3	20.0
5/25-7/25	E-field and outer perimeter	3.9	10.0
5/18-19	Parmly pipe laydown area	12.8	22.0
7/18	Cable reel storage yard	3.3	10.0
7/25	Unit#2 misc. gravel areas	5.3	5.0

SPECIAL REPORTS

NONCOMPLIANCES

NPDES Permit Noncompliances

The *National Pollutant Discharge Elimination System*, or NPDES permit, is issued by the Ohio Environmental Protection Agency. It establishes monitoring requirements and limits for discharges from the plant. It also specifies the locations from which the plant is allowed to discharge. There were no NPDES noncompliances in 1991.

EPP Noncompliances

The *Environmental Protection Plan*, or EPP, is a part of the PNPP Operating License. It requires nonradiological environmental monitoring programs and reporting. There were no EPP noncompliances in 1991.

UNREVIEWED ENVIRONMENTAL QUESTIONS

All proposed changes in plant design or operation, as well as tests or experiments conducted during 1991 were reviewed for potential environmental impact in accordance with the EPP and administrative quality assurance procedures. The reviews ensured that no changes were performed which could cause an adverse environmental impact. Therefore, there were no potentially significant unreviewed environmental questions in 1991.

NONROUTINE REPORTS

One report of a nonroutine event was submitted to the NRC and EPA in 1991. The following is a brief account of that event.

On December 22, 1991, at 1:50 am, a 36 inch fiberglass pipe carrying circulating water from the cooling tower to the condenser broke. The pipe is located outside the plant on the North side. An estimated 2.9 million gallons of water flooded the yard.

The environmental impacts of this event were minor. An access road that leads to the beach was washed out and the storm drain system that serves the area was temporarily inundated. As a result of removing water from flooded areas inside the plant, a small amount of contaminated water was released to the environment. The release was a fraction of both NRC and EPA regulatory limits, and was only a fraction of what is allowable in drinking water.

The contaminated areas of the environment were cleaned and additional samples were collected and analyzed as verification.

APPENDIX A: 1991 RADIOLOGICAL

ENVIRONMENTAL MONITORING PROGRAM DATA

APPENDIX A: 1991 RADIOLOGICAL

ENVIRONMENTAL MONITORING PROGRAM DATA SUMMARY

P24001 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY PAGE: 001

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
TLD MR/STD.QTR	DIRECT 135		16.55 (0135/0135) 11.70-26.00	16.62 (0127/0127) 11.70-26.00	18 05.0 S	24.60 (0004/0004) 23.40-26.00	15.48 (0008/0008) 12.70-18.20

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. :)-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
AI PCI/CU.M.	I-131 364		LLD	-	-	-	-
APTB E-03 PCI/CU.M	G-BETA 364		19.17 (0362/0364) 7.00-34.00	19.11 (0310/0312) 7.00-34.00	3 01.0 SE	20.13 (0052/0052) 8.00-34.00	19.52 (0052/0052) 9.00-32.00
APTG E-03 PCI/CU.M	BE-7 28		52.07 (0028/0028) 42.00-68.00	52.38 (0024/0024) 42.00-68.00	3 01.0 SE	57.50 (0004/0004) 54.00-60.00	50.25 (0004/0004) 44.00-54.00
	CO-58 28		LLD	-	-	-	-
	CO-60 28		LLD	-	-	-	-
	CS-134 28	.005	LLD	-	-	-	-
	CS-137 28	.006	LLD	-	-	-	-

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
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Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
STRONTIUM PCI/L	SR-89 20		LLD	-	-	-	-
	SR-90 20		0.62 (0005/0020) 0.40-0.90	0.50 (0003/0014) 0.40-0.60	28 22.0 ENE	0.80 (0002/0004) 0.70-0.90	0.80 (0002/0006) 0.70-0.90

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
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Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
TRITIUM PCI/L	H3 22		179.95 (0022/0022) 99.00-263.00	179.69 (0016/0016) 99.00-263.00	36 03.9 WSW	210.00 (0004/0004) 154.00-244.00	180.67 (0006/0006) 124.00-256.00

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

P24001 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY PAGE: 001

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean Dist. Direct	Location with Highest Annual Mean Mean (1) (Range)	All Control Locations Mean (1) (Range)
WTRG PCI/L	BA-140 63	60	LLD	-	-	-	-
	CO-58 63	15	LLD	-	-	-	-
	CO-60 63	15	LLD	-	-	-	-
	CS-134 63	15	LLD	-	-	-	-
	CS-137 63	18	LLD	-	-	-	-
	FE-59 63	30	LLD	-	-	-	-
	LA-140 63	15	LLD	-	-	-	-

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

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Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean		All Control Locations Mean (1) (Range)
					Dist. Direct	Mean (1) (Range)	
WTRG PCI/L	MN-54 63	15	LLD	-	-	-	-
	NB-95 63	15	LLD	-	-	-	-
	ZN-65 63	30	LLD	-	-	-	-
	ZR-95 63	30	LLD	-	-	-	-

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P24001 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY PAGE: 001

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control, Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean Dist. Direct	Location with Highest Annual Mean Mean (1) (Range)	All Control Locations Mean (1) (Range)
MLKG PCI/L	BA-140 92	60	LLD	-	-	-	-
	CS-134 92	15	LLD	-	-	-	-
	CS-137 92	18	LLD	-	-	-	-
	K-40 92		1510.65 (0092/0092) 1060.00-1970.00	1624.29 (0056/0056) 1220.00-1970.00	61 07.4 SE	1706.00 (0015/0015) 1490.00-1860.00	1333.89 (0036/0036) 1060.00-1770.00
	LA-140 92	15	LLD	-	-	-	-

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
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Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean Dist. Direct	Location with Highest Annual Mean Mean (1) (Range)	All Control Locations Mean (1) (Range)
STRONTIUM PCI/L	SR-89 28		LLD	-	-	-	-
	SR-90 28		2.51 (0028/0028) 1.10-4.60	2.55 (0019/0019) 1.10-4.60	71 07.9 SE	1.60 (0003/0003) 3.00-4.60	2.43 (0009/0009) 1.40-3.30

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

P24001

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean		All Control Locations Mean (1) (Range)
					Dist. Direct	Mean (1) (Range)	
MLKI PCI/L	I-131 93	1	LLD	-	-	-	-

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
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Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean Dist. Direct	Location with Highest Annual Mean Mean (1) (Range)	All Control Locations Mean (1) (Range)
PRB PCI/L	G-BETA 60		3.81 (0060/0060) 0.80-12.70	4.03 (0050/0050) 0.80-12.70	3 01.0 SE	5.44 (0010/0010) 1.10-12.70	2.71 (0010/0010) 1.00-7.30

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

P24001

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean		All Control Locations Mean (1) (Range)
					Dist. Direct	Mean (1) (Range)	
PRG PCI/L	BA-140 60		LLD	-	-	-	-
	CO-58 60		LLD	-	-	-	-
	CO-60 60		LLD	-	-	-	-
	CS-134 60		LLD	-	-	-	-
	CS-137 60		LLD	-	-	-	-
	FE-59 60		LLD	-	-	-	-
	LA-140 60		LLD	-	-	-	-

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean		All Control Locations Mean (1) (Range)
					Dist. Direct	Mean (1) (Range)	
PRG PCI/L	MN-54 60		LLD	-	-	-	-
	NB-95 60		LLD	-	-	-	-
	ZN-65 60		LLD	-	-	-	-
	ZR-95 60		LLD	-	-	-	-

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

P24001

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
TRITIUM PCI/L	H3 60		151.54 (0024/0060) 91.00-315.00	158.85 (0020/0050) 104.00-315.00	35 00.6 E	170.40 (0005/0010) 131.00-204.00	115.00 (0004/0010) 91.00-125.00

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (#) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Location Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
FSH PCI/KG(WET)	CO-58 30	130	LLD	-	-	-	-
	CO-60 30	130	LLD	-	-	-	-
	CS-134 30	130	LLD	-	-	-	-
	CS-137 30	150	25.10 (0001/0030) 25.10-25.10	25.10 (0001/0016) 25.10-25.10	25 00.6 NNW	25.10 (0001/0016) 25.10-25.10	0.00 (0000/0014) 0.00-0.00
	FE-59 30	260	LLD	-	-	-	-
	K-40 30		2221.00 (0030/0030) 1230.00-3050.00	2241.25 (0016/0016) 1481.00-3050.00	25 00.6 NNW	2241.25 (0016/0016) 1481.00-3050.00	2197.86 (0014/0014) 1230.00-2914.00
	MN-54 30	130	LLD	-	-	-	-

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

P24001

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
SOIL PCI/KG(DRY)	CO-58 31		LLD	-	-	-	-
	CO-60 31		LLD	-	-	-	-
	CS-134 31		LLD	-	-	-	-
	CS-137 31		344.93 (0029/0031) 44.00-854.00	327.80 (0025/0027) 44.00-854.00	12 00.6 WSW	703.75 (0004/0004) 435.00-854.00	452.00 (0004/0004) 357.00-542.00
	K-40 31		11203.81 (0031/0031) 6860.00-21560.00	10853.81 (0027/0027) 6860.00-21560.00	18 05.0 S	16695.00 (0004/0004) 12460.00-21560.00	13566.25 (0004/0004) 11810.00-16370.00
	RA-226 31		792.16 (0031/0031) 260.00-1574.00	717.37 (0027/0027) 260.00-1573.00	6 11.0 SSW	1297.00 (0004/0004) 1130.00-1574.00	1297.00 (0004/0004) 1130.00-1574.00

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
STRONTIUM PCI/KG(DRY)	SR-89 15		LLD	-	-	-	-
	SR-90 15		47.99 (0013/0015) 10.50-135.30	42.69 (0011/0013) 10.50-135.30	1 03.4 ENE	135.30 (0001/0001) 135.30-135.30	77.15 (0002/0002) 64.00-90.30

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
SED PCI/KG(DRY)	CO-58 14		LLD	-	-	-	-
	CO-60 14		LLD	-	-	-	-
	CS-134 14	150	LLD	-	-	-	-
	CS-137 14	180	196.63 (0006/0014) 43.50-350.00	227.26 (0005/0012) 59.10-350.00	26 04.2 ENE	273.50 (0002/0002) 197.00-350.00	43.50 (0001/0002) 43.50-43.50
	K-40 14		9902.21 (0014/0014) 4656.00-14850.00	10090.42 (0012/0012) 5702.00-14850.00	26 04.2 ENE	14265.00 (0002/0002) 13680.00-14850.00	8773.00 (0002/0002) 4656.00-12890.00

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean Dist. Direct	Location with Highest Annual Mean Mean (1) (Range)	All Control Locations Mean (1) (Range)
STRONTIUM PCI/KG(DRY)	SR-89 14		LLD	-	-	-	-
	SR-90 14		11.10 (0005/0014) 9.20-13.60	11.43 (0004/0012) 9.20-13.60	26 04.2 ENE	13.15 (0002/0002) 12.70-13.60	9.80 (0001/0002) 9.80-9.80

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

P24001

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: PERRY NUCLEAR POWER PLANT Docket No. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
FP PCI/KG	BE-7 52		1691.96 (0049/0052) 245.00-7481.00	1653.51 (0039/0041) 245.00-7481.00	48 01.1 ENE	2084.29 (0007/0007) 397.00-5709.00	1841.90 (0010/0011) 768.00-4710.00
	CO-58 52		LLD	-	-	-	-
	CO-60 52		LLD	-	-	-	-
	CS-134 52	60	LLD	-	-	-	-
	CS-137 52	80	27.17 (0003/0052) 24.60-31.90	27.17 (0003/0041) 24.60-31.90	48 01.1 ENE	28.25 (0002/0007) 24.60-31.90	0.00 (0000/0011) 0.00-0.00
	I-131 52	60	LLD	-	-	-	-
	K-40 52		5416.95 (0052/0052) 2509.00-10100.00	5365.29 (0041/0041) 2509.00-10100.00	48 01.1 ENE	6293.57 (0007/0007) 5000.00-10100.00	5609.55 (0011/0011) 4038.00-7415.00

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean: Dist. Direct	Location with Highest Annual Mean: Mean (1) (Range)	All Control Locations Mean (1) (Range)
FP PCI/KG	BE-7 6		685.50 (0002/0006) 217.00-1154.00	685.50 (0002/0005) 217.00-1154.00	71 07.9 SE	1154.00 (0001/0001) 1154.00-1154.00	0.00 (0000/0001) 0.00-0.00
	CO-58 6		LLD	-	-	-	-
	CO-60 6		LLD	-	-	-	-
	CS-134 6	60	LLD	-	-	-	-
	CS-137 6	80	25.17 (0003/0006) 17.30-34.20	25.17 (0003/0005) 17.30-34.20	61 07.4 SE	34.20 (0001/0001) 34.20-34.20	0.00 (0000/0001) 0.00-0.00
	I-131 6	60	LLD	-	-	-	-
	K-40 6		7281.33 (0006/0006) 5560.00-9870.00	7625.60 (0005/0005) 5916.00-9870.00	29 01.4 ESE	9870.00 (0001/0001) 9870.00-9870.00	5560.00 (0001/0001) 5560.00-5560.00

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

P24001

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Name of Facility: PERRY NUCLEAR POWER PLANT Docket no. : 50-440/50-441

Location of Facility : Lake County Ohio Reporting period : 1991

Medium and Measurement	Type and Tot. (n) Analysis Performed	Lower Limit (LLD)	All Locations (Indicator & Control) Mean (1) (Range)	All Indicator Locations Mean (1) (Range)	Location with Highest Annual Mean Dist. Direct	Location with Highest Annual Mean Mean (1) (Range)	All Control Locations Mean (1) (Range)
FP PCI/KG	BE-7 7		LLD	-	-	-	-
	CO-58 7		LLD	-	-	-	-
	CO-60 7		LLD	-	-	-	-
	CS-134 7	60	LLD	-	-	-	-
	CS-137 7	80	LLD	-	-	-	-
	I-131 7	60	LLD	-	-	-	-
	K-40 7		1971.43 (0007/0007) 1530.00-3280.00	1742.50 (0004/0004) 1530.00-2210.00	70 16.2 SSW	2276.67 (0003/0003) 1630.00-3280.00	2276.67 (0003/0003) 1630.00-3280.00

1 - The ratio of positive results to the number of samples analyzed for the parameter of interest.
LLD - Lower Limit of Detection.

APPENDIX B: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM DATA

G-BETA AIR REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN E-03 PCI/CU.M. +/- 2 SIGMA

COLLECTION PERIOD	STATION LOCATIONS				
	01	03	04	5	06
JAN 910102 TO 910109	022.00+/-5.00	022.00+/-5.00	016.00+/-4.00	01[illegible].00+/-5.00	017.00+/-5.00
910109 TO 910116	030.00+/-5.00	023.00+/-5.00	025.00+/-4.00	023.00+/-5.00	029.00+/-5.00
910116 TO 910123	022.00+/-5.00	022.00+/-5.00	023.00+/-4.00	023.00+/-5.00	024.00+/-5.00
910123 TO 910130	027.00+/-5.00	026.00+/-5.00	028.00+/-5.00	024.00+/-5.00	026.00+/-5.00
FEB 910130 TO 910206	027.00+/-5.00	026.00+/-4.00	024.00+/-5.00	022.00+/-5.0[illegible]	025.00+/-5.00
910206 TO 910213	025.00+/-5.00	022.00+/-5.00	023.00+/-5.00	021.00+/-5.00	024.00+/-5.00
9102[illegible] TO 910220	012.00+/-5.00	012.00+/-5.00	014.00+/-4.00	013.00+/-4.00	015.00+/-5.00
910220 TO 910227	019.00+/-5.00	018.00+/-4.00	020.00+/-4.00	015.00+/-4.00	016.00+/-4.00
MAR 910227 TO 910306	016.00+/-5.00	020.00+/-5.00	016.00+/-4.00	021.00+/-5.00	018.00+/-4.00
910306 TO 910313	021.00+/-5.00	023.00+/-5.00	021.00+/-4.00	022.00+/-5.00	020.00+/-4.00
910313 TO 910320	013.00+/-5.00	015.00+/-5.00	011.00+/-4.00	011.00+/-4.00	013.00+/-4.00
910320 TO 910327	016.00+/-5.00	010.00+/-5.00	012.00+/-4.00	013.00+/-5.00	015.00+/-5.00
APR 910327 TO 910403	018.00+/-5.00	016.00+/-5.00	017.00+/-4.00	017.00+/-4.00	016.00+/-4.00
910403 TO 910410	017.00+/-5.00	017.00+/-5.00	016.00+/-4.00	017.00+/-5.00	012.00+/-4.00
910410 TO 910417	015.00+/-4.00	014.00+/-5.00	014.00+/-4.00	014.00+/-4.00	015.00+/-4.00
910417 TO 910424	007.00+/-5.00	011.00+/-5.00	007.00+/-4.00	012.00+/-4.00	011.00+/-4.00
MAY 910424 TO 910501	019.00+/-5.00	022.00+/-5.00	022.00+/-4.00	018.00+/-4.00	022.00+/-5.00
910501 TO 910508	LT 7.00	008.00+/-4.00	LT 6.00	008.00+/-4.00	009.00+/-4.00
910508 TO 910515	015.00+/-5.00	025.00+/-5.00	016.00+/-4.00	018.00+/-4.00	020.00+/-5.00
910515 TO 910522	017.00+/-5.00	018.00+/-5.00	016.00+/-4.00	014.00+/-4.00	015.00+/-4.00
910522 TO 910529	014.00+/-4.00	019.00+/-5.00	017.00+/-4.00	021.00+/-4.00	017.00+/-5.00
JUN 910529 TO 910605	011.00+/-3.00	015.00+/-3.00	010.00+/-3.00	013.00+/-3.00	012.00+/-3.00
910605 TO 910612	014.00+/-3.00	011.00+/-3.00	013.00+/-3.00	011.00+/-3.00	013.00+/-3.00
910612 TO 910619	015.00+/-4.00	013.00+/-4.00	011.00+/-4.00	012.00+/-4.00	013.00+/-4.00
910619 TO 910626	015.00+/-4.00	013.00+/-5.00	014.00+/-4.00	012.00+/-4.00	016.00+/-4.00
JUL 910626 TO 910703	015.00+/-4.00	020.00+/-5.00	017.00+/-4.00	018.00+/-4.00	020.00+/-4.00
910703 TO 910710	018.00+/-3.00	023.00+/-4.00	018.00+/-3.00	020.00+/-3.00	019.00+/-3.00
910710 TO 910[illegible]	021.00+/-4.00	018.00+/-5.00	016.00+/-4.00	018.00+/-4.00	018.00+/-4.00
910717 TO 910724	030.00+/-[illegible].00	033.00+/-5.00	031.00+/-4.00	034.00+/-5.00	032.00+/-5.00
910724 TO 910731	009.00+/-[illegible].00	008.00+/-3.00	011.00+/-3.00	010.00+/-3.00	010.00+/-3.00
AUG 910731 TO 910807	018.00+/-4.00	017.00+/-5.00	014.00+/-4.00	013.00+/-4.00	013.00+/-4.00
910807 TO 910814	013.00+/-4.00	013.00+/-4.00	016.00+/-4.00	015.00+/-4.00	017.00+/-4.00

G-BETA AIR REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN E-03 PCI/CU.M. +/- 2 SIGMA

COLLECTION PERIOD		STATION LOCATIONS	
		07	35
JAN	910102 TO 910109	015.00+/-5.00	017.00+/-4.00
	910109 TO 910116	024.00+/-5.00	018.00+/-4.00
	910116 TO 910123	026.00+/-5.00	025.00+/-4.00
	910123 TO 910130	026.00+/-5.00	027.00+/-4.00
FEB	910130 TO 910206	029.00+/-5.00	022.00+/-4.00
	910206 TO 910213	027.00+/-5.00	024.00+/-4.00
	910213 TO 910220	011.00+/-4.00	011.00+/-4.00
	910220 TO 910227	019.00+/-4.00	018.00+/-4.00
MAR	910227 TO 910306	020.00+/-5.00	017.00+/-4.00
	910306 TO 910313	025.00+/-5.00	020.00+/-4.00
	910313 TO 910320	014.00+/-4.00	012.00+/-4.00
	910320 TO 910327	010.00+/-4.00	012.00+/-4.00
APR	910327 TO 910403	018.00+/-4.00	018.00+/-4.00
	910403 TO 910410	017.00+/-4.00	013.00+/-4.00
	910410 TO 910417	013.00+/-4.00	015.00+/-4.00
	910417 TO 910424	009.00+/-4.00	009.00+/-4.00
MAY	910424 TO 910501	018.00+/-5.00	018.00+/-4.00
	910501 TO 910508	010.00+/-4.00	008.00+/-4.00
	910508 TO 910515	010.00+/-4.00	011.00+/-4.00
	910515 TO 910522	017.00+/-4.00	014.00+/-4.00
	910522 TO 910529	015.00+/-4.00	017.00+/-4.00
JUN	910529 TO 910605	013.00+/-3.00	013.00+/-3.00
	910605 TO 910612	014.00+/-3.00	012.00+/-3.00
	910612 TO 910619	016.00+/-4.00	015.00+/-4.00
	910619 TO 910626	016.00+/-4.00	016.00+/-4.00
JUL	910626 TO 910703	017.00+/-4.00	018.00+/-4.00
	910703 TO 910710	022.00+/-3.00	021.00+/-3.00
	910710 TO 910717	020.00+/-4.00	015.00+/-4.00
	910717 TO 910724	031.00+/-5.00	031.00+/-5.00
	910724 TO 910731	010.00+/-3.00	011.00+/-3.00
AUG	910731 TO 910807	013.00+/-4.00	013.00+/-4.00
	910807 TO 910814	015.00+/-4.00	014.00+/-4.00

G-BETA AIR REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN E-03 PCI/CU.M. +/- 2 SIGMA

	COLLECTION PERIOD	STATION LOCATIONS				
		01	03	04	05	06
	910814 TO 910821	021.00+/-5.00	023.00+/-5.00	018.00+/-4.00	023.00+/-5.00	020.00+/-5.00
	910821 TO 910828	020.00+/-4.00	024.00+/-5.00	023.00+/-4.00	024.00+/-4.00	023.00+/-4.00
SEP	910828 TO 910904	024.00+/-5.00	020.00+/-5.00	021.00[illegible]4.00	021.00+/-4.00	021.00+/-4.00
	910904 TO 910911	020.00+/-4.00	023.00+/-5.00	022[illegible]/-4.00	022.00+/-4.00	021.00+/-4.00
	910911 TO 910918	023.00+/-4.00	022.00+/-5.00	022.00+/-4.00	022.00+/-4.00	024.00+/-4.00
	910918 TO 910925	013.00+/-4.00	012.00+/-4.00	009.00+/-4.00	013.[illegible]+/-4.00	016.00+/-4.00
OCT	910925 TO 911002	015.00+/-4.00	018.00+/-5.00	013.00+/-4.00	018.00+/-4.00	017.00+/-4.00
	911002 TO 911009	019.00+/-5.00	021.00+/-5.00	018.00+[illegible]-4.00	016.00+/-4.00	021.00+/-5.00
	911009 TO 911016	022.00+/-4.00	023.00+/-5.00	021.00+/-4.00	022.00+/-4.00	022.00+/-4.00
	911016 TO 911023	023.00+/-5.00	027.00+/-5.00	024.00+/-4.00	020.00+/-4.00	023.00+/-4.00
	911023 TO 911030	020.00+/-5.00	026.00+/-6.00	020.00+/-4.00	023.00+/-5.00	022.00+/-5.00
NOV	911030 TO 911106	025.00+/-5.00	027.00+/-6.00	030.00+/-5.00	029.00+/-5.00	029.00+/-5.00
	911106 TO 911113	018.00+/-5.00	018.00+/-5.00	021.00+/-4.00	018.00+/-4.00	025.00+/-5.00
	911113 TO 911120	030.00+/-5.00	036.00+/-6.00	028.00+/-5.00	033.00+/-5.00	032.00+/-5.00
	911120 TO 911127	019.00+/-5.00	021.00+/-5.00	016.00+/-4.00	018.00+/-4.00	017.00+/-4.00
DEC	911127 TO 911204	021.00+/-5.00	025.00+/-5.00	021.00+/-4.00	022.00+/-5.00	022.00+/-5.00
	911204 TO 911211	025.00+/-5.00	030.00+/-6.00	026.00+/-5.00	027.00+/-5.00	031.00+/-5.00
	911211 TO 911218	023.00+/-5.00	025.00+/-5.00	025.00+/-4.00	025.00+/-5.00	022.00+/-5.00
	911218 TO 911226	020.00+/-4.00	021.00+/-5.00	013.00+/-4.00	015.00+/-4.00	015.00+/-4.00
JAN	911226 TO 920101	029.00+/-6.00	031.00+/-6.00	028.00+/-6.00	031.00+/-6.00	030.00+/-6.00

G-BETA AIR REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN E-03 PCI/CU.M. +/- 2 SIGMA

	COLLECTION PERIOD	STATION LOCATIONS	
		07	35
	910814 TO 910821	020.00+/-5.00	022.00+/-4.00
	910821 TO 910828	026.00+/-5.00	025.00+/-4.00
SEP	910828 TO 910904	016.00+/-4.00	023.00+/-4.00
	910904 TO 910911	018.00+/-4.00	020.00+/-4.00
	910911 TO 910918	021.00+/-4.00	024.00+/-4.00
	910918 TO 910925	014.00+/-4.00	013.00+/-4.00
OCT	910925 TO 911002	014.00+/-4.00	019.00+/-4.00
	911002 TO 911009	020.00+/-5.00	024.00+/-4.00
	911009 TO 911016	021.00+/-4.00	022.00+/-4.00
	911016 TO 911023	022.00+/-4.00	024.00+/-4.00
	911023 TO 911030	016.00+/-4.00	020.00+/-4.00
NOV	911030 TO 911106	030.00+/-5.00	026.00+/-5.00
	911106 TO 911113	022.00+/-4.00	017.00+/-4.00
	911113 TO 911120	028.00+/-5.00	033.00+/-5.00
	911120 TO 911127	018.00+/-4.00	019.00+/-4.00
DEC	911127 TO 911204	022.00+/-4.00	020.00+/-4.00
	911204 TO 911211	025.00+/-5.00	028.00+/-5.00
	911211 TO 911218	023.00+/-4.00	028.00+/-5.00
	911218 TO 911226	016.00+/-4.00	018.00+/-4.00
JAN	911226 TO 920101	028.00+/-6.00	032.00+/-6.00

GAMMA SPEC REPORT OF APTG
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN E-03 PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BE-7	CS-134	CS-137	CO-58	CO-60
01	AIR	910102/910403	68.00+/-16.00	LT 1.00	LT 1.00	LT 2.00	LT 1.00
01	AIR	910403/910703	47.00+/-18.00	LT 1.00	LT 1.00	LT 2.00	LT 1.00
01	AIR	910710/911002	55.00+/-12.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
01	AIR	911127/920101	43.00+/-11.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
03	AIR	910102/910403	58.00+/-14.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
03	AIR	910403/910703	54.00+/-20.00	LT 1.00	LT 1.00	LT 2.00	LT 1.00
03	AIR	910710/911002	58.00+/-14.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
03	AIR	911127/920101	60.00+/-22.00	LT 1.00	LT 2.00	LT 2.00	LT 2.00
04	AIR	910102/910403	56.00+/-10.00	LT 1.00	LT 1.00	LT 2.00	LT 1.00
04	AIR	910403/910703	66.00+/-19.00	LT 1.00	LT 1.00	LT 2.00	LT 1.00
04	AIR	910710/911002	46.00+/-9.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
04	AIR	911127/920101	44.00+/-11.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
05	AIR	910102/910403	59.00+/-10.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
05	AIR	910403/910703	63.00+/-19.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
05	AIR	910710/911002	42.00+/-17.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
05	AIR	911127/920101	52.00+/-14.00	LT 1.00	LT 1.00	LT 2.00	LT 2.00
06	AIR	910102/910403	54.00+/-13.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
06	AIR	910403/910703	52.00+/-22.00	LT 1.00	LT 1.00	LT 2.00	LT 1.00
06	AIR	910710/911002	44.00+/-11.00	LT 1.00	LT 2.00	LT 2.00	LT 2.00
06	AIR	911127/920101	51.00+/-10.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00

GAMMA SPEC REPORT OF APTG
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN E-03 PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BE-7	CS-134	CS-137	CO-58	CO-60
07	AIR	910102/910403	55.00+/-9.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
07	AIR	910403/910703	51.00+/-14.00	LT 1.00	LT 1.00	LT 2.00	LT 1.00
07	AIR	910710/911002	47.00+/-13.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
07	AIR	911127/920101	46.00+/-9.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
35	AIR	910102/910403	65.00+/-12.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
35	AIR	910403/910703	49.00+/-18.00	LT 1.00	LT 1.00	LT 2.00	LT 1.00
35	AIR	910710/911002	46.00+/-12.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00
35	AIR	911127/920101	44.00+/-12.00	LT 1.00	LT 1.00	LT 1.00	LT 1.00

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
01	AIR	910102/910109	LT .02
01	AIR	910109/910116	LT .03
01	AIR	910116/910123	LT .02
01	AIR	910123/910130	LT .02
01	AIR	910130/910206	LT .03
01	AIR	910206/910213	LT .03
01	AIR	910213/910220	LT .02
01	AIR	910220/910227	LT .02
01	AIR	910227/910306	LT .02
01	AIR	910306/910313	LT .02
01	AIR	910313/910320	LT .02
01	AIR	910320/910327	LT .02
01	AIR	910327/910403	LT .02
01	AIR	910403/910410	LT .02
01	AIR	910410/910417	LT .02
01	AIR	910417/910424	LT .02
01	AIR	910424/910501	LT .02
01	AIR	910501/910508	LT .02
01	AIR	910508/910515	LT .02
01	AIR	910515/910522	LT .02
01	AIR	910522/910529	LT .02
01	AIR	910529/910605	LT .03
01	AIR	910605/910612	LT .02
01	AIR	910612/910619	LT .02
01	AIR	910619/910626	LT .02
01	AIR	910626/910703	LT .03
01	AIR	910703/910710	LT .02
01	AIR	910710/910717	LT .02
01	AIR	910717/910724	LT .02
01	AIR	910724/910731	LT .02
01	AIR	910731/910807	LT .02
01	AIR	910807/910814	LT .03
01	AIR	910814/910821	LT .02
01	AIR	910821/910828	LT .03
01	AIR	910828/910904	LT .02
01	AIR	910904/910911	LT .02
01	AIR	910911/910918	LT .03
01	AIR	910918/910925	LT .02
01	AIR	910925/911002	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
01	AIR	911002/911009	LT .02
01	AIR	911009/911016	LT .01
01	AIR	911016/911023	LT .02
01	AIR	911023/911030	LT .02
01	AIR	911030/911106	LT .02
01	AIR	911106/911113	LT .02
01	AIR	911113/911120	LT .03
01	AIR	911120/911127	LT .02
01	AIR	911127/911204	LT .02
01	AIR	911204/911211	LT .02
01	AIR	911211/911218	LT .02
01	AIR	911218/911226	LT .02
01	AIR	911226/920101	LT .03
03	AIR	910102/910109	LT .03
03	AIR	910109/910116	LT .03
03	AIR	910116/910123	LT .03
03	AIR	910123/910130	LT .02
03	AIR	910130/910206	LT .03
03	AIR	910206/910213	LT .03
03	AIR	910213/910220	LT .03
03	AIR	910220/910227	LT .02
03	AIR	910227/910306	LT .03
03	AIR	910306/910313	LT .03
03	AIR	910313/910320	LT .03
03	AIR	910320/910327	LT .02
03	AIR	910327/910403	LT .02
03	AIR	910403/910410	LT .02
03	AIR	910410/910417	LT .03
03	AIR	910417/910424	LT .03
03	AIR	910424/910501	LT .02
03	AIR	910501/910508	LT .02
03	AIR	910508/910515	LT .02
03	AIR	910515/910522	LT .03
03	AIR	910522/910529	LT .02
03	AIR	910529/910605	LT .02
03	AIR	910605/910612	LT .02
03	AIR	910612/910619	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
03	AIR	910619/910626	LT .02
03	AIR	910626/910703	LT .03
03	AIR	910703/910710	LT .02
03	AIR	910710/910717	LT .03
03	AIR	910717/910724	LT .02
03	AIR	910724/910731	LT .02
03	AIR	910731/910807	LT .02
03	AIR	910807/910814	LT .02
03	AIR	910814/910821	LT .03
03	AIR	910821/910828	LT .03
03	AIR	910828/910904	LT .02
03	AIR	910904/910911	LT .02
03	AIR	910911/910918	LT .03
03	AIR	910918/910925	LT .03
03	AIR	910925/911002	LT .03
03	AIR	911002/911009	LT .02
03	AIR	911009/911016	LT .01
03	AIR	911016/911023	LT .02
03	AIR	911023/911030	LT .02
03	AIR	911030/911106	LT .03
03	AIR	911106/911113	LT .02
03	AIR	911113/911120	LT .03
03	AIR	911120/911127	LT .02
03	AIR	911127/911204	LT .03
03	AIR	911204/911211	LT .03
03	AIR	911211/911218	LT .02
03	AIR	911218/911226	LT .03
03	AIR	911226/920101	LT .03
04	AIR	910102/910109	LT .02
04	AIR	910109/910116	LT .02
04	AIR	910116/910123	LT .02
04	AIR	910123/910130	LT .02
04	AIR	910130/910206	LT .03
04	AIR	910206/910213	LT .02
04	AIR	910213/910220	LT .02
04	AIR	910220/910227	LT .02
04	AIR	910227/910306	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
04	AIR	910306/910313	LT .02
04	AIR	910313/910320	LT .02
04	AIR	910320/910327	LT .02
04	AIR	910327/910403	LT .02
04	AIR	910403/910410	LT .02
04	AIR	910410/910417	LT .02
04	AIR	910417/910424	LT .02
04	AIR	910424/910501	LT .02
04	AIR	910501/910508	LT .02
04	AIR	910508/910515	LT .02
04	AIR	910515/910522	LT .02
04	AIR	910522/910529	LT .02
04	AIR	910529/910605	LT .02
04	AIR	910605/910612	LT .02
04	AIR	910612/910619	LT .02
04	AIR	910619/910626	LT .02
04	AIR	910626/910703	LT .02
04	AIR	910703/910710	LT .02
04	AIR	910710/910717	LT .02
04	AIR	910717/910724	LT .02
04	AIR	910724/910731	LT .02
04	AIR	910731/910807	LT .02
04	AIR	910807/910814	LT .02
04	AIR	910814/910821	LT .02
04	AIR	910821/910828	LT .02
04	AIR	910828/910904	LT .02
04	AIR	910904/910911	LT .02
04	AIR	910911/910918	LT .02
04	AIR	910918/910925	LT .02
04	AIR	910925/911002	LT .02
04	AIR	911002/911009	LT .02
04	AIR	911009/911016	LT .01
04	AIR	911016/911023	LT .02
04	AIR	911023/911030	LT .02
04	AIR	911030/911106	LT .02
04	AIR	911106/911113	LT .02
04	AIR	911113/911120	LT .02
04	AIR	911120/911127	LT .02
04	AIR	911127/911204	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
04	AIR	911204/911211	LT .02
04	AIR	911211/911218	LT .02
04	AIR	911218/911226	LT .02
04	AIR	911226/920101	LT .02
05	AIR	910102/910109	LT .02
05	AIR	910109/910116	LT .02
05	AIR	910116/910123	LT .02
05	AIR	910123/910130	LT .02
05	AIR	910130/910206	LT .03
05	AIR	910206/910213	LT .03
05	AIR	910213/910220	LT .02
05	AIR	910220/910227	LT .02
05	AIR	910227/910306	LT .02
05	AIR	910306/910313	LT .02
05	AIR	910313/910320	LT .02
05	AIR	910320/910327	LT .02
05	AIR	910327/910403	LT .02
05	AIR	910403/910410	LT .02
05	AIR	910410/910417	LT .02
05	AIR	910417/910424	LT .02
05	AIR	910424/910501	LT .02
05	AIR	910501/910508	LT .02
05	AIR	910508/910515	LT .02
05	AIR	910515/910522	LT .02
05	AIR	910522/910529	LT .02
05	AIR	910529/910605	LT .02
05	AIR	910605/910612	LT .02
05	AIR	910612/910619	LT .02
05	AIR	910619/910626	LT .02
05	AIR	910626/910703	LT .02
05	AIR	910703/910710	LT .02
05	AIR	910710/910717	LT .02
05	AIR	910717/910724	LT .02
05	AIR	910724/910731	LT .02
05	AIR	910731/910807	LT .02
05	AIR	910807/910814	LT .02
05	AIR	910814/910821	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
05	AIR	910821/910828	LT .03
05	AIR	910828/910904	LT .02
05	AIR	910904/910911	LT .02
05	AIR	910911/910918	LT .02
05	AIR	910918/910925	LT .02
05	AIR	910925/911002	LT .02
05	AIR	911002/911009	LT .02
05	AIR	911009/911016	LT .01
05	AIR	911016/911023	LT .02
05	AIR	911023/911030	LT .02
05	AIR	911030/911106	LT .02
05	AIR	911106/911113	LT .02
05	AIR	911113/911120	LT .02
05	AIR	911120/911127	LT .02
05	AIR	911127/911204	LT .02
05	AIR	911204/911211	LT .02
05	AIR	911211/911218	LT .02
05	AIR	911218/911226	LT .02
05	AIR	911226/920101	LT .02
06	AIR	910102/910109	LT .02
06	AIR	910109/910116	LT .02
06	AIR	910116/910123	LT .02
06	AIR	910123/910130	LT .02
06	AIR	910130/910206	LT .03
06	AIR	910206/910213	LT .03
06	AIR	910213/910220	LT .02
06	AIR	910220/910227	LT .02
06	AIR	910227/910306	LT .02
06	AIR	910306/910313	LT .02
06	AIR	910313/910320	LT .02
06	AIR	910320/910327	LT .02
06	AIR	910327/910403	LT .02
06	AIR	910403/910410	LT .02
06	AIR	910410/910417	LT .02
06	AIR	910417/910424	LT .02
06	AIR	910424/910501	LT .02
06	AIR	910501/910508	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
06	AIR	910508/910515	LT .02
06	AIR	910515/910522	LT .02
06	AIR	910522/910529	LT .02
06	AIR	910529/910605	LT .03
06	AIR	910605/910612	LT .02
06	AIR	910612/910619	LT .02
06	AIR	910619/910626	LT .02
06	AIR	910626/910703	LT .03
06	AIR	910703/910710	LT .02
06	AIR	910710/910717	LT .02
06	AIR	910717/910724	LT .02
06	AIR	910724/910731	LT .02
06	AIR	910731/910807	LT .02
06	AIR	910807/910814	LT .03
06	AIR	910814/910821	LT .02
06	AIR	910821/910828	LT .03
06	AIR	910828/910904	LT .02
06	AIR	910904/910911	LT .02
06	AIR	910911/910918	LT .02
06	AIR	910918/910925	LT .02
06	AIR	910925/911002	LT .02
06	AIR	911002/911009	LT .02
06	AIR	911009/911016	LT .01
06	AIR	911016/911023	LT .02
06	AIR	911023/911030	LT .02
06	AIR	911030/911106	LT .02
06	AIR	911106/911113	LT .02
06	AIR	911113/911120	LT .02
06	AIR	911120/911127	LT .02
06	AIR	911127/911204	LT .02
06	AIR	911204/911211	LT .02
06	AIR	911211/911218	LT .02
06	AIR	911218/911226	LT .02
06	AIR	911226/920101	LT .02
07	AIR	910102/910109	LT .02
07	AIR	910109/910116	LT .02
07	AIR	910116/910123	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
07	AIR	910123/910130	LT .02
07	AIR	910130/910206	LT .03
07	AIR	910206/910213	LT .03
07	AIR	910213/910220	LT .02
07	AIR	910220/910227	LT .02
07	AIR	910227/910306	LT .02
07	AIR	910306/910313	LT .02
07	AIR	910313/910320	LT .02
07	AIR	910320/910327	LT .02
07	AIR	910327/910403	LT .02
07	AIR	910403/910410	LT .02
07	AIR	910410/910417	LT .02
07	AIR	910417/910424	LT .02
07	AIR	910424/910501	LT .02
07	AIR	910501/910508	LT .02
07	AIR	910508/910515	LT .02
07	AIR	910515/910522	LT .02
07	AIR	910522/910529	LT .02
07	AIR	910529/910605	LT .03
07	AIR	910605/910612	LT .02
07	AIR	910612/910619	LT .02
07	AIR	910619/910626	LT .02
07	AIR	910626/910703	LT .03
07	AIR	910703/910710	LT .02
07	AIR	910710/910717	LT .02
07	AIR	910717/910724	LT .02
07	AIR	910724/910731	LT .02
07	AIR	910731/910807	LT .02
07	AIR	910807/910814	LT .02
07	AIR	910814/910821	LT .02
07	AIR	910821/910828	LT .03
07	AIR	910828/910904	LT .02
07	AIR	910904/910911	LT .02
07	AIR	910911/910918	LT .02
07	AIR	910918/910925	LT .02
07	AIR	910925/911002	LT .02
07	AIR	911002/911009	LT .02
07	AIR	911009/911016	LT .01
07	AIR	911016/911023	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
07	AIR	911023/911030	LT .02
07	AIR	911030/911106	LT .02
07	AIR	911106/911113	LT .02
07	AIR	911113/911120	LT .02
07	AIR	911120/911127	LT .02
07	AIR	911127/911204	LT .02
07	AIR	911204/911211	LT .02
07	AIR	911211/911218	LT .02
07	AIR	911218/911226	LT .02
07	AIR	911226/920101	LT .02
35	AIR	910102/910109	LT .02
35	AIR	910109/910116	LT .02
35	AIR	910116/910123	LT .02
35	AIR	910123/910130	LT .02
35	AIR	910130/910206	LT .02
35	AIR	910206/910213	LT .02
35	AIR	910213/910220	LT .02
35	AIR	910220/910227	LT .02
35	AIR	910227/910306	LT .02
35	AIR	910306/910313	LT .02
35	AIR	910313/910320	LT .02
35	AIR	910320/910327	LT .02
35	AIR	910327/910403	LT .02
35	AIR	910403/910410	LT .02
35	AIR	910410/910417	LT .02
35	AIR	910417/910424	LT .02
35	AIR	910424/910501	LT .02
35	AIR	910501/910508	LT .02
35	AIR	910508/910515	LT .02
35	AIR	910515/910522	LT .02
35	AIR	910522/9105_	LT .02
35	AIR	910529/910605	LT .02
35	AIR	910605/910612	LT .02
35	AIR	910612/910619	LT .02
35	AIR	910619/910626	LT .02
35	AIR	910626/910703	LT .02
35	AIR	910703/910710	LT .02

I-131 REPORT
SAMPLE FREQUENCY IS : WEEKLY
RESULTS IN PCI/CU.M. +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
35	AIR	910710/910717	LT .02
35	AIR	910717/910724	LT .02
35	AIR	910724/910731	LT .02
35	AIR	910731/910807	LT .02
35	AIR	910807/910814	LT .02
35	AIR	910814/910821	LT .02
35	AIR	910821/910828	LT .02
35	AIR	910828/910904	LT .02
35	AIR	910904/910911	LT .02
35	AIR	910911/910918	LT .02
35	AIR	910918/910925	LT .02
35	AIR	910925/911002	LT .02
35	AIR	911002/911009	LT .02
35	AIR	911009/911016	LT .01
35	AIR	911016/911023	LT .02
35	AIR	911023/911030	LT .02
35	AIR	911030/911106	LT .02
35	AIR	911106/911113	LT .02
35	AIR	911113/911120	LT .02
35	AIR	911120/911127	LT .02
35	AIR	911127/911204	LT .02
35	AIR	911204/911211	LT .02
35	AIR	911211/911218	LT .02
35	AIR	911218/911226	LT .02
35	AIR	911226/920101	LT .02

G-BETA PR REPORT
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

COLLECTION PERIOD	STATION LOCATIONS					
	03	04	06	07	12	35
JAN 901227 TO 910130	02.00+/-.40	01.60+/-.30	01.60+/-.30	01.40+/-.30	02.20+/-.40	01.00+/-.30
FEB 910130 TO 910227	06.80+/-.70	04.10+/-.40	03.60+/-.30	03.10+/-.30	02.90+/-.30	03.10+/-.30
MAR 910227 TO 910327	05.80+/-.40	02.90+/-.30	02.60+/-.30	02.60+/-.20	03.80+/-.30	03.70+/-.30
APR 910327 TO 910501	12.70+/-.80	08.00+/-.50	07.30+/-.20	06.80+/-.40	08.90+/-.60	06.60+/-.60
MAY 910501 TO 910529	08.70+/-.60	06.70+/-.50	03.30+/-.40	06.30+/-.50	06.40+/-.50	08.60+/-.60
AUG 910730 TO 910828	01.80+/-.30	00.80+/-.20	01.60+/-.30	01.30+/-.30	01.90+/-.30	02.10+/-.20
SEP 910828 TO 910930	01.10+/-.10	01.70+/-.20	01.00+/-.10	01.80+/-.10	01.60+/-.10	02.30+/-.30
OCT 910930 TO 911029	01.80+/-.30	02.40+/-.30	01.00+/-.30	05.10+/-.50	02.30+/-.30	01.60+/-.30
NOV 911029 TO 911127	04.90+/-.40	04.00+/-.30	01.90+/-.30	02.10+/-.30	05.70+/-.30	04.60+/-.40
DEC 911127 TO 911231	08.80+/-.50	03.10+/-.30	03.20+/-.30	02.00+/-.30	05.30+/-.40	04.70+/-.50

GAMMA SPEC REPORT OF PRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
03	PR	901227/910130	LT 26.80 LT 10.10 LT 8.20	LT 4.30 LT 8.40	LT 4.30 LT 3.80	LT 3.50 LT 4.90	LT 3.90 LT 8.60
03	PR	910130/910227	LT 29.60 LT 13.60 LT 10.50	LT 5.20 LT 10.00	LT 5.40 LT 5.10	LT 5.20 LT 5.50	LT 5.90 LT 12.80
03	PR	910227/910327	LT 26.30 LT 8.00 LT 6.80	LT 3.80 LT 6.20	LT 3.20 LT 3.40	LT 4.20 LT 4.00	LT 4.20 LT 9.10
03	PR	910327/910501	LT 17.80 LT 9.20 LT 8.10	LT 4.10 LT 7.40	LT 4.40 LT 4.20	LT 3.60 LT 4.60	LT 4.00 LT 9.90
03	PR	910501/910529	LT 21.80 LT 10.80 LT 7.70	LT 4.50 LT 7.30	LT 4.70 LT 4.00	LT 3.90 LT 4.70	LT 4.20 LT 10.70
03	PR	910730/910828	LT 23.00 LT 7.70 LT 7.30	LT 3.80 LT 3.00	LT 5.10 LT 3.70	LT 3.70 LT 4.40	LT 4.80 LT 9.40
03	PR	910828/910930	LT 37.80 LT 14.00 LT 13.60	LT 7.50 LT 8.80	LT 6.00 LT 7.10	LT 7.70 LT 7.10	LT 7.30 LT 16.80
03	PR	910930/911029	LT 19.30 LT 8.80 LT 8.20	LT 4.70 LT 5.90	LT 4.40 LT 4.40	LT 4.50 LT 4.70	LT 4.80 LT 9.50
03	PR	911029/911127	LT 35.50 LT 11.00 LT 7.40	LT 4.00 LT 6.90	LT 4.30 LT 4.50	LT 3.90 LT 5.40	LT 4.20 LT 8.00
03	PR	911127/911231	LT 15.30 LT 9.20 LT 6.40	LT 3.20 LT 6.40	LT 3.50 LT 3.20	LT 2.70 LT 3.90	LT 2.90 LT 6.60
04	PR	901227/910130	LT 22.90 LT 11.40 LT 9.50	LT 4.60 LT 9.40	LT 5.70 LT 4.00	LT 3.60 LT 5.00	LT 4.20 LT 10.30
04	PR	910130/910227	LT 16.40 LT 9.00 LT 5.40	LT 2.90 LT 4.50	LT 3.20 LT 3.00	LT 2.60 LT 3.50	LT 2.90 LT 7.20

GAMMA SPEC REPORT OF PRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
04	PR	910227/910327	LT 24.10 LT 13.20 LT 9.60	LT 5.20 LT 9.70	LT 6.70 LT 5.00	LT 5.20 LT 6.00	LT 5.20 LT 16.00
04	PR	910327/910501	LT 23.50 LT 6.10 LT 5.80	LT 3.20 LT 6.60	LT 3.00 LT 2.90	LT 3.60 LT 3.80	LT 3.60 LT 6.90
04	PR	910501/91 19	LT 22.10 LT 13.10 LT 9.10	LT 4.90 LT 7.80	LT 4.40 LT 4.70	LT 3.90 LT 5.20	LT 4.70 LT 11.00
04	PR	910730/910828	LT 29.10 LT 11.40 LT 9.50	LT 6.20 LT 9.50	LT 6.20 LT 5.90	LT 5.80 LT 6.00	LT 5.90 LT 11.70
04	PR	910828/910930	LT 41.30 LT 15.50 LT 14.90	LT 8.00 LT 10.70	LT 6.80 LT 8.10	LT 7.10 LT 8.40	LT 8.50 LT 15.70
04	PR	910930/911029	LT 18.10 LT 8.90 LT 7.90	LT 4.90 LT 6.00	LT 4.20 LT 4.80	LT 4.40 LT 4.30	LT 5.20 LT 9.60
04	PR	911029/911127	LT 37.90 LT 11.60 LT 8.80	LT 4.60 LT 10.00	LT 3.90 LT 4.30	LT 4.30 LT 5.80	LT 4.40 LT 9.60
04	PR	911127/911231	LT 31.50 LT 9.90 LT 9.00	LT 4.50 LT 8.60	LT 4.50 LT 4.20	LT 4.70 LT 5.00	LT 4.60 LT 10.40
06	PR	901227/910130	LT 22.60 LT 10.50 LT 7.60	LT 4.60 LT 7.00	LT 4.10 LT 4.20	LT 3.80 LT 4.50	LT 4.10 LT 9.50
06	PR	910130/910227	LT 17.90 LT 9.00 LT 6.50	LT 3.30 LT 5.00	LT 3.60 LT 3.30	LT 2.80 LT 3.70	LT 3.10 LT 7.00
06	PR	910227/910327	LT 23.60 LT 11.60 LT 9.50	LT 6.10 LT 9.80	LT 5.40 LT 5.00	LT 5.20 LT 6.10	LT 5.70 LT 14.50
06	PR	910327/910501	LT 21.50 LT 8.70 LT 8.10	LT 4.30 LT 3.50	LT 4.10 LT 4.10	LT 4.60 LT 4.50	LT 4.30 LT 7.50

GAMMA SPEC REPORT OF PRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
06	PR	910501/910529	LT 30.00 LT 10.70 LT 7.70	LT 6.40 LT 9.20	LT 4.00 LT 4.10	LT 3.70 LT 4.90	LT 3.90 LT 8.10
06	PR	910730/910828	LT 19.70 LT 11.00 LT 7.90	LT 3.30 LT 2.80	LT 4.10 LT 4.00	LT 3.80 LT 4.80	LT 4.60 LT 7.50
06	PR	910828/910930	LT 21.00 LT 10.80 LT 9.20	LT 6.20 LT 5.80	LT 5.70 LT 5.10	LT 5.50 LT 6.10	LT 5.70 LT 12.20
06	PR	910930/911029	LT 19.20 LT 9.30 LT 9.10	LT 4.80 LT 3.40	LT 3.80 LT 4.60	LT 3.80 LT 4.30	LT 4.50 LT 9.10
06	PR	911029/911127	LT 39.70 LT 11.80 LT 8.50	LT 4.80 LT 10.70	LT 4.60 LT 4.40	LT 4.30 LT 6.10	LT 4.40 LT 9.00
06	PR	911127/911231	LT 18.70 LT 6.70 LT 5.50	LT 2.80 LT 3.20	LT 2.60 LT 2.70	LT 2.40 LT 3.40	LT 3.0 LT 5.
07	PR	901227/910130	LT 30.00 LT 16.40 LT 10.80	LT 5.50 LT 9.30	LT 5.60 LT 5.20	LT 5.20 LT 6.30	LT 5.20 LT 11.80
07	PR	910130/910227	LT 24.00 LT 11.20 LT 7.60	LT 4.10 LT 7.90	LT 3.50 LT 3.80	LT 3.60 LT 4.50	LT 3.70 LT 8.60
07	PR	910227/910327	LT 25.60 LT 10.10 LT 9.20	LT 5.40 LT 7.20	LT 6.40 LT 5.10	LT 5.80 LT 5.70	LT 5.20 LT 9.60
07	PR	910327/910501	LT 28.70 LT 10.30 LT 7.80	LT 4.10 LT 8.50	LT 4.40 LT 3.70	LT 5.00 LT 4.80	LT 4.60 LT 10.30
07	PR	910501/910529	LT 21.00 LT 8.40 LT 6.10	LT 3.30 LT 5.70	LT 3.60 LT 3.20	LT 2.90 LT 4.10	LT 3.40 LT 5.40
07	PR	910730/910828	LT 24.10 LT 9.00 LT 8.20	LT 4.10 LT 5.50	LT 3.80 LT 4.40	LT 4.50 LT 4.90	LT 3.90 LT 9.20

GAMMA SPEC REPORT OF PRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
07	PR	910828/910930	LT 27.10 LT 12.10 LT 10.70	LT 5.50 LT 8.00	LT 5.20 LT 5.60	LT 5.90 LT 6.10	LT 6.30 LT 11.60
07	PR	910930/911029	LT 18.70 LT 8.80 LT 7.10	LT 4.20 LT 4.10	LT 2.70 LT 3.80	LT 3.60 LT 3.20	LT 4.40 LT 7.50
07	PR	911029/911127	LT 37.60 LT 12.00 LT 8.20	LT 5.60 LT 10.50	LT 4.20 LT 4.00	LT 4.80 LT 5.30	LT 4.80 LT 10.50
07	PR	911127/911231	LT 28.10 LT 8.90 LT 8.70	LT 4.70 LT 7.60	LT 4.20 LT 4.30	LT 4.50 LT 4.90	LT 4.50 LT 9.60
12	PR	901227/910130	LT 20.00 LT 9.60 LT 7.50	LT 4.10 LT 6.20	LT 3.70 LT 3.90	LT 3.40 LT 4.60	LT 3.50 LT 8.70
12	PR	910130/910227	LT 31.90 LT 9.80 LT 10.10	LT 5.30 LT 5.50	LT 4.20 LT 5.30	LT 4.70 LT 5.80	LT 5.30 LT 10.00
12	PR	910227/910327	LT 27.40 LT 11.20 LT 10.20	LT 5.30 LT 8.30	LT 5.40 LT 5.70	LT 5.80 LT 6.10	LT 5.00 LT 12.70
12	PR	910327/910501	LT 20.20 LT 10.70 LT 7.20	LT 4.20 LT 6.00	LT 4.70 LT 4.20	LT 3.60 LT 4.10	LT 4.10 LT 9.00
12	PR	910501/910529	LT 12.20 LT 5.20 LT 3.80	LT 2.90 LT 3.80	LT 2.00 LT 2.00	LT 1.80 LT 2.30	LT 1.90 LT 4.30
12	PR	910730/910828	LT 31.10 LT 12.10 LT 11.30	LT 5.60 LT 8.40	LT 4.80 LT 5.80	LT 6.00 LT 6.70	LT 6.10 LT 11.80
12	PR	910828/910930	LT 41.80 LT 14.60 LT 15.10	LT 8.30 LT 10.70	LT 7.90 LT 8.60	LT 7.70 LT 8.70	LT 9.20 LT 15.20
12	PR	910930/911029	LT 19.80 LT 9.30 LT 7.20	LT 4.80 LT 5.10	LT 4.30 LT 4.60	LT 4.70 LT 4.80	LT 4.80 LT 9.60

GAMMA SPEC REPORT OF PRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
12	PR	911029/911127	LT 13.80	LT 4.90	LT 2.90	LT 3.30	LT 4.40
			LT 13.80	LT 9.10	LT 3.80	LT 5.80	LT 9.20
			LT 8.30				
12	PR	911127/911231	LT 25.50	LT 4.60	LT 4.70	LT 4.20	LT 4.10
			LT 10.90	LT 10.00	LT 4.40	LT 4.40	LT 8.80
			LT 7.40				
35	PR	901227/91[illegible]130	LT 27.00	LT 5.70	LT 5.20	LT 3.90	LT 5.70
			LT 15.20	LT 8.80	LT 5.40	LT 6.20	LT 13.00
			LT 11.10				
35	PR	910130/910227	LT 21.20	LT 4.00	LT 4.00	LT 3.40	LT 3.90
			LT 9.80	LT 7.50	LT 4.00	LT 4.60	LT 7.80
			LT 7.40				
35	PR	910227/910327	LT 24.30	LT 3.80	L[illegible] 4.30	LT 4.80	LT 4.80
			LT 9.10	LT 5.70	LT 3.90	LT 4.40	LT 8.90
			LT 8.20				
35	PR	910327/910501	LT 23.10	LT 4.20	LT 4.30	LT 4.30	LT 4.70
			LT 9.30	LT 4.00	LT 3.90	LT 5.70	LT 9.50
			LT 9.20				
35	PR	910501/910529	LT 30.80	LT 5.40	LT 5.10	LT 4.90	LT 5.40
			LT 14.90	LT 8.30	LT 5.70	LT 6.20	LT 13.50
			LT 11.80				
35	PR	910730/910828	LT 21.00	LT 3.80	LT 4.20	LT 4.00	LT 4.10
			LT 8.40	LT 6.90	LT 3.80	LT 4.30	LT 9.60
			LT 6.30				
35	PR	910828/910930	LT 23.20	LT 4.20	LT 3.50	LT 4.40	LT 4.50
			LT 8.70	LT 5.50	LT 4.70	LT 4.70	LT 9.70
			LT 7.60				
35	PR	910930/911029	LT 18.50	LT 4.20	LT 4.00	LT 4.80	LT 5.00
			LT 9.30	LT 4.90	LT 4.60	LT 4.20	LT 9.60
			LT 8.20				
35	PR	911029/911127	LT 37.00	LT 4.30	LT 3.[illegible]	LT 3.90	LT 3.80
			LT 10.70	LT 10.40	LT 4.06	LT 5.10	LT 9.00
			LT 8.00				
35	PR	911127/911231	LT 21.20	LT 3.90	LT 4.00	LT 3.30	LT 3.80
			LT 8.70	LT 7.80	LT 3.70	LT 4.00	LT 8.10
			LT 6.60				

TRITIUM REPORT
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	H3
03	PR	901227/910130	114.00+/-89.00
03	PR	910130/910227	315.00+/-104.00
03	PR	910227/910327	132.00+/-63.00
03	PR	910327/910501	104.00+/-72.00
03	PR	910501/910529	LT 186.00
03	PR	910730/910828	LT 186.00
03	PR	910828/910930	LT 162.00
03	PR	910930/911029	LT 174.00
03	PR	911029/911127	LT 165.00
03	PR	911127/911231	LT 179.00
04	PR	901227/910130	LT 171.00
04	PR	910130/910227	175.00+/-99.00
04	PR	910227/910327	LT 178.00
04	PR	910327/910501	LT 198.00
04	PR	910501/910529	LT 186.00
04	PR	910730/910828	LT 186.00
04	PR	910828/910930	107.00+/-85.00
04	PR	910930/911029	LT 174.00
04	PR	911029/911127	LT 165.00
04	PR	911127/911231	LT 179.00
06	PR	901227/910130	LT 176.00
06	PR	910130/910227	125.00+/-97.00
06	PR	910227/910327	120.00+/-89.00
06	PR	910327/910501	LT 198.00
06	PR	910501/910529	LT 186.00
06	PR	910730/910828	124.00+/-97.00
06	PR	910828/910930	91.00+/-84.00
06	PR	910930/911029	LT 174.00
06	PR	911029/911127	LT 165.00
06	PR	911127/911231	LT 179.00
07	PR	901227/910130	LT 171.00
07	PR	910130/910227	175.00+/-98.00
07	PR	910227/910327	LT 178.00

TRITIUM REPORT
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	H3
07	PR	910327/910501	206.00+/-106.00
07	PR	910501/910529	131.00+/-69.00
07	PR	910730/910828	109.00+/-96.00
07	PR	910828/910930	145.00+/-86.00
07	PR	910930/911029	129.00+/-64.00
07	PR	911029/911127	LT 165.00
07	PR	911127/911231	LT 179.00
12	PR	901227/910130	LT 171.00
12	PR	910130/910227	168.00+/-98.00
12	PR	910227/910327	LT 178.00
12	PR	910327/910501	179.00+/-105.00
12	PR	910501/910529	LT 166.00
12	PR	910730/910828	LT 186.00
12	PR	910828/910930	LT 162.00
12	PR	910930/911029	LT 174.00
12	PR	911029/911127	136.00+/-88.00
12	PR	911127/911231	LT 179.00
35	PR	901227/910130	LT 176.00
35	PR	910130/910227	204.00+/-100.00
35	PR	910227/910327	169.00+/-91.00
35	PR	910327/910501	LT 198.00
35	PR	910501/910529	200.00+/-101.00
35	PR	910730/910828	131.00+/-97.00
35	PR	910828/910930	148.00+/-86.00
35	PR	910930/911029	LT 174.00
35	PR	911029/911127	LT 165.00
35	PR	911127/911231	LT 179.00

GAMMA SPEC REPORT OF MLKG
SAMPLE FREQUENCY IS : BI-MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140	CS-134	CS-137	K-40	LA-140
29	MILK	910405/910408	LT 24	LT 5	LT 6	1840+/-130	LT 5
29	MILK	910419/910422	LT 23	LT 5	LT 6	1820+/-100	LT 4
29	MILK	910531/910603	LT 28	LT 5	LT 5	1400+/-120	LT 10
29	MILK	910614/910617	LT 20	LT 6	LT 6	1800+/-150	LT 8
29	MILK	910705/910708	LT 32	LT 5	LT 7	1690+/-110	LT 6
29	MILK	910719/910722	LT 39	LT 3	LT 4	1700+/-100	LT 10
29	MILK	910802/910805	LT 43	LT 4	LT 4	1680+/-60	LT 10
29	MILK	910816/910819	LT 24	LT 6	LT 7	1710+/-180	LT 7
29	MILK	910906/910909	LT 29	LT 5	LT 8	1540+/-140	LT 5
29	MILK	910920/910923	LT 40	LT 5	LT 6	1660+/-120	LT 7
29	MILK	911004/911007	LT 13	LT 3	LT 4	1320+/-90	LT 3
31	MILK	910503/910506	LT 24	LT 5	LT 5	1570+/-110	LT 5
31	MILK	910517/910520	LT 33	LT 6	LT 7	1670+/-160	LT 10
47	MILK	910405/910408	LT 19	LT 4	LT 6	1320+/-130	LT 3
47	MILK	910419/910422	LT 19	LT 5	LT 7	1390+/-140	LT 5
47	MILK	910503/910506	LT 30	LT 6	LT 6	1590+/-140	LT 9
47	MILK	910517/910520	LT 29	LT 5	LT 6	1470+/-160	LT 8
47	MILK	910531/910603	LT 30	LT 6	LT 6	1660+/-130	LT 9
47	MILK	910614/910617	LT 33	LT 5	LT 6	1710+/-130	LT 6
47	MILK	910705/910708	LT 35	LT 7	LT 8	1640+/-170	LT 8
47	MILK	910719/910722	LT 36	LT 4	LT 5	1660+/-120	LT 7
47	MILK	910802/910805	LT 44	LT 3	LT 4	1610+/-80	LT 10
47	MILK	910816/910819	LT 37	LT 9	LT 10	1530+/-200	LT 10
47	MILK	910906/910909	LT 31.7	LT 3.9	LT 6.1	1720.0+/-150.0	LT 3.7
47	MILK	910920/910923	LT 36	LT 5	LT 7	1970+/-110	LT 10
47	MILK	911004/911007	LT 17	LT 4	LT 5	1760+/-80	LT 6
51	MILK	910104/910107	LT 28	LT 6	LT 6	1090+/-110	LT 7
51	MILK	910201/910204	LT 27	LT 5	LT 6	1220+/-120	LT 4
51	MILK	910301/910304	LT 13	LT 3	LT 4	1060+/-50	LT 5
51	MILK	910405/910408	LT 20	LT 5	LT 5	1100+/-120	LT 5
51	MILK	910419/910422	LT 23	LT 6	LT 6	1770+/-130	LT 6
51	MILK	910503/910506	LT 30	LT 5	LT 6	1320+/-120	LT 6
51	MILK	910517/910520	LT 29	LT 6	LT 6	1200+/-140	LT 8
51	MILK	910531/910603	LT 31	LT 5	LT 6	1150+/-110	LT 5
51	MILK	910614/910617	LT 29	LT 5	LT 6	1460+/-120	LT 5
51	MILK	910705/910708	LT 28	LT 6	LT 7	1440+/-160	LT 10

GAMMA SPEC REPORT OF MLKG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140	CS-134	CS-137	K-40	LA-140
51	MILK	910719/910722	LT 40	LT 5	LT 6	1350+/-120	LT 10
51	MILK	910802/910805	LT 35	LT 3	LT 3	1210+/-70	LT 11
51	MILK	910816/910819	LT 26	LT 5	LT 6	1410+/-140	LT 6
51	MILK	910906/910909	LT 33	LT 5	LT 5	1320+/-120	LT 7
51	MILK	910920/910923	LT 39	LT 4	LT 6	1290+/-140	LT 8
51	MILK	911004/911007	LT 15	LT 4	LT 4	1330+/-100	LT 5
51	MILK	911018/911021	LT 19	LT 4	LT 5	1380+/-130	LT 5
51	MILK	911108/911111	LT 29	LT 5	LT 6	1250+/-140	LT 6
51	MILK	911130/911202	LT 39.9	LT 3.6	LT 6.4	1300.0+/-140.0	LT 9.1
57	MILK	910419/910422	LT 22	LT 6	LT 6	1220+/-130	LT 8
57	MILK	910503/910506	LT 25	LT 4	LT 6	1440+/-130	LT 6
57	MILK	910517/910520	LT 27	LT 6	LT 8	1630+/-160	LT 7
57	MILK	910531/910603	LT 33	LT 5	LT 7	1570+/-160	LT 6
57	MILK	910614/910617	LT 30	LT 6	LT 7	1670+/-160	LT 10
57	MILK	910703/910708	LT 34	LT 8	LT 8	1720+/-190	LT 9
57	MILK	910719/910722	LT 45	LT 3	LT 3	1230+/-50	LT 9
57	MILK	910802/910805	LT 43	LT 1	LT 2	1890+/-30	LT 8
57	MILK	910816/910819	LT 24	LT 6	LT 8	1740+/-150	LT 5
57	MILK	910906/910909	LT 35	LT 5	LT 8	1530+/-150	LT 7
57	MILK	910920/910923	LT 38	LT 5	LT 6	1730+/-130	LT 10
57	MILK	911004/911007	LT 13	LT 3	LT 4	1480+/-80	LT 3
57	MILK	911018/911021	LT 20	LT 5	LT 7	1340+/-140	LT 6
57	MILK	911112/911115	LT 25	LT 5	LT 7	1310+/-140	LT 4
57	MILK	911130/911202	LT 39.6	LT 4.3	LT 5.9	1440.0+/-130.0	LT 8.5
61	MILK	910405/910408	LT 19	LT 5	LT 7	1760+/-170	LT 4
61	MILK	910419/910422	LT 20	LT 5	LT 6	1740+/-120	LT 5
61	MILK	910503/910506	LT 24	LT 5	LT 6	1590+/-140	LT 6
61	MILK	910517/910520	LT 26	LT 5	LT 7	1860+/-120	LT 4
61	MILK	910531/910603	LT 34	LT 5	LT 7	1820+/-170	LT 6
61	MILK	910614/910617	LT 30	LT 6	LT 6	1790+/-150	LT 9
61	MILK	910703/910708	LT 33	LT 6	LT 8	1530+/-170	LT 10
61	MILK	910719/910722	LT 45	LT 3	LT 5	1790+/-110	LT 9
61	MILK	910802/910805	LT 44	LT 3	LT 5	1820+/-100	LT 7
61	MILK	910816/910819	LT 30	LT 6	LT 7	1640+/-150	LT 8
61	MILK	910906/910909	LT 27.5	LT 3.8	LT 5.9	1840.0+/-120.0	LT 5.3
61	MILK	910920/910923	LT 32	LT 5	LT 5	1760+/-120	LT 8
61	MILK	911004/911007	LT 23	LT 5	LT 8	1580+/-160	LT 5

GAMMA SPEC REPORT OF MLKG
SAMPLE FREQUENCY IS : BI-MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140	CS-134	CS-137	K-40	LA-140
61	MILK	911018/911021	LT 26	LT 6	LT 7	1580+/-80	LT 6
61	MILK	911108/911111	LT 31	LT 7	LT 7	1490+/-160	LT 10
69	MILK	910104/910107	LT 26	LT 5	LT 5	1370+/-110	LT 7
69	MILK	910201/910204	LT 17	LT 5	LT 5	1410+/-110	LT 7
69	MILK	910301/910304	LT 25	LT 5	LT 6	1590+/-120	LT 6
69	MILK	910405/910408	LT 26	LT 4	LT 6	1600+/-90	LT 4
69	MILK	910419/910422	LT 30	LT 7	LT 8	1360+/-160	LT 10
69	MILK	910503/910506	LT 31	LT 4	LT 5	1320+/-100	LT 7
69	MILK	910517/910520	LT 34	LT 7	LT 7	1330+/-160	LT 9
69	MILK	910531/910603	LT 31	LT 5	LT 5	1340+/-80	LT 6
69	MILK	[illegible]514/910617	LT 31	LT 6	LT 6	1290+/-130	LT 10
69	MILK	9[illegible]/910722	LT 42	LT 4	LT 4	1410+/-90	LT 6
69	MILK	91[illegible]910805	LT 43.5	LT 3	LT 4	1270+/-90	LT 5
69	MILK	910[illegible]10819	LT 30	LT 8	LT 8	1290+/-180	LT 11
69	MILK	910[illegible]10923	LT 38.6	LT 4.6	LT 5.7	1330.0+/-120.0	LT 7.9
69	MILK	911[illegible]11307	LT 22	LT 5	LT 6	1350+/-140	LT 4
69	MILK	911018/911021	LT 21.5	LT 4.1	LT 4.3	1310.0+/-140.0	LT 5.4
69	MILK	911108/911111	LT 22.5	LT 3.9	LT 5.8	1200.0+/-130.0	LT 2.9
69	MILK	911130/911202	LT 40.0	LT 4.6	LT 5.0	1500.0+/-120.0	LT 7.3

GAMMA SPEC REPORT OF MLKI
SAMPLE FREQUENCY IS : BI-MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
29	MILK	910405/910408	LT .17
29	MILK	910419/910422	LT .22
29	MILK	910531/910603	LT .19
29	MILK	910614/910617	LT .25
29	MILK	910705/910708	LT .32
29	MILK	910719/910722	LT .25
29	MILK	910803/910805	LT .50
29	MILK	910816/910819	LT .22
29	MILK	910906/910909	LT .25
29	MILK	910920/910923	LT .27
29	MILK	911004/911007	LT .28
31	MILK	910503/910506	LT .21
31	MILK	910517/910520	LT .19
47	MILK	910405/910408	LT .20
47	MILK	910419/910422	LT .20
47	MILK	910503/910506	LT .32
47	MILK	910517/910520	LT .20
47	MILK	910531/910603	LT .22
47	MILK	910614/910617	LT .24
47	MILK	910705/910708	LT .25
47	MILK	910719/910722	LT .23
47	MILK	910803/910805	LT .36
47	MILK	910816/910819	LT .20
47	MILK	910906/910909	LT .30
47	MILK	910920/910923	LT .44
47	MILK	911004/911007	LT .45
51	MILK	910104/910107	LT .22
51	MILK	910201/910204	LT .30
51	MILK	910301/910304	LT .33
51	MILK	910405/910408	LT .17
51	MILK	910419/910422	LT .20
51	MILK	910503/910506	LT .27
51	MILK	910517/910520	LT .19
51	MILK	910531/910603	LT .23
51	MILK	910614/910617	LT .23
51	MILK	910705/910708	LT .33

GAMMA SPEC REPORT OF MLKI
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
51	MILK	910719/910722	LT .25
51	MILK	910803/910805	LT .32
51	MILK	910816/910819	LT .23
51	MILK	910906/910909	LT .23
51	MILK	910920/910923	LT .24
51	MILK	911004/911007	LT .43
51	MILK	[illegible].8/911021	LT .24
51	MILK	911108/911111	LT .38
51	MILK	911130/911202	LT .25
57	MILK	910419/910422	LT .22
57	MILK	910503/910506	LT .24
57	MILK	910517/910520	LT .28
57	MILK	910531/910603	LT .19
57	MILK	910614/910617	LT .24
57	MILK	910705/910708	LT .26
57	MILK	910719/910722	LT .22
57	MILK	910803/910805	LT .34
57	MILK	910816/910819	LT .21
57	MILK	910906/910909	LT .21
57	MILK	910920/910923	LT .25
57	MILK	911004/911007	LT .40
57	MILK	911018/911021	LT .35
57	MILK	911108/911111	LT .21
57	MILK	911130/911202	LT .32
61	MILK	910405/910408	LT .24
61	MILK	910419/910422	LT .20
61	MILK	910503/910506	LT .23
61	MILK	910517/910520	LT .28
61	MILK	910531/910603	LT .19
61	MILK	910614/910617	LT .21
61	MILK	910705/910708	LT .30
61	MILK	910719/910722	LT .22
61	MILK	910803/910805	LT .36
61	MILK	910816/910819	LT .21
61	MILK	910906/910909	LT .24
61	MILK	910920/910923	LT .27
61	MILK	911004/911007	LT .43

GAMMA SPEC REPORT OF MLKI
SAMPLE FREQUENCY IS : BI-MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	I-131
61	MILK	911018/911021	LT .46
61	MILK	911108/911111	LT .29
69	MILK	910104/910107	LT .24
69	MILK	910201/910204	LT .38
69	MILK	910301/910304	LT .42
69	MILK	910405/910408	L .24
69	MILK	910419/910422	LT [illegible]
69	MILK	910503/910506	LT .22
69	MILK	910517/910520	LT .25
69	MILK	910531/910603	LT .24
69	MILK	910614/910617	LT .24
69	MILK	910719/910722	LT .23
69	MILK	910803/910805	LT .32
69	MILK	910816/910819	LT .18
69	MILK	910906/910909	LT .24
69	MILK	910920/910923	LT .22
69	MILK	911004/911007	LT .24
69	MILK	911018/911021	LT .32
69	MILK	911105/911111	LT .30
69	MILK	911130/911202	LT .17

GAMMA SPEC REPORT OF STRG
SAMPLE FREQUENCY IS : BI-MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	SR-89	SR-90
29	MILK	910531/910603	LT .7	1.60+/-.50
29	MILK	910705/910708	LT .6	2.80+/-.60
29	MILK	911004/911007	LT 1.4	4.50+/-.70
31	MILK	910517/910520	LT .5	1.70+/-.40
47	MILK	910507/910510	LT .6	2.00+/-.50
47	MILK	910531/910603	LT .5	1.80+/-.40
47	MILK	910703/910708	LT .6	2.10+/-.40
47	MILK	911004/911007	LT 1.4	1.70+/-.30
51	MILK	910217/910220	LT .7	2.90+/-.70
51	MILK	910517/910520	LT .5	2.80+/-.50
51	MILK	910531/910603	LT .6	3.30+/-.60
51	MILK	910703/910708	LT .6	3.10+/-.50
51	MILK	911130/911202	LT .7	2.20+/-.50
57	MILK	910517/910520	LT .5	3.10+/-.50
57	MILK	910531/910603	LT .7	3.50+/-.70
57	MILK	910703/910705	LT .5	2.30+/-.50
57	MILK	911130/911202	LT .7	2.50+/-.50
61	MILK	910517/910520	LT .6	2.60+/-.60
61	MILK	910531/910603	LT .6	1.80+/-.40
61	MILK	910703/910708	LT .6	1.10+/-.40
61	MILK	911108/911111	LT 1.3	2.60+/-.70
69	MILK	910217/910220	LT .5	1.80+/-.30
69	MILK	910517/910520	LT .7	2.40+/-.60
69	MILK	910531/910603	LT .6	2.00+/-.40
69	MILK	911130/911202	LT .6	1.40+/-.40
71	MILK	910530/910603	LT .6	4.60+/-.70
71	MILK	910705/910708	LT .8	3.00+/-.80
71	MILK	911130/911202	LT .7	2.20+/-.60

GAMMA SPEC REPORT OF FP
SAMPLE FREQUENCY IS : ANNUAL
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CS-134 CO-58	CS-137 CO-60	I-131	K-40	BE-7
39	CABBAGE	910910/910910	LT 11.30 LT 11.00	LT 10.10 LT 12.50	LT 19.40	1680+/-222.0	LT 89.10
39	PEACHES	910910/910910	LT 12.40 LT 14.20	LT 11.20 LT 15.50	LT 22.90	2210+/-286.0	LT 101.00
62	CABBAGE	910910/910910	LT 11.70 LT 13.20	LT 13.40 LT 13.70	LT 19.20	1550+/-241.0	LT 97.70
62	ZUCCHINI	910910/910910	LT 14.70 LT 16.10	LT 15.40 LT 15.90	LT 27.20	1530+/-272.0	LT 117.00
70	PEACHES	910910/910910	LT 11.80 LT 13.60	LT 13.50 LT 15.70	LT 18.40	1630+/-241.0	LT 90.10
70	ZUCCHINI	910910/910910	LT 4.50 LT 5.60	LT 5.40 LT 6.00	LT 7.60	1920+/-119.0	LT 37.90
70	BROCCOLI	910910/910910	LT 10.60 LT 13.40	LT 12.10 LT 14.80	LT 16.80	3280+/-291.0	LT 82.90

GAMMA SPEC REPORT OF FP
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CS-134 CO-58	CS-137 CO-60	I-131	K-40	BE-7
06	GRASS	910502/910502	LT 11.40 LT 12.10	LT 11.90 LT 11.80	LT 20.90	4190+/-266.0	4710+/-173.0
06	LEAVES	910529/910529	LT 15.40 LT 20.00	LT 17.90 LT 23.00	LT 39.20	4038+/-442.0	LT 238.00
06	GRASS	910529/910529	LT 18.50 LT 18.00	LT 19.80 LT 24.70	LT 39.70	4580+/-387.0	820+/-144.0
06	LEAVES	910626/910626	LT 16.40 LT 17.80	LT 17.30 LT 19.60	LT 26.50	7415+/-465.0	1143+/-190.0
06	GRASS	910626/910626	LT 8.70 LT 10.50	LT 10.50 LT 10.20	LT 22.80	7193+/-263.0	768+/-113.0
06	LEAVES	910731/910731	LT 15.80 LT 18.80	LT 16.00 LT 20.30	LT 32.30	6313+/-457.0	1077+/-190.0
06	GRASS	910731/910731	LT 15.20 LT 18.60	LT 15.30 LT 19.10	LT 23.50	5550+/-351.0	3060+/-1[illegible].0
06	LEAVES	910830/910830	LT 13.80 LT 17.40	LT 16.20 LT 18.70	LT 36.00	5726+/-451.0	1191+/-177.0
06	GRASS	910830/910830	LT 16.10 LT 19.00	LT 18.50 LT 20.90	LT 36.40	6060+/-475.0	2290+/-206.0
06	LEAVES	910930/910930	LT 18.70 LT 20.00	LT 21.10 LT 19.80	LT 35.20	6020+/-313.0	1840+/-148.0
06	GRASS	910930/910930	LT 24.10 LT 26.40	LT 24.70 LT 24.60	LT 33.90	4620+/-569.0	1520+/-230.0
07	GRASS	910501/910501	LT 11.80 LT 14.10	LT 14.10 LT 12.20	LT 26.10	4440+/-196.0	1500+/-95.0
07	LEAVES	910529/910529	LT 16.90 LT 20.10	LT 19.40 LT 17.60	LT 38.80	4344+/-412.0	422+/-154.0
07	GRASS	910529/910529	LT 12.60 LT 15.10	LT 17.60 LT 17.00	LT 26.90	5015+/-399.0	3129+/-226.0
07	LEAVES	910626/910626	LT 12.10 LT 16.70	LT 14.50 LT 18.30	LT 15.10	6870+/-365.0	737+/-85.0
07	GRASS	910626/910626	LT 7.70 LT 7.80	LT 8.30 LT 8.10	LT 14.40	7260+/-232.0	1450+/-693.0
07	LEAVES	910731/910731	LT 13.60 LT 14.30	LT 15.00 LT 16.50	LT 26.00	5713+/-390.0	1005+/-148.0
07	LEAVES	910830/910830	LT 14.40 LT 16.50	LT 15.20 LT 17.50	LT 30.50	6100+/-427.0	1104+/-171.0
07	GRASS	910830/910830	LT 18.40 LT 19.80	LT 19.10 LT 19.30	LT 35.60	4450+/-453.0	378+/-123.0

GAMMA SPEC REPORT OF FP
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CS-134 CO-58	CS-137 CO-60	I-131	K-40	BE-7
07	LEAVES	910930/910930	LT 9.60 LT 10.20	LT 10.50 LT 9.90	LT 11.80	2509+/-256.0	1224+/-103.0
07	GRASS	910930/910930	LT 12.50 LT 13.40	LT 12.70 LT 15.20	LT 14.60	3770+/-258.0	1270+/-100.0
07	GRASS	911029/911029	LT 12.50 LT 13.00	LT 12.80 LT 15.10	LT 14.80	4930+/-280.0	5300+/-175.0
35	GRASS	910501/910501	LT 13.10 LT 11.50	LT 12.70 LT 11.90	LT 26.80	5750+/-213.0	1905+/-92.0
35	LEAVES	910529/910529	LT 10.60 LT 13.00	LT 11.60 LT 13.80	LT 17.30	4970+/-353.0	245+/-90.0
35	GRASS	910529/910529	LT 20.60 LT 22.80	LT 23.20 LT 24.80	LT 38.90	4150+/-459.0	632+/-149.0
35	LEAVES	910626/910626	LT 18.20 LT 21.30	LT 21.20 LT 18.90	LT 33.90	6410+/-334.0	LT 177.00
35	GRASS	910626/910626	LT 13.70 LT 15.40	LT 15.20 LT 13.70	LT 28.90	6260+/-262.0	1510+/-100.0
35	LEAVES	910731/910731	LT 13.30 LT 15.10	LT 17.00 LT 17.90	LT 28.80	6073+/-400.0	478+/-136.0
35	GRASS	910731/910731	LT 12.20 LT 14.60	LT 12.90 LT 14.50	LT 18.70	7150+/-340.0	1400+/-100.0
35	LEAVES	910830/910830	LT 9.30 LT 12.10	LT 11.10 LT 12.90	LT 18.10	5749+/-322.0	1080+/-119.0
35	GRASS	910830/910830	LT 13.50 LT 13.70	LT 13.60 LT 13.00	LT 31.10	4090+/-210.0	2120+/-126.0
35	LEAVES	910930/910930	LT 9.80 LT 10.50	LT 11.50 LT 11.20	LT 14.40	4145+/-282.0	762+/-109.0
35	GRASS	910930/910930	LT 14.10 LT 15.00	LT 15.40 LT 17.80	LT 14.70	4190+/-304.0	712+/-92
44	GRASS	910501/910501	LT 7.80 LT 9.60	LT 9.20 LT 9.40	LT 20.80	5737+/-235.0	2431+/-136.0
44	LEAVES	910529/910529	LT 14.60 LT 17.40	LT 16.80 LT 14.40	LT 29.70	3370+/-207.0	LT 132.00
44	GRASS	910529/910529	LT 11.80 LT 14.30	LT 14.20 LT 13.80	LT 31.10	5473+/-322.0	830+/-174.0
44	LEAVES	910626/910626	LT 7.60 LT 10.00	LT 9.30 LT 10.60	LT 29.20	4239+/-252.0	311+/-90.0

GAMMA SPEC REPORT OF FP
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CS-134 CO-58	CS-137 CO-60	I-131	K-40	BE-7
44	GRASS	910626/910626	LT 8.70 LT 10.60	LT 10.60 LT 10.00	LT 26.60	6728+/-263.0	1214+/-121.0
44	LEAVES	910731/910731	LT 11.70 LT 8.70	LT 8.60 LT 8.90	LT 29.70	3900+/-207.0	439+/-78.0
44	GRASS	910731/910731	LT 9.10 LT 9.90	LT 9.00 LT 10.20	LT 34.20	7170+/-295.0	2410+/-104.0
44	LEAVES	910830/910830	LT 13.40 LT 16.00	LT 14.90 LT 17.10	LT 30.60	2680+/-265.0	410+/-88.0
44	GRASS	910830/910830	LT 10.60 LT 10.30	25+/-11.6 LT 12.40	LT 29.70	5674+/-321.0	7481+/-262.0
44	LEAVES	910930/910930	LT 26.1 LT 29.	LT 27.50 LT 31.50	LT 34.30	5385+/-452.0	1485+/-181.0
44	GRASS	910930/910930	LT 10.40 LT 11.30	LT 12.30 LT 12.70	LT 19.30	7138+/-290.0	1263+/-149.0
44	GRASS	911029/911029	LT 16.60 LT 17.50	LT 18.10 LT 16.20	LT 31.00	4090+/-245.0	3260+/-154.0
48	GRASS	910501/910501	LT 8.00 LT 9.10	24.6+/-7.5 LT 9.50	LT 18.40	5228+/-247.0	4088+/-159.0
48	LEAVES	910529/910529	LT 18.30 LT 20.30	LT 19.30 LT 22.60	LT 32.90	5025+/-332.0	397+/-111.0
48	GRASS	910529/910529	LT 14.00 LT 18.10	LT 15.50 LT 19.60	LT 26.60	5430+/-333.0	815+/-108.0
48	GRASS	910626/910626	LT 10.50 LT 12.60	LT 11.20 LT 14.10	LT 13.00	6480+/-224.0	1790+/-75.0
48	LEAVES	910731/910731	LT 12.30 LT 16.00	LT 13.90 LT 17.60	LT 17.20	5000+/-310.0	531+/-78.0
48	LEAVES	910830/910830	LT 14.10 LT 16.20	LT 15.80 LT 14.40	LT 40.30	10100+/-336.0	1260+/-95.0
48	GRASS	910830/910830	LT 9.70 LT 11.30	31.9+/-9.9 LT 10.90	LT 30.70	6792+/-272.0	5709+/-201.0

GAMMA SPEC REPORT OF SOIL
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN PCI/KG(DRY) +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CS-134 CO-60	CS-137	K-40	RA-226	CO-58
01	SOIL	910605/910605	LT 20 LT 31	704+/-43	9808+/-518	684+/-56	LT 21
01	SOIL	910822/910822	LT 16 LT 17	597+/-21	91[illegible]0+/-339	578+/-36	LT 14
01	SOIL	911122/911122	LT 31 LT 31	403+/-25	68[illegible]0+/-407	523+/-39	LT 31
02	SOIL	910221/910221	LT 15 LT 22	308+/-25	7574+/-394	402+/-51	LT 15
02	SOIL	910523/910523	LT 40 LT 38	235+/-28	7565+/-330	260+/-36	LT 35
02	SOIL	910822/910822	LT 15 LT 15	249+/-13	8370+/-307	513+/-43	LT 13
02	SOIL	911122/911122	LT 27 LT 36	293+/-40	9271+/-667	580+/-79	LT 30
04	SOIL	910221/910221	LT 18 LT 19	95+/-10	11900+/-417	656+/-41	LT 14
04	SOIL	910523/910523	LT 37 LT 39	LT 31	11100+/-510	729+/-80	LT 33
04	SOIL	910822/910822	LT 19 LT 20	103+/-10	12000+/-425	800+/-60	LT 18
04	SOIL	911122/911122	LT 36 LT 35	116+/-18	11500+/-570	689+/-58	LT 33
06	SOIL	910221/910221	LT 14 LT 21	491+/-25	13785+/-357	1229+/-44	LT 15
06	SOIL	910523/910523	LT 23 LT 31	542+/-34	16370+/-553	1574+/-690	LT 24
06	SOIL	910822/910822	LT 21 LT 31	418+/-30	11810+/-589	1255+/-60	LT 28
06	SOIL	911122/911122	LT 39 LT 40	357[illegible]/-30	[illegible]2300+/-572	1130+/-51	LT 36
12	SOIL	910221/910221	LT 14 LT 20	854+/-30	9332+/-380	583+/-49	LT 14

GAMMA SPEC REPORT OF SOIL
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN PCI/KG(DRY) +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CS-134 CO-60	CS-137	K-40	RA-226	CO-58
12	SOIL	910523/910523	LT 38 LT 38	707+/-38	9460+/-470	447+/-52	LT 36
12	SOIL	910822/910822	LT 19 LT 25	435+/-30	13460+/-461	945+/-50	LT 20
12	SOIL	911122/911122	LT 44 LT 35	819+/-56	9820+/-680	663+/-70	LT 35
14	SOIL	910221/910221	LT 17 LT 24	51+/-18	8088+/-411	474+/-63	LT 21
14	SOIL	910523/910523	LT 30 LT 30	LT 29	6970+/-316	373+/-62	LT 28
14	SOIL	910822/910822	LT 22 LT 22	101+/-12	10400+/-414	790+/-50	LT 18
14	SOIL	911122/911122	LT 21 LT 30	44+/-24	6955+/-560	442+/-57	LT 29
18	SOIL	910221/910221	LT 22 LT 28	378+/-32	12460+/-561	917+/-83	LT 31
18	SOIL	910523/910523	LT 24 LT 31	405+/-29	21560+/-839	1573+/-130	LT 29
18	SOIL	910822/910822	LT 41 LT 37	230+/-25	15500+/-661	1000+/-64	LT 34
18	SOIL	911122/911122	LT 23 LT 37	250+/-31	17260+/-692	1067+/-61	LT 33
20	SOIL	910221/910221	LT 22 LT 25	142+/-15	11900+/-433	1090+/-86	LT 21
20	SOIL	910523/910523	LT 24 LT 34	258+/-37	13270+/-628	984+/-73	LT 27
20	SOIL	910822/910822	LT 35 LT 39	142+/-22	8970+/-528	692+/-46	LT 32
20	SOIL	911122/911122	LT 33 LT 33	276+/-25	12910+/-484	915+/-52	LT 29

STRONTIUM REPORT
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	SR-89	SR-90
01	SOIL	910605/910605	LT 16.1	135.30+/-16.60
02	SOIL	910221/910221	LT 7.2	LT 5.9
02	SOIL	910523/910523	LT 19.9	26.60+/-7.20
04	SOIL	910221/910221	LT 6.4	10.50+/-4.00
04	SOIL	910523/910523	LT 22.3	14.20+/-8.50
06	SOIL	910221/910221	LT 9.7	64.00+/-7.70
06	SOIL	910523/910523	LT 27.4	90.30+/-20.40
12	SOIL	910221/910221	LT 12.1	63.40+/-11.80
12	SOIL	910523/910523	LT 16.5	33.70+/-8.90
14	SOIL	910221/910221	LT 8.7	70.70+/-10.70
14	SOIL	910523/910523	LT 30.0	LT 16.7
18	SOIL	910221/910221	LT 12.1	26.00+/-8.70
18	SOIL	910523/910523	LT 37.6	54.90+/-19.60
20	SOIL	910221/910221	LT 12.0	12.80+/-7.00
20	SOIL	910523/910523	LT 21.6	21.50+/-9.90

GAMMA SPEC REPORT OF FP
SAMPLE FREQUENCY IS : ANNUAL
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CS-134 CO-58	CS-137 CO-60	I-131	K-40	BE-7
29	FEED	910909/910909	LT 11.40 LT 13.00	LT 12.10 LT 12.50	LT 37.90	9870+/-322.0	LT 103.00
47	FEED	910909/910909	LT 8.70 LT 10.80	LT 11.50 LT 9.60	LT 35.70	6761+/-309.0	217+/-93.0
51	FEED	910909/910909	LT 9.70 LT 11.90	LT 9.80 LT 13.20	LT 27.20	5560+/-240.0	LT 84.40
57	FEED	910909/910909	LT 6.40 LT 8.60	17.3+/-8.1 LT 7.70	LT 28.50	8051.0+/-209.0	LT 70.90
61	FEED	910909/910909	LT 8.00 LT 10.10	34.2+/-6.4 LT 11.60	LT 20.60	7530.0+/-300.0	LT 69.80
71	FEED	910909/910909	LT 7.70 LT 9.20	24.0+/-9.6 LT 8.20	LT 39.10	5916.0+/-214.0	1154.0+/-122.0

G-BETA WATER REPORT
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

COLLECTION PERIOD	STATION LOCATIONS					
	28	34	36	59	60	68
JAN 901228 TO 910131		02.40+/-.40	02.30+/-.40	02.80+/-.30	03.00+/-.40	02.90+/-.30
FEB 910131 TO 910228	03.10+/-.60	02.70+/-.40	02.70+/-.60			02.00+/-.60
MAR 910228 TO 910327	02.30+/-.70	02.50+/-.50	02.50+/-.70	02.20+/-.70	02.80+/-.80	02.30+/-.70
APR 910327 TO 910426	02.40+/-.70	02.70+/-.70	02.00+/-.70	02.20+/-.50	02.20+/-.70	02.10+/-.70
MAY 910426 TO 910530	02.80+/-.30	02.00+/-.30	02.40+/-.70	02.40+/-.70	02.00+/-.70	02.20+/-.70
JUN 910530 TO 910628	02.70+/-.60	02.20+/-.60	02.10+/-.60	02.30+/-.60	02.70+/-.60	01.70+/-.50
JUL 910628 TO 910725	02.10+/-.50	02.70+/-.60	02.80+/-.60	03.40+/-.60	02.70+/-.60	02.50+/-.40
AUG 910725 TO 910829	02.60+/-.70	01.90+/-.70	01.40+/-.40	01.70+/-.60	02.50+/-.60	
SEP 910829 TO 910927	02.70+/-.60	02.70+/-.60	02.80+/-.60	03.30+/-.60	03.70+/-.60	
OCT 910927 TO 911031	02.60+/-.70	02.50+/-.70	01.60+/-.70	01.60+/-.50	01.80+/-.70	
NOV 911031 TO 911129	02.90+/-.60		02.50+/-.60	02.70+/-.60	02.60+/-.60	
DEC 911129 TO 911230	04.60+/-.70	02.60+/-.60	02.50+/-.60	02.60+/-.60	02.60+/-.60	

GAMMA SPEC REPORT OF WTRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
28	WATER	910204/910228	LT 32.70 LT 12.90 LT 7.70	LT 4.90 LT 6.10	LT 3.70 LT 5.00	LT 3.30 LT 6.60	LT 5.20 LT 8.00
28	WATER	910228/910327	LT 28.20 LT 10.30 LT 8.70	LT 5.40 LT 9.80	LT 5.60 LT 5.10	LT 4.60 LT 5.00	LT 5.00 LT 10.60
28	WATER	910327/910426	LT 23.20 LT 9.90 LT 8.30	LT 4.20 LT 3.50	LT 4.10 LT 3.80	LT 4.00 LT 4.80	LT 4.70 LT 6.90
28	WATER	910426/910530	LT 20.60 LT 9.80 LT 6.40	LT 3.70 LT 6.00	LT 3.80 LT 2.60	LT 2.70 LT 4.50	LT 4.10 LT 8.90
28	WATER	910530/910628	LT 31.70 LT 6.50 LT 6.10	LT 3.20 LT 7.20	LT 2.60 LT 2.90	LT 2.70 LT 4.00	LT 2.90 LT 5.70
28	WATER	910628/910725	LT 27.90 LT 10.00 LT 8.20	LT 4.10 LT 8.70	LT 3.70 LT 4.30	LT 4.10 LT 4.80	LT 4.10 LT 10.10
28	WATER	910725/910829	LT 34.90 LT 9.40 LT 10.40	LT 5.40 LT 6.10	LT 4.30 LT 4.70	LT 3.50 LT 6.40	LT 4.70 LT 9.80
28	WATER	910829/910927	LT 32.10 LT 9.70 LT 9.40	LT 3.80 LT 6.80	LT 3.20 LT 4.00	LT 3.80 LT 5.60	LT 3.80 LT 7.60
28	WATER	910927/911031	LT 38.20 LT 10.10 LT 7.30	LT 3.90 LT 10.30	LT 3.40 LT 3.50	LT 3.30 LT 5.10	LT 3.80 LT 8.20
28	WATER	911031/911129	LT 43.40 LT 9.70 LT 9.60	LT 4.40 LT 8.30	LT 3.20 LT 3.70	LT 3.80 LT 5.50	LT 4.30 LT 9.00
28	WATER	911129/911230	LT 28.90 LT 9.60 LT 7.30	LT 3.80 LT 6.60	LT 4.00 LT 4.30	LT 3.80 LT 6.00	LT 3.90 LT 8.70
34	WATER	901228/910131	LT 25.40 LT 7.80 LT 7.60	LT 3.80 LT 4.70	LT 2.80 LT 3.60	LT 3.40 LT 4.30	LT 3.80 LT 6.60

GAMMA SPEC REPORT OF WTRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
34	WATER	910131/910228	LT 19.50 LT 5.80 LT 4.60	LT 2.80 LT 4.90	LT 2.70 LT 2.40	LT 2.90 LT 3.00	LT 2.90 LT 5.20
34	WATER	910228/910327	LT 15.40 LT 7.40 LT 6.30	LT 3.30 LT 5.20	LT 3.40 LT 3.10	LT 2.60 LT 3.60	LT 3.10 LT 7.70
34	WATER	910327/910426	LT 19.90 LT 10.30 LT 8.20	LT 3.90 LT 3.70	LT 3.80 LT 4.10	LT 3.40 LT 5.10	LT 4.40 LT 7.90
34	WATER	910426/910530	LT 25.80 LT 8.50 LT 7.60	LT 4.20 LT 6.90	LT 4.00 LT 4.10	LT 4.60 LT 4.50	LT 4.10 LT 9.40
34	WATER	910530/910628	LT 33.20 LT 6.60 LT 5.90	LT 3.20 LT 7.30	LT 2.50 LT 2.80	LT 2.70 LT 4.00	LT 2.80 LT 5.70
34	WATER	910628/910725	LT 30.90 LT 6.80 LT 5.40	LT 2.80 LT 8.40	LT 2.50 LT 2.70	LT 2.40 LT 3.60	LT 2.60 LT 5.80
34	WATER	910725/910829	LT 38.80 LT 11.20 LT 8.50	LT 5.50 LT 7.40	LT 4.80 LT 4.90	LT 3.60 LT 6.10	LT 5.30 LT 9.50
34	WATER	910829/910927	LT 26.00 LT 9.00 LT 7.60	LT 4.00 LT 9.30	LT 4.00 LT 4.20	LT 4.30 LT 5.20	LT 4.40 LT 8.20
34	WATER	910927/911101	LT 30.50 LT 8.70 LT 6.60	LT 3.80 LT 9.80	LT 2.90 LT 3.10	LT 3.60 LT 4.30	LT 3.60 LT 8.00
34	WATER	911129/911230	LT 26.30 LT 10.00 LT 5.20	LT 3.10 LT 6.50	LT 3.10 LT 3.30	LT 3.30 LT 5.00	LT 3.70 LT 6.60
36	WATER	901228/910131	LT 21.20 LT 6.40 LT 5.80	LT 3.00 LT 4.00	LT 2.50 LT 3.00	LT 2.80 LT 3.50	LT 3.10 LT 6.00
36	WATER	910131/910228	LT 39.10 LT 10.50 LT 10.60	LT 5.60 LT 6.00	LT 4.40 LT 5.50	LT 4.70 LT 6.20	LT 5.60 LT 10.10

GAMMA SPEC REPORT OF WTRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
36	WATER	910228/910327	LT 23.10 LT 9.10 LT 7.90	LT 3.90 LT 4.40	LT 3.80 LT 3.40	LT 3.70 L. 5.20	LT 4.30 LT 8.00
36	WATER	910327/910426	LT 24.50 LT 8.20 LT 7.90	LT 3.90 LT 4.70	LT 3.60 LT 3.80	LT 3.10 LT 4.20	LT 3.80 LT 7.60
36	WATER	910426/910530	LT 20.00 LT 6.00 LT 5.50	LT 2.80 LT 5.60	LT 3.10 LT 2.80	LT 3.50 LT 3.20	LT 3.10 LT 5.60
36	WATER	910530/910628	LT 19.50 LT 6.20 LT 4.50	LT 2.40 LT 6.40	LT 2.30 LT 2.20	LT 1.80 LT 3.00	LT 1.90 LT 5.30
36	WATER	910628/910725	LT 28.80 LT 9.60 LT 8.10	LT 4.60 LT 6.70	LT 3.60 LT 4.30	LT 4.00 LT 5.40	LT 4.50 LT 9.90
36	WATER	910725/910829	LT 28.10 LT 9.50 LT 7.30	LT 4.30 LT 8.10	LT 4.40 LT 4.10	LT 4.00 LT 4.90	LT 4.40 LT 9.60
36	WATER	910829/910927	LT 27.80 LT 8.00 LT 6.90	LT 4.00 LT 6.20	LT 3.30 LT 3.60	LT 3.70 LT 4.30	LT 3.90 LT 7.60
36	WATER	910927/911101	LT 36.50 LT 15.90 LT 7.80	LT 5.60 LT 9.70	LT 5.30 LT 4.30	LT 4.00 LT 6.00	LT 4.20 LT 8.70
36	WATER	911101/911129	LT 29.30 LT 10.60 LT 8.70	LT 5.10 LT 7.00	LT 3.50 LT 5.10	LT 5.10 LT 5.80	LT 4.70 LT 10.00
36	WATER	911129/911230	LT 26.80 LT 11.80 LT 7.60	LT 5.20 LT 5.40	LT 3.40 LT 4.40	LT 4.30 LT 5.60	LT 4.40 LT 9.20
59	WATER	910104/910131	LT 13.60 LT 5.50 LT 4.30	LT 2.50 LT 5.60	LT 2.70 LT 2.30	LT 2.00 LT 2.60	LT 2.20 LT 5.50
59	WATER	910314/910327	LT 16.80 LT 7.10 LT 5.10	LT 2.90 LT 6.80	LT 3.30 LT 2.80	LT 2.40 LT 3.10	LT 2.70 LT 6.80

GAMMA SPEC REPORT OF WTRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
59	WATER	910404/910426	LT 27.70 LT 9.30 LT 7.60	LT 4.20 LT 9.30	LT 4.60 LT 4.30	LT 4.90 LT 4.80	LT 4.90 LT 9.90
59	WATER	910503/910530	LT 22.90 LT 7.60 LT 5.70	LT 3.40 LT 7.30	LT 3.50 LT 3.10	LT 4.30 LT 4.10	LT 3.60 LT 6.80
59	WATER	910606/910627	LT 21.30 LT 4.50 LT 3.50	LT 1.90 LT 4.40	LT 1.50 LT 1.60	LT 1.40 LT 2.50	LT 1.70 LT 3.10
59	WATER	910705/910725	LT 31.80 LT 9.90 LT 7.90	LT 4.30 LT 8.10	LT 4.40 LT 4.00	LT 4.30 LT 5.10	LT 9.90 LT 9.10
59	WATER	910802/910829	LT 20.20 LT 8.50 LT 6.30	LT 4.40 LT 8.80	LT 4.00 LT 3.70	LT 3.50 LT 4.50	LT 3.80 LT 8.60
59	WATER	[illegible]0905/910927	LT 34.00 LT 11.10 LT 8.30	LT 4.90 LT 7.30	LT 3.60 LT 4.10	LT 4.40 LT 6.60	LT 4.70 LT 10.20
59	WATER	911003/911031	LT 41.20 LT 12.40 LT 8.60	LT 3.80 LT 9.00	LT 4.20 LT 4.10	LT 3.50 LT 5.30	LT 3.80 LT 8.10
59	WATER	911107/911129	LT 20.20 LT 8.40 LT 7.20	LT 4.40 LT 4.80	LT 4.40 LT 4.50	LT 4.10 LT 4.60	LT 4.20 LT 8.20
59	W[illegible]ER	911206/911230	LT 27.40 LT 9.30 LT 9.10	LT 4.10 LT 8.40	LT 3.60 LT 4.20	LT 4.70 LT 5.40	LT 4.50 LT 10.70
60	WATER	910104/910131	LT 15.60 LT 6.20 LT 5.10	LT 2.90 LT 5.90	LT 3.40 LT 2.50	LT 2.50 LT 3.00	LT 2.50 LT 6.30
60	WATER	910314/910327	LT 25.00 LT 9.40 LT 8.40	LT 4.70 LT 9.20	LT 5.00 LT 4.40	LT 4.70 LT 4.90	LT 5.10 LT 11.70
60	WATER	910404/910426	LT 23.20 LT 8.20 LT 7.50	LT 4.00 LT 6.30	LT 4.10 LT 3.70	LT 4.40 LT 4.30	LT 4.20 LT 9.60

GAMMA SPEC REPORT OF WTRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
60	WATER	910503/910530	LT 23.80 LT 7.80 LT 6.60	LT 3.50 LT 4.80	LT 3.20 LT 3.40	LT 3.00 LT 4.70	LT 3.80 LT 7.60
60	WATER	910606/910627	LT 18.20 LT 3.70 LT 3.00	LT 1.60 LT 4.80	LT 1.30 LT 1.40	LT 1.40 LT 2.00	LT 1.40 LT 3.20
60	WATER	910705/910725	LT 24.70 LT 8.80 LT 6.70	LT 4.00 LT 6.80	LT 3.20 LT 3.90	LT 3.70 LT 4.10	LT 4.30 LT 8.40
60	WATER	910802/910829	LT 30.10 LT 10.40 LT 9.20	LT 4.50 LT 6.50	LT 3.80 LT 4.50	LT 3.80 LT 5.30	LT 4.70 LT 8.80
60	WATER	910905/910927	LT 23.90 LT 13.00 LT 7.70	LT 4.10 LT 8.80	LT 4.50 LT 4.20	LT 3.30 LT 5.20	LT 3.60 LT 7.70
60	WATER	911003/911031	LT 41.70 LT 13.00 LT 7.80	LT 5.20 LT 6.60	LT 4.50 LT 4.70	LT 3.70 LT 6.10	LT 4.90 LT 8.10
60	WATER	911107/911129	LT 34.20 LT 10.50 LT 7.70	LT 4.90 LT 10.40	LT 3.60 LT 4.00	LT 4.00 LT 5.00	LT 4.00 LT 3.70
60	WATER	911206/911230	LT 26.50 LT 10.10 LT 7.60	LT 4.50 LT 5.40	LT 3.40 LT 4.00	LT 3.30 LT 4.30	LT 4.00 LT 8.70
68	WATER	910131/910131	LT 20.20 LT 8.20 LT 6.50	LT 3.60 LT 8.60	LT 3.80 LT 4.00	LT 3.20 LT 3.70	LT 3.40 LT 8.40
68	WATER	910228/910228	LT 28.40 LT 12.40 LT 10.10	LT 4.80 LT 7.50	LT 4.40 LT 4.10	LT 4.10 LT 5.50	LT 4.40 LT 7.20
68	WATER	910327/910327	LT 26.70 LT 13.50 LT 9.00	LT 5.20 LT 9.30	LT 4.70 LT 5.00	LT 4.30 LT 5.60	LT 4.80 LT 9.10
68	WATER	910426/910426	LT 24.70 LT 7.60 LT 7.00	LT 3.40 LT 7.30	LT 4.30 LT 3.00	LT 4.10 LT 4.20	LT 3.90 LT 9.30

GAMMA SPEC REPORT OF WTRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	BA-140 FE-59 ZR-95	CO-58 LA-140	CO-60 MN-54	CS-134 NB-95	CS-137 ZN-65
68	WATER	910530/910530	LT 19.90 LT 6.90 LT 6.40	LT 3.60 LT 3.90	LT 3.20 LT 3.40	LT 3.10 LT 3.80	LT 3.10 LT 6.20
68	WATER	910628/910628	LT 24.70 LT 4.60 LT 3.70	LT 2.10 LT 6.90	LT 1.90 LT 1.90	LT 1.70 LT 2.70	LT 1.80 LT 4.20
68	WATER	910725/910725	LT 23.70 LT 7.40 LT 7.00	LT 4.10 LT 5.30	LT 3.80 LT 3.80	LT 3.50 LT 4.20	LT 3.60 LT 9.00

TRITIUM REPORT
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN PCI/KG +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	H3
28	WATER	910204/910327	190.00+/-101.00
28	WATER	910327/910628	227.00+/-96.00
28	WATER	910628/910927	142.00+/-87.00
28	WATER	910927/911230	145.00+/-101.00
34	WATER	901228/910327	151.00+/-100.00
34	WATER	910327/910628	263.00+/-97.00
34	WATER	910628/910927	197.00+/-63.00
34	WATER	910927/911230	170.00+/-102.00
36	WATER	901228/910327	244.00+/-73.00
36	WATER	910327/910628	209.00+/-95.00
36	WATER	910628/910927	233.00+/-91.00
36	WATER	910927/911230	154.00+/-101.00
59	WATER	910104/910327	245.00+/-106.00
59	WATER	910404/910627	112.00+/-91.00
59	WATER	910705/910927	147.00+/-88.00
59	WATER	911003/911230	163.00+/-101.00
60	WATER	910104/910327	219.00+/-102.00
60	WATER	910404/910627	139.00+/-95.00
60	WATER	910705/910927	130.00+/-87.00
60	WATER	911003/911230	99.00+/-70.00
68	WATER	910131/910327	256.00+/-104.00
68	WATER	910426/910628	124.00+/-95.00

GAMMA SPEC REPORT OF STRG
SAMPLE FREQUENCY IS : MONTHLY
RESULTS IN PCI/L +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	SR-89	SR-90
28	WATER	910704/910228	LT .7	LT .6
28	WATER	910426/910530	LT .5	LT .4
28	WATER	910725/910829	LT .9	.90+/-.40
28	WATER	911031/911129	LT 1.0	.70+/-.40
34	WATER	910131/910228	LT .5	LT .4
34	WATER	910426/910530	LT .9	LT .8
34	WATER	910725/910829	LT .8	.60+/-.30
34	WATER	910927/911101	LT 1.3	LT .6
36	WATER	910131/910228	LT .5	LT .4
36	WATER	910426/910530	LT .7	LT .6
36	WATER	910725/910829	LT .9	LT .5
36	WATER	910927/911101	LT .8	LT .6
59	WATER	910503/910530	LT .6	LT .6
59	WATER	910802/910829	LT 1.2	LT .5
59	WATER	911107/911129	LT .6	.50+/-.20
60	WATER	910503/910530	LT .7	LT .6
60	WATER	910802/910829	LT .9	LT .6
60	WATER	911107/911129	LT .6	.40+/-.20
68	WATER	910228/910228	LT .9	LT .9
68	WATER	910530/910530	LT .5	LT .4

GAMMA SPEC REPORT OF FSH
SAMPLE FREQUENCY IS : SEM-ANNUAL
RESULTS IN PCI/KG(WET) +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CO-58 K-40	CO-60 MN-54	CS-134 ZN-65	CS-137	FE-59
32	FRESHWATER DRUM	910517/910517	LT 44	LT 44	LT 38	LT 43	LT 100
			1890+/-520	LT 42	LT 98		
32	WALLEYE	910517/910517	LT 22	LT 24	LT 17	LT 29	LT 61
			2809+/-495	LT 20	LT 50		
32	WHITE SUCKER	911002/911002	LT 42	LT 29	LT 21	LT 23	LT 151
			2614+/-475	LT 33	LT 58		
32	CARP	911002/911002	LT 20	LT 14	LT 11	LT 12	LT 61
			1867+/-266	LT 12	LT 40		
32	CATFISH	911002/911002	LT 19	LT 13	LT 13	LT 17	LT 76
			1997+/-311	LT 13	LT 40		
32	WHITE PERCH	911002/911002	LT 43	LT 24	LT 19	LT 20	LT 136
			1910+/-282	LT 23	LT 64		
32	FRESHWATER DRUM	911002/911002	LT 37	LT 20	LT 16	LT 22	LT 124
			2250+/-335	LT 18	LT 64		
32	SMALLMOUTH BASS	911002/911002	LT 45	LT 24	LT 21	LT 24	LT 160
			2605+/-482	LT 27	LT 59		
32	WALLEYE	911002/911002	LT 34	LT 17	LT 17	LT 17	LT 106
			2815+/-[illegible]	LT 19	LT 51		
32	QUILLBACK	911002/911002	LT 47	LT 24	LT 22	LT 24	LT 169
			2000+/-438	LT 29	LT 62		
32	RAINBOW TROUT	911002/911002	LT 34.0	LT 17.0	LT 14.0	LT 18.0	LT 113.0
			1825.0+/-312.0	LT 18.0	LT 46.0		

GAMMA SPEC REPORT OF FSH
SAMPLE FREQUENCY IS : SEM-ANNUAL
RESULTS IN PCI/KG(WET) +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CO-58 K-40	CO-60 MN-54	CS-134 ZN-65	CS-137	FE-59
25	SMALLMOUTH BASS	910517/910517	LT 21	LT 25	LT 19	LT 21	LT 48
			2542+/-403	LT 23	LT 51		
25	FRESHWATER DRUM	910517/910517	LT 20	LT 20	LT 15	LT 19	LT 80
			1980+/-416	LT 16	LT 47		
25	WHITE SUCKER	910517/910517	LT 32	LT 29	LT 26	LT 27	LT 68
			1950+/-302	LT 29	LT 64		
25	WHITE BASS	910517/910517	LT 25	LT 19	LT 19	LT 24	LT 59
			1481+/-375	LT 25	LT 44		
25	WHITE PERCH	910517/910517	LT 21	LT 26	LT 19	LT 29	LT 70
			2497+/-441	LT 26	LT 45		
25	ROCK BASS	910517/910517	LT 33	LT 34	LT 24	LT 31	LT 86
			2220+/-555	LT 25	LT 55		
25	RED HORSE	910517/910517	LT 36	LT 29	LT 28	LT 34	LT 71
			2660+/-355	LT 33	LT 65		
25	WALLEYE	910517/910517	LT 21	LT 20	LT 18	LT 18	LT 62
			2850+/-282	LT 23	LT 62		
25	YELLOW PERCH	910517/910517	LT 24	LT 22	LT 17	LT 22	LT 73
			3050+/-452	LT 25	LT 44		
25	RAINBOW TROUT	911002/911002	LT 21	LT 13	LT 11	LT 15	LT 49
			2348+/-238	LT 15	LT 36		
25	RED HORSE	911002/911002	LT 33	LT 20	LT 17	LT 18	LT 119
			2260+/-298	LT 23	LT 52		
25	CARP	911002/911002	LT 20	LT 12	LT 11	LT 12	LT 60
			1960+/-209	LT 13	LT 31		
25	WHITE SUCKER	911002/911002	LT 43	LT 22	LT 21	21	LT 136
			1820+/-273	LT 25	LT 57		
25	WHITE PERCH	911002/911002	LT 39	LT 18	LT 21	19	LT 126
			1650+/-283	LT 21	LT 55		
25	WALLEYE	911002/911002	LT 23	LT 14	LT 12	25.1+/-9.2	LT 71
			2742+/-192	LT 15	LT 35		
25	SMALLMOUTH BASS	911002/911002	LT 36	LT 22	LT 18	LT 18	LT 124
			1850+/-263	LT 22	LT 55		
32	WHITE BASS	910517/910517	LT 30	LT 37	LT 24	LT 29	LT 78
			1230+/-373	LT 29	LT 75		
32	WHITE PERCH	910517/910517	LT 31	LT 26	LT 27	LT 27	LT 87
			2044+/-494	LT 29	LT 68		
32	YELLOW PERCH	910517/910517	LT 27	LT 22	LT 17	LT 25	LT 48
			2914+/-437	LT 20	LT 58		

GAMMA SPEC REPORT OF SED
SAMPLE FREQUENCY IS : SEM-ANNUAL
RESULTS IN PCI/KG(DRY) +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	CS-134	CS-137	K-40	CO-58	CO-60
25	SEDIMENT	910516/910516	LT 22	199+/-26	11450+/-552	LT 26	LT 35
25	SEDIMENT	911001/911001	LT 14	331.2+/-20.7	13770+/-314	LT 15	LT 17
26	SEDIMENT	910516/910516	LT 25	197+/-32	13680+/-612	LT 28	LT 39
26	SEDIMENT	911001/911001	LT 35	350+/-20.7	14850+/-426	LT 29	LT 32
27	SEDIMENT	910516/910516	LT [illegible]	LT 23	10460+/-578	LT 23	LT 32
27	SEDIMENT	911001/911001	LT [illegible]	59.1+/-12.4	11760+/-348	LT 16	LT 21
32	SEDIMENT	910516/910516	LT 24.2	LT 34.3	12890.0+/-637.0	LT 28.2	LT 33.7
32	SEDIMENT	911001/911001	LT 10	43.5+/-9.8	4656+/-205	LT 13	LT 14
63	SEDIMENT	910516/910516	LT 19	LT 21	8453+/-361	LT 26	LT 29
63	SEDIMENT	911001/911001	LT 25	LT 21	8240+/-401	LT 25	LT 25
64	SEDIMENT	910516/910516	LT 18.1	LT 21.3	5702.0+/-444.0	LT 21.1	LT 26.9
64	SEDIMENT	911001/911001	LT 11	LT 12	10310+/-291	LT 13	LT 15
65	SEDIMENT	910516/910516	LT 25	LT 24	5910+/-279	LT 27	LT 25
65	SEDIMENT	911001/911001	LT 10	LT 9	6500+/-238	LT 11	LT 12

DIRECT REPORT
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN MR/QTR +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	DIRECT
01	TLD	910404/910709	15.20+/-.50
01	TLD	910709/911008	14.50+/-.70
02	TLD	910103/910404	16.20+/-1.00
02	TLD	910404/910709	13.50+/-.70
02	TLD	910709/911008	11.70+/-.10
02	TLD	911008/920110	14.00+/-.40
03	TLD	910103/910404	17.70+/-.30
03	TLD	910404/910709	15.20+/-.70
03	TLD	910709/911008	13.60+/-.50
03	TLD	911008/920110	17.00+/-1.10
04	TLD	910103/910404	18.90+/-.50
04	TLD	910404/910709	14.60+/-.70
04	TLD	910709/911008	14.80+/-.50
04	TLD	911008/920110	17.00+/-.40
05	TLD	910103/910404	17.90+/-.60
05	TLD	910404/910709	14.80+/-.70
05	TLD	910709/911008	14.90+/-1.20
05	TLD	911008/920110	16.70+/-1.40
06	TLD	910103/910404	17.70+/-.60
06	TLD	910404/910709	12.70+/-.30
06	TLD	910709/911008	13.30+/-.40
06	TLD	911008/920110	13.80+/-.90
07	TLD	910103/910404	19.50+/-1.30
07	TLD	910404/910709	14.90+/-.80
07	TLD	910709/911008	15.60+/-.30
07	TLD	911008/920110	17.40+/-.90

DIRECT REPORT
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN MR/QTR +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	DIRECT
08	TLD	910103/910404	16.70+/-1.00
08	TLD	910404/910709	12.30+/-.30
08	TLD	910709/911008	12.80+/-.30
08	TLD	911008/920110	14.20+/-.30
09	TLD	910103/910404	16.20+/-.30
09	TLD	910404/910709	12.50+/-.30
09	TLD	910709/911008	14.80+/-.70
09	TLD	911008/920110	15.50+/-.50
10	TLD	910103/910404	20.50+/-.40
10	TLD	910404/910709	17.50+/-1.20
10	TLD	910709/911008	17.60+/-.50
10	TLD	911008/920110	20.80+/-1.00
11	TLD	910103/910404	17.10+/-.80
11	TLD	910709/911008	15.00+/-.90
11	TLD	911008/920110	16.10+/-.60
12	TLD	910103/910404	16.40+/-.40
12	TLD	910404/910709	14.20+/-.80
12	TLD	910709/911008	13.90+/-.90
12	TLD	911008/920110	16.80+/-1.30
13	TLD	910103/910404	16.50+/-1.10
13	TLD	910404/910709	13.80+/-.70
13	TLD	910709/911008	12.70+/-.60
13	TLD	911008/920110	17.70+/-.50
14	TLD	910103/910404	16.50+/-.30
14	TLD	910404/910709	14.10+/-.60
14	TLD	910709/911008	13.60+/-1.30
14	TLD	911008/920110	16.70+/-.90

DIRECT REPORT
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN MR/QTR +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	DIRECT
15	TLD	910103/910404	19.30+/-.40
15	TLD	910404/910709	14.80+/-.40
15	TLD	910709/911008	16.60+/-.40
15	TLD	911008/920110	16.60+/-.60
16	TLD	910103/910404	21.10+/-1.00
16	TLD	910404/910709	19.60+/-.90
16	TLD	910709/911008	18.30+/-.40
16	TLD	911008/920110	21.20+/-1.00
17	TLD	910103/910404	20.40+/-1.10
17	TLD	910404/910709	17.10+/-.60
17	TLD	910709/911008	18.40+/-1.10
17	TLD	911008/920110	20.00+/-.80
18	TLD	910103/910404	26.00+/-.40
18	TLD	910404/910709	23.40+/-1.90
18	TLD	910709/911008	24.10+/-.50
18	TLD	911008/920110	24.90+/-1.10
19	TLD	910103/910404	18.90+/-.20
19	TLD	910404/910709	16.60+/-1.20
19	TLD	910709/911008	16.10+/-.50
19	TLD	911008/920110	18.10+/-.90
20	TLD	910103/910404	19.60+/-.90
20	TLD	910404/910709	18.50+/-1.50
20	TLD	910709/911008	15.90+/-.40
20	TLD	911008/920110	17.20+/-1.10
21	TLD	910103/910404	21.00+/-.10
21	TLD	910404/910709	16.80+/-.30
21	TLD	910709/911008	18.80+/-.80

DIRECT REPORT
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN MR/QTR +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	DIRECT
21	TLD	911008/920110	17.30+/-1.10
22	TLD	910103/910404	16.40+/-.30
22	TLD	910404/910709	16.70+/-.50
22	TLD	910709/911008	16.90+/-.40
22	TLD	911008/920110	20.20+/-.90
23	TLD	910103/910404	21.20+/-.80
23	TLD	910404/910709	18.40+/-1.00
23	TLD	910709/911008	18.80+/-.70
24	TLD	910103/910404	18.20+/-.50
24	TLD	910404/910709	15.30+/-.30
24	TLD	910709/911008	15.10+/-.70
24	TLD	911008/920110	17.70+/-.70
35	TLD	910103/910404	16.00+/-.40
35	TLD	910404/910709	14.00+/-.90
35	TLD	910709/911008	12.60+/-.40
35	TLD	911008/920110	16.90+/-1.10
36	TLD	910103/910404	19.10+/-.30
36	TLD	910404/910709	19.20+/-.80
36	TLD	910709/911008	17.30+/-.30
36	TLD	911008/920110	21.30+/-.70
41	TLD	910103/910404	17.30+/-.20
41	TLD	910404/910709	15.00+/-1.20
41	TLD	910709/911008	17.80+/-.90
41	TLD	911008/920110	13.80+/-1.30
42	TLD	910103/910404	17.80+/-.40

DIRECT REPORT
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN MR/QTR +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	DIRECT
42	TLD	910404/910709	13.00+/-.30
42	TLD	910709/911008	14.60+/-.80
42	TLD	911008/920110	15.00+/-.40
43	TLD	910103/910404	16.80+/-.50
43	TLD	910404/910709	13.40+/- 1.00
43	TLD	910709/911008	13.40+/-.90
43	TLD	911008/920110	15.60+/-.70
45	TLD	910103/910404	16.50+/-.30
45	TLD	910404/910709	14.50+/-1.10
45	TLD	910709/911008	13.40+/-.40
45	TLD	911008/920110	13.40+/-.90
53	TLD	910103/910404	16.40+/-.30
53	TLD	910404/910709	14.30+/-.30
53	TLD	910709/911008	14.00+/-.30
53	TLD	911008/920110	15.80+/-.40
54	TLD	910103/910404	16.60+/-.50
54	TLD	910404/910709	14.80+/-.30
54	TLD	911008/920110	16.90+/-.50
55	TLD	910103/910404	18.60+/-.30
55	TLD	910404/910709	14.60+/-.60
55	TLD	910709/911008	15.80+/-.60
55	TLD	911008/920110	17.60+/-.70
56	TLD	910103/910404	18.30+/-.30
56	TLD	910404/910709	13.90+/-.70
56	TLD	910709/911008	14.80+/-.70
56	TLD	911008/920110	13.30+/-.70

DIRECT REPORT
SAMPLE FREQUENCY IS : QUARTERLY
RESULTS IN MR/QTR +/- 2 SIGMA

STATION LOCATION	SAMPLE TYPE	COLLECTION DATE	DIRECT
58	TLD	910103/910404	18.00+/-.40
58	TLD	910404/910709	14.60+/-.30
58	TLD	910709/911008	15.30+/-1.00
58	TLD	911008/920110	15.60+/-.40