YANKEE ATOMIC ELECTRIC COMPANY

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January 26, 2005
BYR 2005-007

Massachusetts Department of Environmental Protection
DEP Western Region
436 Dwight Street
Suite 402
Springfield, MA 01103

Attention: Mr. David Howland

Subject: **Yankee Nuclear Power Station (YNPS) Phase II Comprehensive Site Assessment Report**

Dear Mr. Howland:

The enclosed YNPS Phase IIP Comprehensive Site Assessment Report was prepared at the request of the Massachusetts Department of Environmental Protection to summarize:

- Likely and known sources of release of radioactivity, oil, and/or hazardous materials (OHM) to the environment.
- Yankee's rationale for selection of radioactive/OHM constituents/chemicals of concern (COCs) and areas/media targeted for investigation and/or characterization. A complete list of COCs is included in Table 16 of the document for your consideration and reference.
- Results of investigation and testing to identify the nature and extent of contamination in potentially affected media (soil, groundwater, surface water, sediment, air, fish and food stocks such as syrup and milk).
- Ongoing/scheduled characterization and/or remedial actions.

This Phase II Report is submitted in fulfillment of the requirements of the Massachusetts Contingency Plan (MCP), Code of Massachusetts Regulations (310 CMR 40.0000) for a Phase II-Comprehensive Site Assessment (Phase II) Report pursuant to 310 CMR 40.0883. A risk assessment (as required under 310 CMR 40.0995) will be prepared following completion of remedial actions at the site to document that residual radioactivity and/or OHM remaining at the site following closure meet applicable risk management criteria for protection of human health, safety, public welfare and the environment.

As site decommissioning, assessment and remediation continues, it is Yankee's expectation that this Phase II Report will provide a comprehensive basis for the Department to provide YAEC appropriate guidance as applicable to complete ongoing and future assessment and remedial actions necessary for Yankee to achieve closure of the site in a safe, responsible, reliable and beneficial manner.

Should you have questions or require additional information, please contact us.

Sincerely,

YANKEE ATOMIC ELECTRIC COMPANY

J. A. Kay

James A. Kay
Principal Licensing Engineer

Attachment: YNPS Phase II Comprehensive Site Assessment Report

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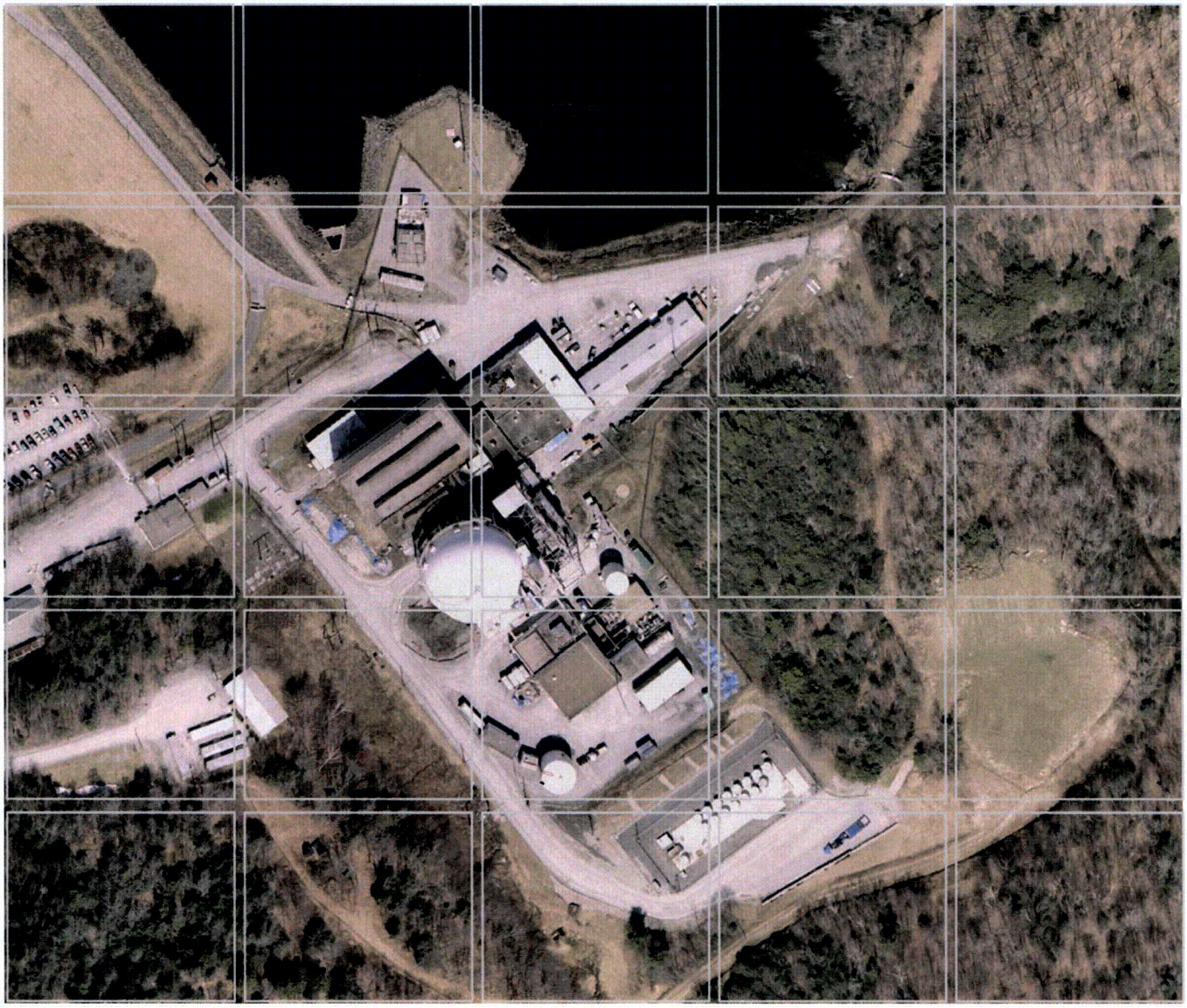

Phase II-Comprehensive Site Assessment Report

Yankee Nuclear Power Station
49 Yankee Road
Rowe, Massachusetts

RTN 1-13411
ERM Reference 0015181
28 January 2005
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FINAL REPORT

Yankee Atomic Electric Company

Phase II-Comprehensive Site Assessment Report
for the Yankee Nuclear Power Station

49 Yankee Road

Rowe, Massachusetts

28 January 2005

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ABC	Asphalt, Brick, and Concrete
ALARA	As Low As Reasonably Achievable
AMDA	Alternate Method of Disposal Approval
ANRAD	Abbreviated Notice of Resource Area Delineation
AOC	Area of Concern
AOR	Abnormal Occurrence Report
AREOR	Annual Radiological Environmental Operating Report
ASTs	Aboveground Storage Tanks
AUL	Activity and Use Limitation
BUD	Beneficial Use Determination
CAD	Corrective Action Design
CFR	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
COC	Contaminant of Concern
CR	Condition Report
CSA	Comprehensive Site Assessment
DCE	1,1-dichloroethene
DCGL	Derived Concentration Guideline Level
DEHP	bis(2-ethylhexyl)phthalate
DOD	Department of Defense
DOE	Department of Energy
DPH	Department of Public Health
Dpm	Disintegration per minute
DRO	Diesel Range Organics
ECFA	East Construction Fill Area
EDCR	Engineering Design Change Request
EENF	Expanded Environmental Notification Form
EPA	Environmental Protection Agency
EPH	Extractable Petroleum Hydrocarbon
ERAMS	Environmental Radiation Ambient Monitoring System
ERM	Environmental Resources Management
FANP	Framatome-ANP Laboratory
FID	Flame Ionization Detector
FSS	Final Status Survey
GRO	Gasoline Range Organics
GTCC	Greater Than Class C
HPGe	High Purity Germanium
HSA	Historical Site Assessment
ISFSI	Independent Spent Fuel Storage Installation
IX	Ion Exchange
LER	Licensee Event Report
LPST	Low Pressure Surge Tank

LSP	Licensed Site Professional
LTP	License Termination Plan
MADEP	Massachusetts Department of Environmental Protection
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
mCi/ml	millicurrie per milliliter
MCL	Maximum Contaminant Level
MCP	Massachusetts Contingency Plan
MDC	Minimum Detected Concentration
mg/kg	Milligrams per kilogram (approximately equivalent to parts per million or ppm)
mR/hr	Millirad per hour
mrad/hr	Millirad per hour
mrem/yr	Millirems per year
N&SDR	North&South Decon Room
NAAQS	National Ambient Air Quality Standards
NIST MAP	National Institute of Standards and Technology Measurement Assurance Program
NRC	Nuclear Regulatory Commission
NST	Neutron Shield Tank
OHM	Oil and Hazardous Materials
PAB	Primary Auxiliary Building
PAHs	Polycyclic Aromatic Hydrocarbons
PCA	Potentially Contaminated Area
PCBs	Polychlorinated Biphenyls
pCi/L	picocuries per liter
pCi/g	picocuries per gram
pg/g	picograms per gram
PIR	Plant Incident Report
ppm	Parts per million
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RAM	Release Abatement Measure
RAO	Release Abatement Outcome
RBDAA	Risk-Based Disposal Approval Application
RCs	Reportable Concentrations
RCA	Radiologically Controlled Area
REMP	Radiological Environmental Monitoring Program
RETS	Radiological Environmental Technical Specifications
RIR	Radiological Incident Reports
ROR	Radiological Occurrence Report
RSCS	Radiation Safety Control Services
SCFA	Southeast Construction Fill Area
SCPP	Site Closure Project Plan

SFP	Spent Fuel Pool
SI/DG	Safety Injection/Diesel Generator
SSCs	Systems, Structures & Components
SVOC	Semi-Volatile Organic Compound
TCA	1,1,1-trichloroethane
TEQ	Total Equivalent Quantity
TPH	Total Petroleum Hydrocarbon
ug/kg	micrograms per kilogram
USTs	Underground Storage Tanks
VC	Vapor Container
VOC	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbon
YAEC	Yankee Atomic Electric Company
YNPS	Yankee Nuclear Power Station

1.0 INTRODUCTION

1.1 BACKGROUND

The Yankee Nuclear Power Station (YNPS) is located on an approximately 1,800-acre property at 49 Yankee Road in Rowe, Massachusetts (Figure 1). Yankee Atomic Electric Company (YAEC), owner and operator of YNPS, ceased commercial power generation activities in 1992 and is decommissioning the plant. In October 2003, YAEC released a Site Closure Project Plan (SCPP) to the public and various regulatory and non-regulatory stakeholders. The SCPP outlines the process and permitting by which YAEC will complete the decommissioning, environmental investigation, environmental remediation, site closure, and post-closure property transfer of YNPS. The SCPP has been updated to incorporate stakeholder comments since it's initial issuance. As outlined in the SCPP, YAEC's goals are to:

- Complete the majority of decommissioning and physical site closure activities at the site by mid-2005.
- Achieve radiological and non-radiological site closure in a safe, responsible, reliable, and beneficial manner.
- Integrate stakeholder requirements and interests into the project planning and implementation process to optimize efficiency, avoid duplication of efforts, and facilitate acceptance by both regulatory and non-regulatory stakeholders.
- Where feasible, restore the site to environmental quality standards that will enable future unrestricted use of the site.
- Safely manage the spent nuclear fuel on-site until such time that the Department of Energy (DOE) satisfies it's legal obligation to remove the spent fuel and Greater Than Class C (GTCC) wastes to a permanent off-site storage facility.

On behalf of Yankee Atomic Electric Company (YAEC), Environmental Resources Management (ERM), in coordination with Gradient Corporation (Gradient), Radiation Safety Control Services (RSCS) and C.N. Associates, has prepared this Phase II-Comprehensive Site Assessment (Phase II) Report for the YNPS site.

1.2 *PURPOSE & SCOPE*

This Phase II Report was prepared at the request of the Massachusetts Department of Environmental Protection (MADEP/Department) to summarize:

- Likely/known sources of release of radioactivity, oil, and/or hazardous materials (OHM) to the environment.
- YAEC's rationale for selection of radioactive/OHM constituents/chemicals of concern (COCs) and areas/media targeted for investigation.
- Results of investigation and testing to identify the nature and extent of contamination in potentially affected media (soil, groundwater, surface water, sediment, air, fish and food stocks such as syrup and milk).
- Ongoing/scheduled investigations and/or remedial actions.

At the Department's request, this Phase II Report is intended to be a summary document and thereby relies on more detailed supporting characterization documentation referenced in Appendix A (available at Greenfield Community College Library and at www.yankee.com). This Phase II is applicable to the entire "YNPS site" defined as that location in the environment where plant-related radioactivity and/or OHM have come to be located in the environment (i.e., at levels exceeding those naturally occurring, or background, including anthropogenic influences).

This Phase II is submitted in partial fulfillment of the requirements of the Massachusetts Contingency Plan (MCP), Code of Massachusetts Regulations (310 CMR 40.0000) for a Phase II-Comprehensive Site Assessment (Phase II) Report pursuant to 310 CMR 40.0883, but excludes characterization of the potential risk of harm to human health, safety, public welfare and the environment at this time (as required under 310 CMR 40.0995). A risk characterization will be prepared following completion of remedial actions at the site to document that residual radioactivity and/or OHM remaining at the site following closure meeting applicable risk management criteria for protection of human health, safety, public welfare and the environment.

As site decommissioning, assessment and remediation continues, it is YAEC's expectation that this Phase II will provide a basis for the Department to provide YAEC appropriate guidance as applicable to complete ongoing and future assessment and remedial actions necessary for YAEC to achieve closure of the site in a safe, responsible, reliable and beneficial manner.

2.0 *IDENTIFICATION OF SOURCES, CONSTITUENTS OF CONCERN & STUDY AREAS*

2.1 *IDENTIFICATION OF SOURCES*

2.1.1 *Site Radiological Sources*

Normal plant operations were expected to result in contamination of certain areas of the site and these areas were designed to contain such material. However, during the history of plant operations, certain events and conditions resulted in radioactive material being deposited in other locations within the plant. As a result, the plant design and operational procedures evolved to accommodate or eliminate these circumstances. These events were categorized as "Planned" release events, because they were associated with normal plant operations and were expected to result in impacts to plant structures.

The principal events and circumstances, listed in chronological order in Table 1, contributed to the residual contamination that needs to be addressed during decommissioning. It should be noted that these events relate to the plant operational history and affected general plant radiological conditions and not specific plant locations. These events and their consequences, as well as an understanding of radiological conditions for the plant as a whole were among the factors considered when classifying the plant areas for the Final Status Survey (FSS).

A comprehensive review of all recorded events documented as having occurred outside the normal operational condition of the plant was also performed to capture those events that contributed to radiological contamination of the site. These events are summarized in Table 2. These events were typically documented in the format suitable for reporting to regulatory authorities such as Abnormal Occurrence Reports (AOR's), submitted during the early site history, and Plant Incident Reports (PIR's) or Licensee Event Reports (LER's), submitted through the remainder of plant operation. Where available, the information in these reports was supplemented by supporting documentation concerning the events in the form of plant memos and radiological survey data.

2.1.1.1 *Unplanned Gaseous Releases*

Over the lifetime of the plant, a number of unplanned gaseous release events occurred. Short descriptions of these gaseous events as described in AOR/PIR/LER's are documented in the HSA. A careful review of these unplanned discharges did not reveal any unmonitored particulate component that could have significantly contributed to the long-term contamination of the site or its environs.

2.1.1.2 *Unplanned Liquid Releases*

Several AOR's and PIR's reviewed documented unplanned liquid releases that resulted in contamination of the site grounds, buildings, and subsurface locations. When subsurface investigations were not performed due to inaccessibility, or were not completed to the level suitable for license termination, these locations were targeted for continuing characterization during the FSS. Table 3 provides a listing of the events identified that have resulted in radioactive contamination of the site, including a brief summary of each event based on the documentation prepared at the time of the incidents and an assessment of which survey areas (to be investigated during decommissioning and FSS) were impacted by the events.

2.1.2 *Site Sources of Oil and/or Hazardous Materials Release*

The YNPS plant used a variety of chemicals in the course of routine operations. A summary of the materials/chemicals used and stored is provided in Table 4.

2.2 *IDENTIFICATION OF CONSTITUENTS OF CONCERN*

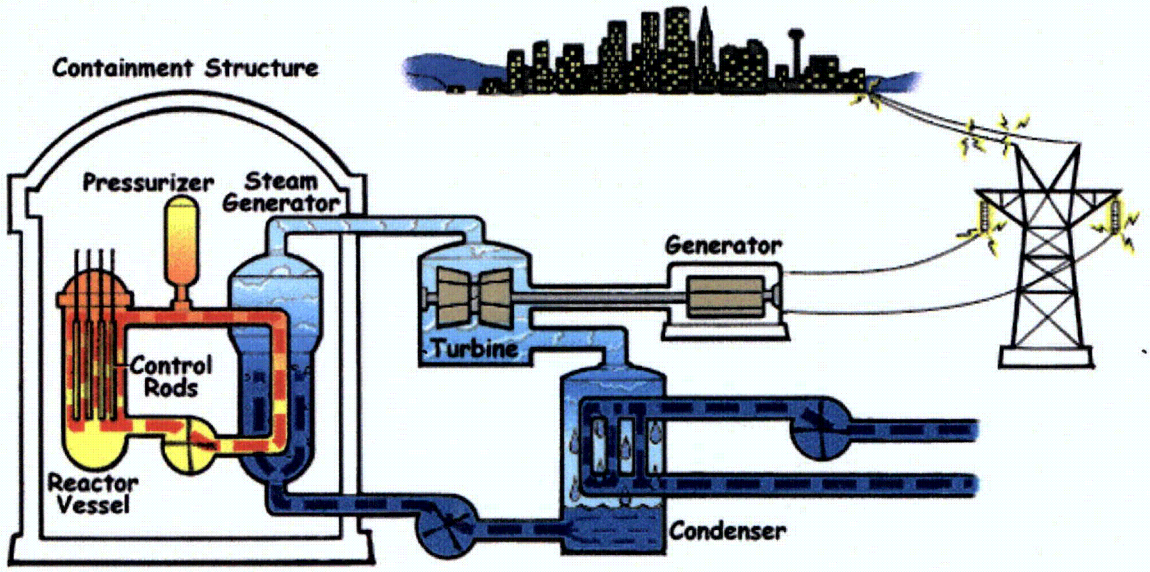
2.2.1 *Radiological*

2.2.1.1 *Fission Radionuclides*

The operation of a nuclear reactor results in the creation of two types of radionuclides; fission and activation products. Fission products are the direct result of U-235 absorbing a thermal neutron and splitting (fissioning) into two smaller nuclear fragments, each of which has an excess of neutrons. The resultant fragments initially have a significant amount of kinetic energy, but due to their mass do not travel outside the confines of the fuel pellet. When the fragments stop, they lose their kinetic energy by transferring it to the medium they are in (i.e., heating the reactor coolant). The fragments are still radioactive and can decay by

either negatron or neutron emission in order to reach a stable nuclear configuration. The additional neutrons (referred to as delayed neutron emission) become available to induce more fission reaction events at some distance from the initial reaction site.

Most of the fission events occur within the nuclear fuel pins that comprise a nuclear fuel element, which in turn are a component of a nuclear reactor core. Each pin is designed to keep the fission products within their stainless steel-welded container once they are created. Occasionally during reactor operations, some of these fuel pins (much less than one percent) develop a defect. When this failure occurs, some of the fission fragments enter the circulating water of the reactor coolant system.



The fission fragments created during the fission process can be atoms with an atomic mass number that ranges from approximately 70 to 160 with predominant nuclides at approximately 95 and 139. Most of the radioactive fission products have short half-lives and decay by the emission of a beta particle. Most of the beta decays are accompanied by the near spontaneous emission of a gamma ray. A small fraction of fission radionuclides have half-lives greater than one year. A listing of some common fission products is provided in Table 5 sorted by half-life.

2.2.1.2 *Activation Radionuclides*

Non-Transuranics

A discussed above, each fission event causes the emission of "free neutrons" from each event. In fact, on average each fission event emits 2.5 neutrons. Some of these neutrons go on to cause other fission events while others interact with other materials in or around the reactor core. The interaction of neutrons with other non-radioactive material often results in the "activation" of a stable atom. The neutron interaction can occur by direct bombardment of metal components near the core, or it can occur with corrosion products carried in the reactor coolant as they travel through the core. For instance, if a neutron is absorbed by Co-59, the creation of Co-60 results which is a radioactive form of cobalt that decays by beta emission with a half-life of 5.26 years. In this example, Co-59 is a normal constituent of the steel alloys contained within the material that make up and surround the reactor core.

Activation products can be created from stable atoms that are contained within the circulating reactor coolant since this coolant passes through the reactor core where a high population of neutrons are present during reactor operations. Some of these stable atoms result from corrosion and wear products from the operation of valves and pumps that are part of the reactor coolant system. A listing of some common *non-transuranic* activation radionuclides is provided in Table 6 sorted by half-life.

Two of the radionuclides listed in Table 6 are activation products that come from sources other than metallic components. Tritium (^{3}H) results from the neutron interaction with boric acid (added as a neutron moderator) and lithium (an added pH control agent). Carbon-14 is formed as a result of activation of ^{14}N (from trace concentrations of dissolved nitrogen) and ^{17}O (from the water molecules).

Transuranics

One additional type of activation product results in the activation of U-238 and its resultant activation products. Of the total uranium contained in a typical reactor core, approximately three percent is U-235 (the fissionable form) and 97 percent is U-238. Some of the fission neutrons interact with the predominant U-238 resulting in U-239 and then Np-239 by beta decay and then Pu-239 by beta decay. These activation products may again absorb a neutron creating other radioactive elements with atomic numbers greater than uranium (92), commonly referred to as transuranic radionuclides. Most of the transuranic radionuclides have short half-lives and decay by alpha particle emission. These activation products are

usually insoluble materials and generally remain within the reactor core except when the fuel undergoes some failures thereby allowing fission products to enter into the reactor coolant system. In the absence of fission products in areas outside of the reactor core, it is reasonable to conclude the absence of transuranic radionuclides. Table 7 lists the long-lived transuranic radionuclides that are important during reactor operations sorted by half-life.

2.2.1.3 *Naturally Occurring Radionuclides*

Naturally occurring radionuclides are present in soil, groundwater, and surface water, sediment and food stocks. These radionuclides are categorized as terrestrial or cosmic. The terrestrial radionuclides are generally contained in the earth's crust including both bedrock and soils. These terrestrial radionuclides include U-234, U-235, U-238, and Th-232. Each of these radionuclides is the first isotope in a chain of successive radionuclides until the chain ends in a stable isotope of lead. These decay chains include radioisotopes of U, Th, Pa, Ac, Ra, Rn, Po, Pb, and Bi. The decay modes of each radioisotope in the series include the emissions of alpha particles, beta particles, and gamma rays depending on the specific isotope. Also, the relative abundance of each of these radioisotopes may differ due to the various chemical properties of each element and of the specific geochemistry of the area. Because of the ubiquitous presence of these radionuclides these can be found in plants and animals as well as soils, surface water and groundwater.

The cosmic radionuclides are produced from nuclear interactions within the atmosphere principally from solar charged-particle radiation. The radionuclides produced from these cosmic sources include K-40, C-14, H-3, and Rb-87. Like the terrestrial radionuclides, these cosmic radionuclides are generally taken up within specific systems in the biosphere and can be found in soils, vegetation, animals, surface and groundwater, and bedrock.

Above ground nuclear weapons testing during the 1970's has contributed to radioactive material found in the environment, and material from this source is considered part of the measurable "background." The principal radionuclides of concern from weapons testing are Cs-137 and Sr-90, which are analyzed for during FSS and detected in some environmental samples (REMP). Differentiating the contribution from fallout versus plant operations is done by evaluating the concentrations present in unaffected areas of the site, the location of the survey area, and presence of any other plant-related radionuclides.

2.2.1.4 *LTP Radionuclide Selection in Support of Final Site Surveys*

In the development of Yankee's License Termination Plan (LTP), a defined set of radionuclides was needed in order to develop Derived Concentration Guideline Levels, or DCGLs. These levels are radionuclide specific and are calculated (modeled) by considering the future uses of the property and the available site-specific parameters including hydrogeologic, geologic and meteorological parameters. Once developed, these DCGLs are used during the final site surveys to determine the significance (or dose contribution) of radionuclides identified at the site. Materials exhibiting levels of radioactivity above applicable DCGLs are contained for off-site transportation and disposal at a licensed facility during decommissioning. Materials exhibiting very low levels of radioactivity at or below DCGLs, but still above background, will be safely managed and reused on-site in restoration. As such, it is important that the LTP list of potential radionuclides be comprehensive, yet limited to those potentially present (based on a relatively longer half-life) once decommissioning is complete.

Table 8 presents a summary of the plant-related radionuclides that were initially considered for the LTP. This all-inclusive list was developed based on the available literature and on Yankee-specific waste stream analysis during reactor operation.

The criteria used to determine a radionuclides inclusion in the LTP included:

- The radionuclides half-life and decay factor.
- Its estimated abundance in the plant waste streams.
- Its relative dose potential.

For instance, a radionuclide with a long half-life may not be included for consideration if it was never identified in any of the plant's waste streams during operations, or in the comprehensive Radiological Environmental Monitoring Program (REMP).

Evidence of radionuclides present during plant operation is supported by routine sampling of plant contamination for personnel protection purposes, for waste classification and disposal and from the routine REMP sampling. For waste classification, samples were required to be analyzed for specific radionuclides that included the LTP radionuclides. For the REMP samples, analysis of soils, vegetation, water, air, and milk was required. These analyses included gross alpha, gross beta, gamma

spectroscopy, liquid scintillation, and alpha spectroscopy, depending on the specific media. As part of developing the LTP radionuclide list, a review of all of this historical data was performed.

Twenty radionuclides have been selected for inclusion in the LTP (Table 8). These radionuclides represent the only ones expected to be present in any area of the site due to plant operations, i.e., are plant-related as opposed to naturally occurring. This selection is based on half-life, fractional abundance, and exposure potential. In addition to routine monitoring for these radionuclides, gross alpha/beta and gamma spectroscopy will verify the absence of other nuclides.

2.2.2 *Oil & Hazardous Materials (OHM)*

2.2.2.1 *Data Review and Usability Assessment*

Since the initiation of plant decommissioning activities in 1992, YAEC has conducted numerous environmental sampling programs to support the decommissioning effort. These investigations have included sampling of building surfaces and materials, soil, soil gas, groundwater, stormwater systems, surface water, sediments and fish. Samples have been analyzed for both radiological and non-radiological parameters.

The Yankee database contains sample data reported since 1997, but nonradiological data reported before 2002 were not formally validated. However, Gradient performed a data usability assessment on a subset of the historical data identified by YAEC to be critical to characterizing the Site. The data usability assessment was performed based on Quality Control (QC) information provided by YAEC. Data collected from 2003 to present have been formally validated by ERM according to EPA Region I guidance. The assessed subset of the historical data, as well as all formally validated data included in the database as of December 2004, were used in identifying the COCs for groundwater, surface water, soil, and sediment.

It is important to note that validation of the November 2004 sediment and groundwater data is incomplete at this writing and the use of validated results may alter the summary statistics Gradient generated to select the COCs for sediment and groundwater. A re-evaluation of COCs will be performed using the validated data for use in the pending risk characterization and assessment and reported in future correspondence.

2.2.2.2 *Reasonably Foreseeable Future Use of the Site*

Plant decommissioning and demolition is currently underway and all radiological systems have been removed from the plant. The spent

nuclear fuel is being stored in the Independent Spent Fuel Storage Installation (ISFSI), an on-site dry cask storage facility. Although the plant decommissioning and environmental restoration is scheduled to be completed by 2005, the YNPS license with the NRC will not be officially "terminated" until such time that the Department of Energy removes the spent fuel to permanent storage at a federally licensed storage facility (no such facility currently exists). Thus, YAEC will retain control of that portion of the site consisting of the ISFSI and former industrial area until the spent fuel is removed, and this "YAEC Retained Area" will be inaccessible to the public and subject to surveillance 24-hours a day.

Although the future status of the Site is currently not fully defined, likely use may consist of open space with some potential for recreational/limited development activities. In situations where the end use of a property has not been defined, the Massachusetts Contingency Plan (MCP) requires the evaluation of risk under a residential scenario and this scenario will form the basis of the human health risk assessment. This assumption will provide a conservative assessment, as the most likely future Site use (*e.g.*, recreational/open space) would not involve the kind of frequent exposure that would be the case under a "residential" exposure scenario.

Although a future residential exposure scenario may be hypothetically plausible for the majority of the 1,800-acre property, a deed restriction and/or Activity Use Limitation (AUL) will be enforced over that portion of the site constituting the former industrial area. In addition, as a component of the final site restoration/grading plan, a 3-foot overburden will be in place in the former industrial area. The AUL will preclude excavation without a DEP-approved soil management plan and any excavation would occur only under the oversight of a Licensed Site Professional (LSP).

2.2.2.3 *Classification of Site Soils and Site Groundwater*

Soil and groundwater at the site were categorized in accordance with 310 CMR 40.0930 as required for a Method 3 Risk Characterization. MADEP has defined three soil (S-1, S-2, S-3) and three groundwater (GW-1, GW-2, GW-3) classifications based on the nature of exposure. Soil classifications are based on accessibility of site soil, frequency of exposure, and intensity of exposure. Soil classification S-1 is based on the assumption of highest potential for exposure, while classification S-3 assumes the lowest potential for exposure. Groundwater classifications are also based on the type of potential exposure. Classification GW-1 has been established to protect against risks under the assumption that site groundwater may be used directly as a potable water source. Classification GW-2 protects

against risks associated with volatilization of compounds from shallow groundwater and infiltration into buildings through cracks and other imperfections in slabs and foundations. Finally, classification GW-3 protects against risks associated with the discharge of groundwater to surface water.

Under an assumed residential exposure scenario, the corresponding soil category would be S-1. However, as noted above, the AUL in the former industrial area will limit possible contact with soils for the industrial portion of the site. Consequently, soils within the area subject to the AUL are classified S-3. For the evaluation of recreational activities and potential exposures, contact with soil may occur, however the intensity and frequency of use is expected to be lower when compared to a residential exposure scenario. Thus, under recreational scenarios the appropriate soil category would likely be S-3 (301 CMR 40.0933).

Because the Site is located within 504 feet of an Interim Wellhead Protection Area, groundwater on the southeastern portion of the Site is characterized as GW-1 (310 CMR 40.0932). In addition, portions of the Site are characterized as GW-2 because groundwater is less than 15 feet below grade and within 30 feet of occupied structures. Finally, all groundwater beneath the Site is characterized as GW-3 because MCP considers all groundwater as a source of discharge to surface water. Therefore, groundwater at the Site is classified as GW-1, GW-2 and GW-3.

2.2.2.4 *Background Chemical Concentrations*

Potential risks to human health and the environment will be evaluated for site-related chemicals above background exposures. MADEP (1995) defines background as "those levels of oil and hazardous material that would exist in the absence of the disposal site of concern that are:

> (a) ubiquitous and consistently present in the environment at and in the vicinity of the disposal site of concern; and,
>
> (b) attributable to geologic or ecologic conditions, atmospheric deposition of industrial process or engine emissions, fill materials containing wood or coal ash, releases to groundwater from a public water supply system, and/or petroleum residues that are incidental to the normal operation of motor vehicles."

Given their ubiquitous presence in the environment, MADEP (2002a) has developed statewide background levels for metals and PAHs in both "natural" soil and soil containing fill material. For chemicals without MADEP-derived background levels, site-specific information was used to

characterize local conditions and identify COCs, including other media such as surface water, groundwater, and sediment. Maximum detected concentrations of chemicals in specific media were compared to MADEP's background levels for soil or local conditions for chemicals lacking a MADEP-derived background level or other media (MADEP, 2002a). Chemicals present at levels consistent with local/regional and published background levels were not retained as COCs for the risk assessment.

2.2.2.5 *Constituents of Concern*

Based on the operations and materials used at the plant, samples from environmental media have been (in previous site investigations) analyzed for (but not necessarily limited to) the following COCs (Gradient, 2003):

- volatile organic compounds (VOCs);
- semivolatile organic compounds (SVOCs);
- petroleum hydrocarbons[i]
- priority pollutant 13 metals, plus boron and lithium;
- hexavalent and trivalent chromium;
- total cyanide and cyanide amenable to chlorination;
- chlorinated herbicides;
- polychlorinated biphenyls (PCBs);
- dioxins and furans;
- hydrazine; and
- radionuclides (radionuclides of concern were identified through the DCGL determination process and as described in section 2.2.1.4).

---

[i] Depending on the levels of total petroleum hydrocarbons found, additional extractable petroleum hydrocarbon/volatile petroleum hydrocarbon (EPH/VPH) analyses may be performed (MADEP, 2002b).

As specified in the MCP, all chemicals detected in soil, sediment, and surface water were retained as COCs if both of the following conditions are met:

- oil or hazardous materials are detected in greater than 5% of environmental samples, and
- oil or hazardous material concentrations exceed background or local conditions.

The risk characterization will focus on COCs defined by the above criteria. In identifying oil or hazardous material COCs in the various sampled media, all data collected and analyzed as of 3 December 2004 were used in the analysis except:

- samples that were removed during remediation activities (including soil piles);
- field QA/QC samples (*i.e.* equipment, field, trip and lab blank data);
- all catch-basin samples; and
- samples collected by YAEC in 2003 and 2004 that were used for purposes other than site characterization.

All data marked as rejected (R) are unusable for use in identifying COCs. Data qualifiers including "U" (undetected) and "J" (estimated) are fully usable, as are detected data, which required no qualifier be applied.

Soil samples were collected and analyzed for TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, hydrazine, inorganics, and dioxin/furans based on a historic assessment. Statistical summaries of detected oil or hazardous materials are presented in Table 9. In accordance with the MCP, detected concentrations of oil or hazardous materials were compared to the MADEP background concentrations for Polycyclic Aromatic Hydrocarbons (PAHs) and inorganics. Where available, site-specific background concentrations were used to compare against maximum detected concentrations for oil or hazardous materials of all other chemical groups. Oil or hazardous materials were identified as COCs if the detected frequency is greater than 5% and if detected concentrations exceed MADEP or local site-specific background concentrations. Oil or hazardous materials with no corresponding MADEP or site-specific background concentrations were selected as COCs based on detected frequencies only. Detected frequencies of greater than 5% were designated as COCs in the soils.

Sediment samples were collected in four Areas of Concern (AOC): Storm Water System, Sherman Reservoir , Deerfield River, and Wheeler Brook. Each AOC was sampled for TPH, VOCs, SVOCs, PCBs, and Inorganics. Statistical summaries of detected oil or hazardous materials are presented in Table 10 through Table 13 for each AOC. As previously stated, oil or hazardous materials are identified as COCs if the frequency of detection is greater than five percent or if site concentrations exceed local background concentrations. Local background conditions were characterized by six sediment samples from the northern/upstream area of Sherman Reservoir. VOCs and PAHs were detected infrequently in background samples. As a result, detected VOCs and PAHs in the AOCs were included as COCs. Concentrations of TPH and metals detected at least once in sediment samples in each of the AOCs were compared to site-specific background concentrations.

Eleven surface water samples were collected in water bodies throughout and adjacent to the site. These samples were analyzed for VOCs, PCBs, and inorganics. No site-specific background surface water samples were collected. Therefore, oil or hazardous materials are identified as COCs if the frequency of detection is greater than five percent. Statistical summaries of surface water results are presented in Table 14.

Both filtered and non-filtered groundwater samples were collected from the site. One filtered groundwater sample was sampled and analyzed for VOCs and inorganics. Twenty-four filtered groundwater samples were analyzed for PCBs. Non-filtered groundwater samples were analyzed for VOCs, SVOCs, pesticides, PCBs, inorganics, herbicides, and alcohols. No site-specific background groundwater samples were collected. Therefore, oil or hazardous materials are identified as COCs if the frequency of detection is greater than 5%. Statistical summaries of detected OHM in groundwater are presented in Table 15.

The following table provides a list of chemicals of potential concern for each media sampled and evaluated based on the comparisons presented in Table 9 through Table 15.[ii]

[ii] In contrast to the approach recommended by MADEP, EPA generally recommends that Chemicals present below background levels be carried through the risk characterization, with risks associated with background being discussed in the risk characterization chapter (EPA, 2002). Given the comprehensive suite of chemicals included in the sampling analysis, the approach adopted here is considered protective of human health and the environment.

Media	Chemicals of Potential Concern
Soil	TPH: TPH, TPH-DRO, EPH C11-C22 aromatics and C19-C36 aliphatics, and total EPH; VOCs: 2-butanone, acetone, diethyl ether, methylene chloride, toluene; SVOCs: all PAHs, bis(2-ethylhexyl)phthalate, carbazole; Dioxin: Total Equivalent Quantity (TEQ) PCBs: Aroclor-1254, aroclor 1260; and Inorganics: Al, As, Ba, B, Cr, Cu, Pb, Li, Mn, Hg, Mo, Ni, and Se.
Sediment-Storm System	TPH: TPH VOCs: 1,1-dichloroethene, methylene chloride; SVOCs: All PAHs; bis(2-ethylhexyl)phthalate, carbazole; dibenzofuran; PCBs: Aroclor-1254; aroclor 1260; and Inorganics: Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Th, and Zn.
Sediment-Sherman Reservoir	VOCs: 1,1-dichloroethene, 1,2,4-trimethylbenzene, 2-butanone, 4-methyl-2-pentanone, acetone, carbon disulfide, toluene; SVOCs: All PAHs, bis(2-ethylhexyl)phthalate, chrysene, fluoranthene, phenanthrene, pyrene; PCBs: Aroclor-1254; and Inorganics: Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Li, Hg, Ni, Se, and Zn.
Sediment-Deerfield River	VOCs: 2-butanone, 4-isopropyltoluene, acetone, chloromethane; SVOCs: All detected PAHs; PCBs: Aroclor-1254, and aroclor-1260; and Inorganics: Cu and Pb.
Sediment-Wheeler Brook	VOCs: 1,1-dichloroethene, 2-butanone, acetone; and Inorganics: Ba, Pb, and Hg.
Surface Water	VOCs: acetone, carbon disulfide, chloromethane, methylene chloride, toluene; and Inorganics: Ba, Cu, Fe, Mn, Se, and Ag.
Groundwater-Non-Filtered	TPH: TPH, TPH-DRO, TPH-GRO VPH C5-C8 aliphatics and C9-C10 aromatics, EPH C11-C22 aromatics and C19-C36 aliphatics; VOCs: 1,1-Dichloroethane, acetone, carbon disulfide, methyl-t-butyl ether, toluene; SVOCs: bis(2-ethylhexyl)phthalate; fluoranthene, naphthalene, phenanthrene, pyrene; PCBs: Arochlor-1254; Inorganics: Ba, Bo, Cr, Cu, Fe, Pb, Mn, Ni, Zn; and Alcohols: iso-propyl alcohol.

Groundwater-Filtered	PCBs: Arochlor-1254

Table Notes: TPH - Total Petroleum Hydrocarbons, VOCs - Volatile Organic Compounds, SVOCs - Semi-Volatile Organic Compounds, PCBs - Polychlorinated Biphenyls, PAHs - Polycyclic Aromatic Hydrocarbons, Sb-Antimony, As-Arsenic, Ba-Barium, Be-Beryllium, B-Boron, Cd-Cadmium, Cr-Chromium, Co-Copper, Pb-Lead, Li-Lithium, Mn - Manganese, Hg-Mercury, Mo-Molybdenum Ni-Nickel, Se-Selenium, Ag-Silver, Th-Thallium, and Zn-Zinc.

A comprehensive list of radionuclides and OHM identified as COCs is included in Table 16. Future site characterization and risk assessments will be focused on these identified COCs.

2.2.2.6 *Applicable or Suitably Analogous Standards*

Section 310 CMR 40.0993(2) of the MCP requires that Applicable or Suitably Analogous Standards be identified in a Method 3 risk characterization. In Massachusetts, standards are available for drinking water, surface water, and air quality. As required by the MCP, Massachusetts Drinking Water Quality Standards may be applicable to site groundwater if site groundwater is classified as GW-1 groundwater. Massachusetts Surface Water Quality Standards would be applicable to surface water in Sherman Reservoir. Massachusetts Air Quality Standards (310 CMR 6.00) also known as the National Ambient Air Quality Standards (NAAQS), which are only available for six compounds, are also applicable.

2.3 *STUDY AREAS*

2.3.1 *Overview*

The developed portion of the site, displayed in Figure 2, is divided into three areas based on past site activities and land use:

- The Industrial Area is the approximately 13-acre fenced portion of the site surrounding the Radiologically Controlled Area (RCA) containing industrial plant structures and operations (approximately 17 acres including the RCA).

- The RCA is the approximately 4-acre parcel within the Industrial Area containing radiological materials associated with plant operation.

- The Non-Industrial Area is that portion of the site outside of the fenced Industrial Area containing offices, roadways, fill areas and undeveloped woodland and encompasses approximately 1,783 acres.

Major structures and features located within these areas are listed below:

Summary of YNPS Areas and Structures

Area	Description	Structures Located Within Area
Industrial Area	RCA	Demineralized Water Tank Firewater Storage Tank/Pump House Former Diesel Generator Building Former Waste Incinerators Fuel Storage Building Former Fuel Oil Tank Independent Spent Fuel Storage Installation (ISFSI) Potentially Contaminated Area (PCA) Warehouses (new and old) Primary Auxiliary Building (PAB) Radiological Waste Warehouse Temporary Waste Evap. Waste Disposal Building Vapor Container (VC)
	Industrial Area outside of the RCA	Screenwell House (Circulating Water Intake Structure) Former Railroad Tracks Garage Security/Gatehouse North Warehouse Office Buildings Old Shooting Range Potable water supply wells* (current and former) Propane Storage Security Diesel Building Service Building Turbine Building/Control Room Transformer Yard
Non-Industrial Area	Areas outside fenced operational area	Asphalt, brick and concrete (ABC) Rubble Disposal Area* Active and Inactive Leach Fields Administrative Building and office trailers Circulating Water Discharge Structure East and West Storm Drain Outfalls East Construction Fill Area (ECFA) Fire Fighter Training Area New Shooting Range Parking areas Sand/Salt Shed Septic System Pump House Southeast Construction Fill Area (SCFA) Storage Yard* Trash Compactor Visitor's Center*

* Location shown in Figure 1.

2.3.2 *Radiological*

Identification of study areas for radiological characterization of the site are identified in the HSA and FSS as Survey Areas based on the physical configuration of the operating plant, historic operations involving the management of radioactive materials and the history of unplanned release events. Approximately 30 acres of the YAEC property was impacted by plant operation and are designated in the HSA and FSS as Survey Areas and are classified as Class 1, 2 or 3 based on the potential for radioactive impact (Figure 3). Radiological characterization of these areas is proceeding in accordance with the LTP. The remainder of the property is non-impacted and will not be surveyed as part of the FSS as no reasonable potential for impact from plant operations exists.

Survey area boundaries and classification of impacted areas defined as of 31 July 2003 are summarized on Figure 3 and Table 17 for structures, and Figure 3 and Table 18 for open lands (YAEC, 2004a). The majority of the impacted area of open land is characterized by no residual plant related radioactivity or at levels that are a small fraction of the DCGL and are classified as Class 3. Class 3 open land survey areas surround the site Industrial Area, with the exception of two isolated areas (OOL-16 and OOL-17) that received soil from impacted locations within the Industrial Area. Class 2 open land survey areas on-site may have detectable levels of radioactivity above background, but are not expected to yield levels in excess of the DCGL. Class 1 open land survey areas represent site locations where historical information indicates the potential presence of radioactivity at levels greater than the DCGL (pre-remediation). Class 1 structure survey areas, and the majority of Class 1 open land survey areas, are located within the boundary of the RCA.

2.3.3 *Oil & Hazardous Materials (OHM)*

Historic site characterization data for OHM in the environment were compared with available information regarding historical site operations involving OHM use, storage, waste generation and waste management to identify study areas; locations where media require further evaluation to assess the presence or absence of OHM impact in the environment associated with YNPS operations. Historic site characterization data for OHM in the environment were compared with available information regarding historical site operations involving OHM use, storage, waste generation and waste management to identify study areas; locations where media require further evaluation to assess the presence or absence of OHM impact in the environment associated with YNPS operations. Study areas are listed below and are shown on Figures 2 and 4:

- Operational areas - Turbine Building, Service Building, PAB, PCA, Former Diesel Generator Building, Fuel Storage Area
- Current and Former AST locations
- Former UST locations
- Former Transformer Locations
- Current and former hazardous waste storage areas
- Former incinerator locations
- Former railroad tracks
- Disposal Areas - SCFA, ECFA, Asphalt, Brick and Concrete (ABC) Rubble Disposal Area
- Active and inactive leachfields
- Old and new shooting ranges
- Soil in Industrial Area to assess potential impact from PCB-containing paint chip release
- Groundwater beneath and down-gradient of the Industrial Area
- Surface water and sediment in Sherman Reservoir, Wheeler Brook, Tributary to Wheeler Brook, Wheeler Brook Divertment, and West Storm Drain

3.0 SUMMARY OF RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)

3.1 OVERVIEW

Radiological environmental monitoring was initiated in 1958, approximately two years before the Rowe plant began commercial power production, and has been in operation continuously since that time. In accordance with the requirements of 10CFR50, Appendix I (CFR, Title 10), the principle objective of the REMP is to provide data on measurable levels of radiation and radioactive materials in the environment as a confirmation that the primary method of determining plant regulatory compliance, plant effluent release measurements and dose computations, are not likely to be significantly underestimated. As such, the radionuclides that are commonly assessed in off-site environmental samples are those that have been previously observed or could be expected to be present in treated liquid and gaseous effluent waste streams to the environment. The nuclides expected include both gamma and non-gamma emitting radionuclides that exhibit mobility through plant process systems.

Gamma isotopic analyses of REMP samples typically report the measured Minimum Detectable Concentration (MDC) or positively detected concentrations, for 23 nuclides. These are the most likely radionuclides, including both activation and fission products, expected to be part of either liquid or gaseous effluent waste streams. The list of nuclides is based on the operating experience at both Yankee Rowe and other operating nuclear power plants, and includes the following nuclides: Ag-108m, Ag-110m, Ba/La-140, Ce-141, Ce-144, Co-57, Co-58, Co-60, Cr-51, Cs-134, Cs-137, Fe-59, I-131, Mn-54, Nb-95, Ru-103, Ru-106, Sb-124, Sb-125, Se-75, Zn-65 and Zr-95.

The NRC guidance on REMP in NUREG-0472 (NUREG, 1982) stipulates a list of 12 radionuclides with specific detection and reporting requirements (MDC and Reporting Levels) that would lead to the highest potential exposure of members of the public resulting from plant operation. This list includes: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Zr-95, Nb-95, I-131, Cs-134, Cs-137, and Ba/La-140. However, if other spectrographic peaks are identified during sample analysis, or if unidentified peaks are noted in the analysis, the reporting laboratory is required to evaluate the additional radionuclides and report their presence in the sample. Consequently, the 23 radionuclides typically listed on the REMP sample gamma isotopic

analysis report do not reflect the only radionuclides that could be reported. In addition to gamma isotopic analysis, gross beta and H-3 analyses are also routinely performed in evaluating environmental media as part of the REMP.

The REMP is also designed to allow a comparison of levels of radioactivity in samples from the area potentially influenced by the plant to levels found in areas not influenced by the plant. The monitoring locations in the first area are designated as "indicators" and the second area monitoring locations are designated as "controls." The distinction between the two areas, for a particular pathway, is based on relative direction and distance from the plant. Analysis of survey data from the two areas is used to differentiate between radiation due to plant activities and that due to other sources such as atmospheric nuclear weapons test fallout or seasonal variations in the natural background.

The REMP monitors four pathway categories that include the sampling of particulates and gaseous I-131 in air; soil, sediment and water; and milk, fish and vegetables. In evaluating analysis results of environmental samples, it is necessary to consider the variability of natural and man-made sources of radioactivity, their distribution in the environment, and their uptake in environmental media. This variability is dependent on many factors including station release rates, past spatial variability of radioactive fallout from nuclear weapons tests, on-going redistribution of fallout, contribution from cosmogenic radioactivity, groundwater dynamics, soil characteristics, farming practices, and feed type. Any one of these factors could cause significant variations in measured levels of radioactivity. Therefore, these factors need to be considered in order to properly explain any variations in radiation detected and to distinguish between natural and station related radioactivity.

Environmental sampling results, as part of the REMP program, were reviewed for a twenty-year period from 1983 to 2003, for this report. This period encompasses ten years of plant operational history and ten years of post operational history. Previously, a review of the airborne pathway data in the REMP program from 1961 through 1997 was conducted, and the results are documented in Reference (Cummings, 1998).

The graphs of the annual average REMP results in the figures below represent only positive concentrations (greater than instrument background) for the nuclides of interest. Additionally, the graphs represent those nuclides for which sufficient results exist to provide a trend plot. Error bars are presented for those data that listed the mean and the uncertainty in the mean in the Annual Radiological Environmental Operating Report (AREOR). All other positive nuclide

results are discussed in the Summary of Results for each media category. Any gaps in the graphed data reflect results that were not positive rather than that no sample was collected. Only in one instance, in 1991, a maple syrup control sample was not available.

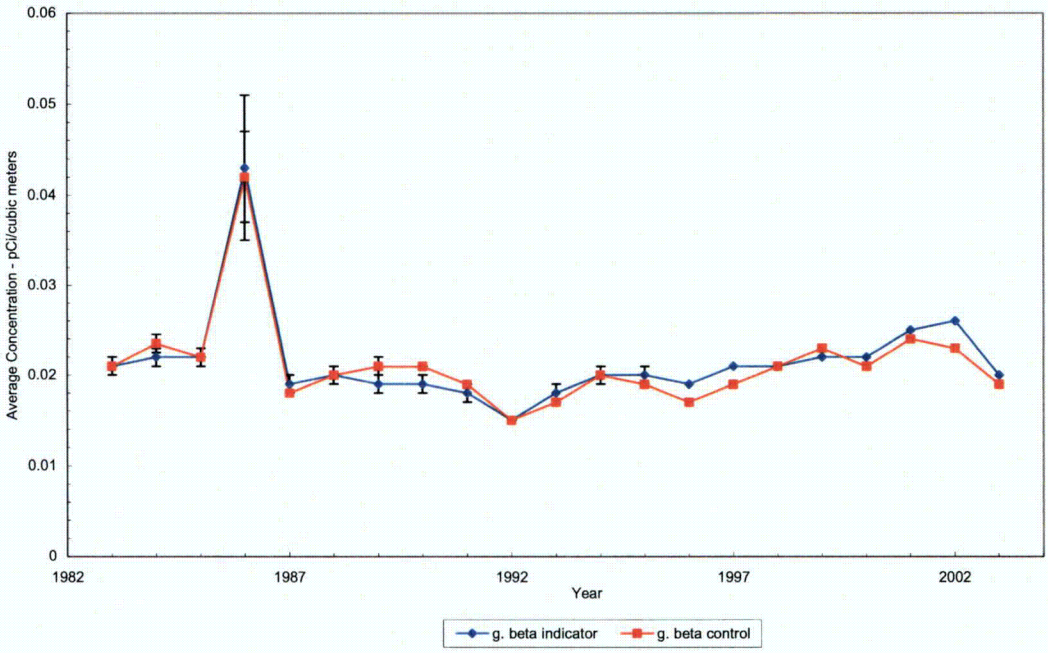
3.2 *INHALATION PATHWAY & AIRBORNE PARTICULATES*

Air sampling was conducted at 7 locations (5 indicator and 2 control) throughout the twenty-year period evaluated. Each sampling station was equipped with an apparatus containing a glass fiber filter for collection of airborne particulates and a charcoal cartridge for collection of gaseous iodine. The air samplers operated continuously and the filters were changed and analyzed weekly. The particulate filters were analyzed for gross beta radioactivity and the cartridges were analyzed for I-131 activity. A trigger level was set for the gross beta activity, above which, an individual filter would be analyzed by gamma spectrometry. Samples from each week in a given quarter were combined to form a composite sample for each location. The composite samples were analyzed by gamma spectrometry.

Positive gross beta activity (above instrument background) was routinely detected at all indicator and control stations. This radioactivity is attributable to naturally occurring radionuclides, as evidenced by the close correlation between the indicator and control stations shown in Figure 5. The gross beta results represent annual averages of 260 gross beta filter analyses from the indicator stations and 104 filters from the control locations. The evident spike in 1986 is the result of fallout from the Chernobyl incident. Gross beta results were elevated at both indicator and control stations in May and June of 1986. These filters, when analyzed by gamma spectrometry, revealed the presence of Cs-137, Cs-134, Ru-103, and Ru-106 (YAEC, 1986).

The only gamma emitting nuclide detected in the air filter quarterly composites, besides those resulting from the Chernobyl incident, was naturally occurring Be-7. No Yankee plant-related radioactivity was detected on either the particulate filters or the charcoal cartridges in the last twenty years.

Figure 5 - Annual Average Gross Beta Concentration - Air Particulate Filters



3.3 *SOIL*

Soil analysis was performed *in situ* using a portable gamma spectrometry analysis system, every three years. The *in situ* soil was analyzed at the air sampling locations in 1978, 1981, 1984, and 1987. In addition, core samples of the soil were collected for a laboratory confirmatory analysis. These results have been evaluated and reported as part of a review of the airborne pathway data to determine non-impacted area classification (Cummings, 1998). This review indicates naturally occurring K-40 and Th-232 and Cs-137 from weapons testing fallout.

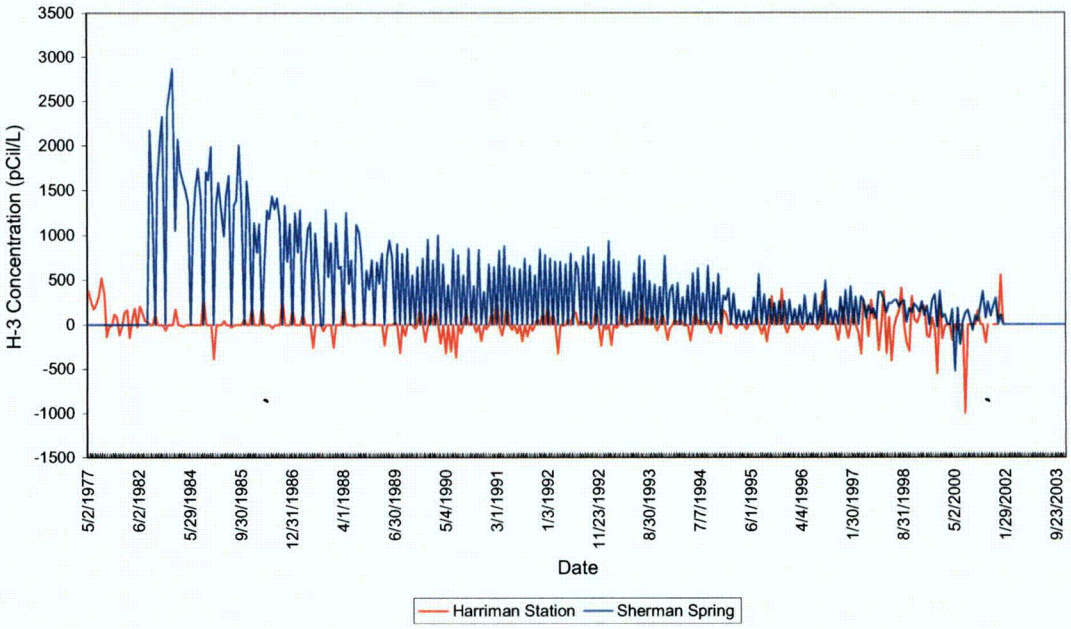
3.4 *GROUNDWATER*

Two fresh water sites were monitored for groundwater as indicator stations. The first was the on-site well (potable), and the second was Sherman Spring (0.2 km). There were no control locations.

Samples were taken monthly and analyzed for gross beta, gamma spectrometry, and H-3. Samples from each month in a given quarter were also combined to form a composite sample. The composite samples were analyzed for H-3.

No gamma emitting radionuclides have been detected in groundwater from either location. H-3 has been detected in Sherman Spring throughout the period evaluated. Figure 6 shows the decrease in the concentration over time, relative to the concentration measured in the river water at Harriman Reservoir. This figure presents the results of all the samples analyzed.

Figure 6 - Tritium in Water



3.5 *SURFACE WATER*

River or surface water was sampled from 2 indicator locations, one in the vicinity of the discharge point in Sherman Reservoir, one at Bear Swamp, 6.3 km downriver, and 1 control station, upriver at Harriman Reservoir (10 km). Samples were collected monthly and analyzed for gross beta and gamma spectrometry. Samples from each month in a given quarter were combined to form a composite sample for each location. The composite samples were analyzed for H-3.

No gamma emitters have been detected in the river water. Figure 7 below shows the gross beta concentrations from Bear Swamp and Harriman

Reservoir. This figure presents the results of all the samples analyzed. Figure 8 shows the annual average tritium concentration from Bear Swamp and Harriman Reservoir. The concentrations can be put into perspective by comparison to the NRC Reporting Level for tritium in non-drinking water paths, 30,000 pCi/L and to the EPA Maximum Contaminant Level (MCL) for tritium in drinking water, 20,000 pCi/L. The required MDC for the analysis is 2,000 pCi/L.

Figure 7 - Gross Beta in River Water

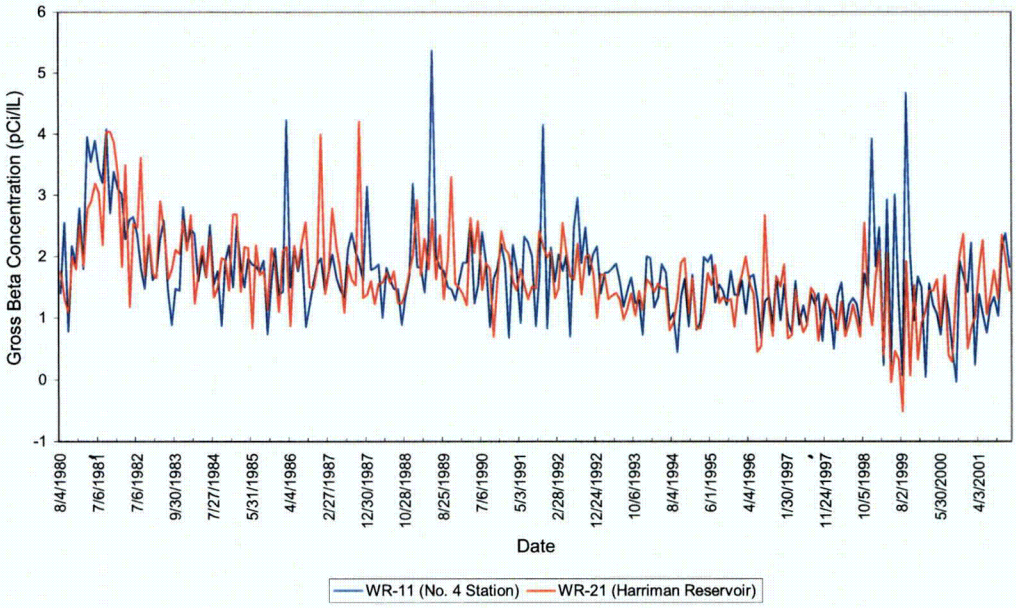
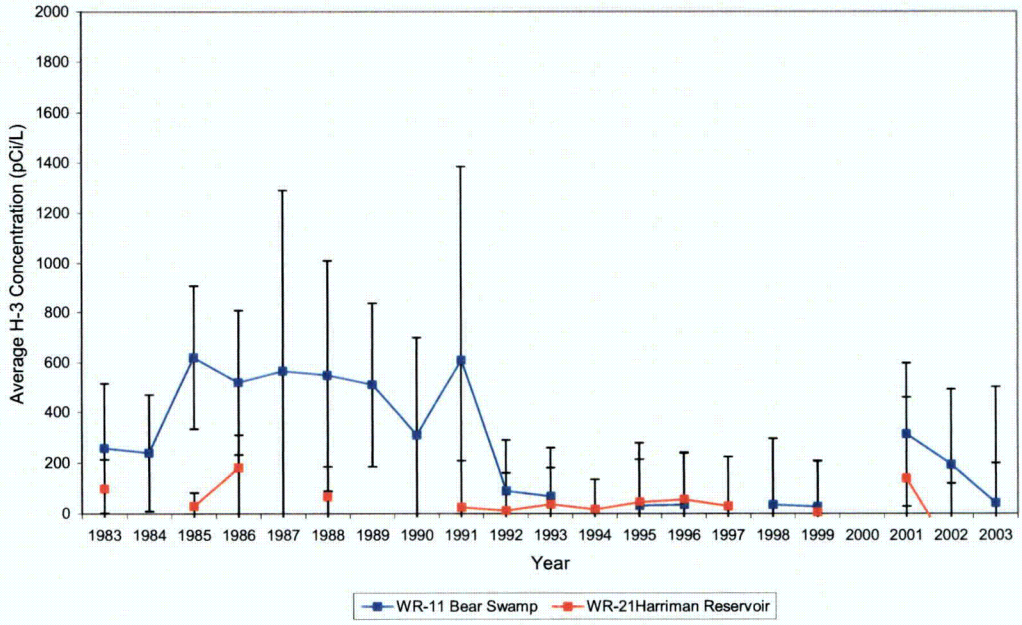


Figure 8 - Tritium in River Water



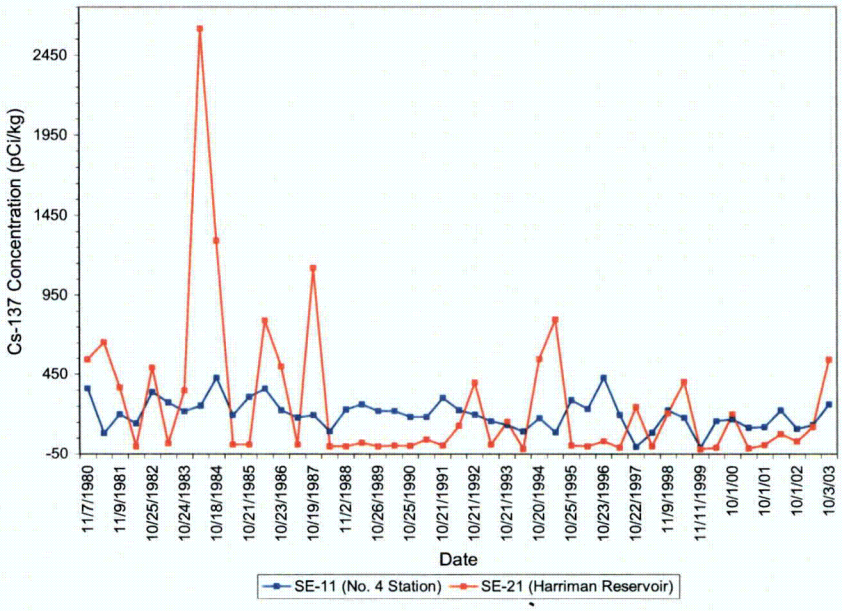
3.6 *SEDIMENT*

Sediment samples were collected semi-annually at 3 locations: 2 shoreline cores and an additional bottom sediment core at Sherman Reservoir . The two indicator locations were: Sherman Reservoir (discharge, 1989-present) and Deerfield River No. 4 station (36.1 km down river). The control station was upriver at Harriman Reservoir (10 km). The sediment samples were sectioned into 2-inch cores prior to analysis by gamma spectrometry. Figure 9 shows the semi-annual sediment results for the Deerfield River and Harriman Reservoir. The data represents the average of the first three core sections.

Natural K-40 was detected in all sediment samples, and Cs-137 was detected in most. In addition, Co-60 was measured in some Sherman Reservoir sediments as discussed in Section 4.4. No other plant-related radionuclides were detected. The Cs-137 concentration at Harriman Reservoir, the control location, was considerably elevated in 1984. The AREOR for that year indicated that several core samples were taken a short distance from the traditional sampling location at the reservoir. The higher levels of Cs-137 are attributed to the very high organic content of these sediments that were collected near the high water mark. The technical explanation for this is given in Bellini, 2000. This data illustrates

the variability with which radionuclides may distribute in the environment, and the caution that must be used in interpreting environmental results.

Figure 9 - Cs-137 Concentration in Sediment



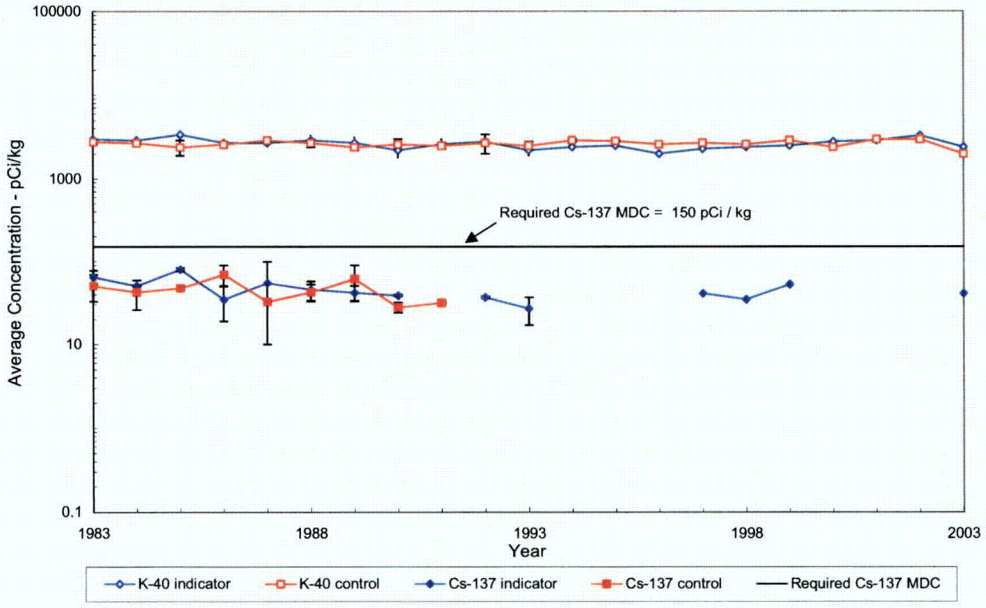
3.7 INGESTION PATHWAY

3.7.1 Fish

Fish samples were initially analyzed from 2 locations, one in the vicinity of the discharge point in Sherman Reservoir, and one upstream at Harriman Reservoir (10 km), in an area not influenced by the plant. The samples were analyzed by gamma spectrometry.

The only radionuclides detected in fish were fallout related Cs-137 and naturally occurring K-40 (see Figure 10).

Figure 10 - Annual Average K-40 and Cs-137 Concentration - Fish



3.7.2 *Food Crops & Maple Syrup*

Farm crops were collected at the time of harvest from 1 to 4 indicator stations depending on the results of a land use census, and one control location in Williamstown, MA, at 21 km.

Food crops have consisted of fruit and broad leafy vegetation. The sampling locations for this media vary based on the results of the annual land use census indicating the location of gardens and meteorological dispersion information for the year. The edible portions of the crops are analyzed by gamma spectrometry.

Due to the importance of maple syrup, as a commercial product in New England, samples have been collected annually since the early seventies, even though they are not required by the radiological environmental technical specifications (RETS). Sampling locations varied based on the land use survey results, and are documented each year in the annual environmental operating reports. The samples were analyzed by gamma spectrometry (see Figures 11 and 12).

K-40 has been detected consistently in all food crops and in maple syrup. Cs-137 has been detected in food crops in two out of the twenty years

from indicator locations. In addition, Cs-137 has been detected in maple syrup from indicator and control locations. Because the syrup is collected from the manufacturer as a finished product that has been boiled down as part of the production process, the concentrations of nuclides do not represent environmental levels. It is estimated that the resulting syrup has been concentrated by a factor ranging from 15 to 120 times the original sap depending on the time of season and sugar content of the sap collected (YAEC, 1983-2003). No plant-related radionuclides have been detected.

Figure 11 - Annual Average K-40 and Cs-137 Concentration - Maple Syrup

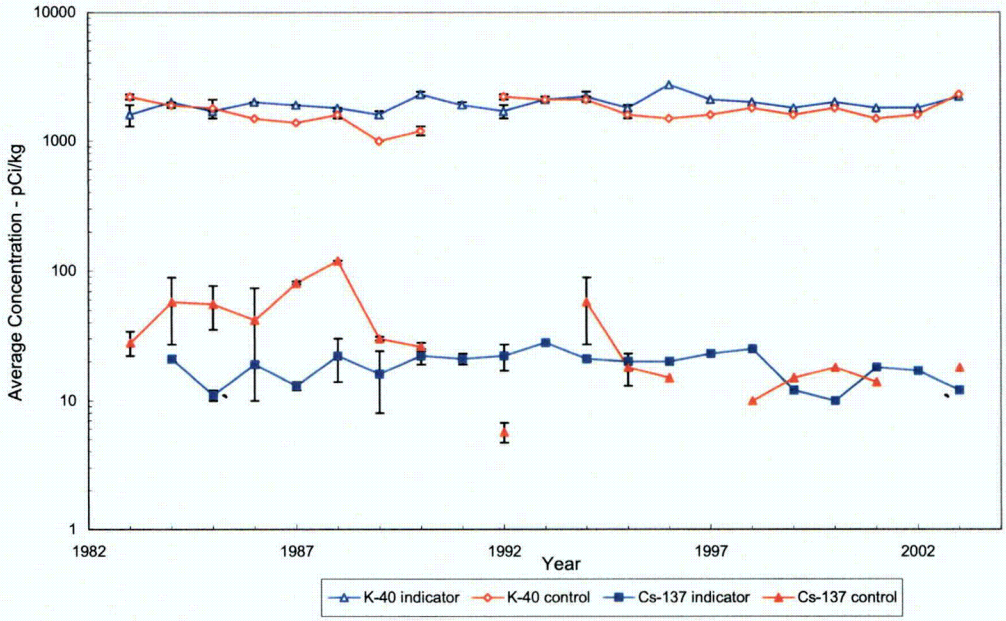
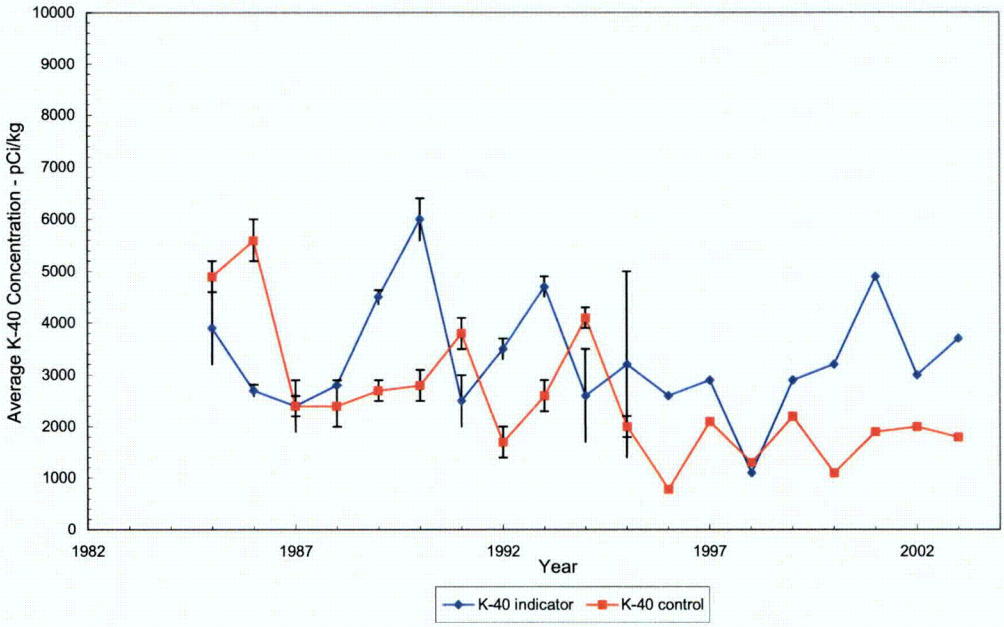


Figure 12 - Annual Average K-40 Concentration - Food Crop



3.7.3 *Milk*

Milk sampling was conducted monthly and twice per month during the "grazing season" that runs from June to November. During that time, milk samples were obtained from two indicator stations (if available) and at least one control station. The indicator stations are chosen based on the annual Land Use Census and current meteorological deposition information and typically are located within five miles of the Yankee Rowe site. Beginning in 1999, no indicator station was available for milk sampling. All samples were analyzed by gamma spectrometry and by nuclide specific analysis for Sr-89, Sr-90 and I-131.

The review of the results for the period between 1983 and 2003 indicate similar K-40 concentrations at the indicator and control stations. Cs-137 and Sr-90 in both control and indicator stations were detected in amounts that were typical throughout the New England environment as a result of nuclear weapons testing fallout and have decreased since the cessation of above ground weapons testing in the 1980s. Figures 13 and 14 show the annual average concentrations for Cs-137 and Sr-90 in raw milk, respectively. In addition to the indicator and control stations for the YNPS, annual average concentrations in pasteurized milk for New England were obtained from the EPA Environmental Radiation Ambient Monitoring System (ERAMS) web site, and from two additional New England sampling locations. Data is included for 1982 to illustrate the extreme variability (as evidenced by the error bars) that was present in

fallout related radionuclide concentrations in New England milk at that time. These large variations are due to differences in the feeding practices at the various farms. In particular, the amount of pasture vegetation vs. stored feed and the amount and type of vegetation in the animals' diet when on pasture (YAEC, 1983-2003).

Figure 13 - Annual Average Cs-137 Concentration - Milk

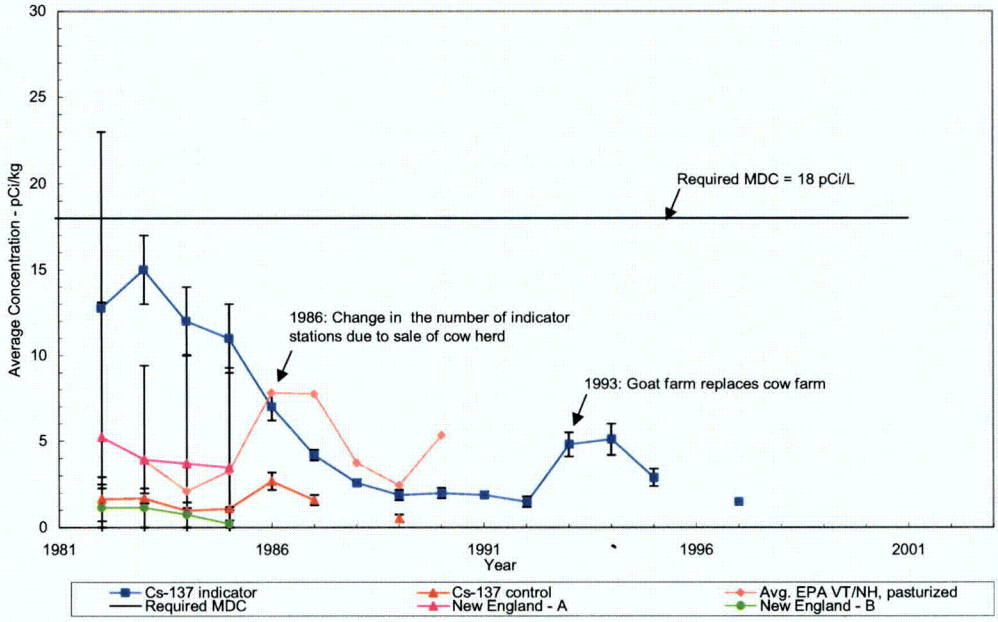
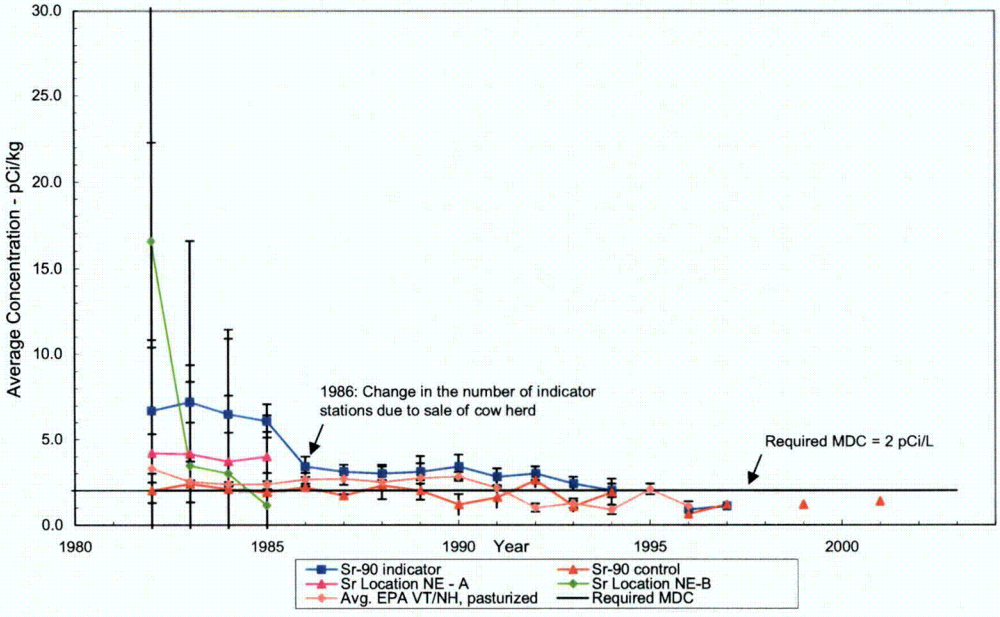


Figure 14 - Annual Average Sr-90 Concentration - Milk



4.0 SUMMARY OF THE NATURE & EXTENT OF CONTAMINATION

4.1 OVERVIEW

This section provides a summary of the nature and extent of impact identified from radionuclides and OHM in the environment by media, i.e., soil, groundwater, surface water, sediment, and fish. This summary is based on the results of past and ongoing investigations incorporating results available through December 2004. Additional investigation and remediation will continue concurrent with site decommissioning efforts requiring update of the findings presented. Once decommissioning, remedial and restoration actions are complete, an assessment of the level of risk to human health and the environment posed by residual impacts will be completed to support closure and restrictions on future use of the site.

4.2 SOIL

4.2.1 Radiological

The soil data are presented in three groups; 1) land areas outside of the industrial area; 2) within the industrial area; and 3) within the RCA. The number of samples collected for which a result was reported are listed; the number of samples with detectable radioactivity, the range of concentrations detected as well as the mean and standard deviation are reported. Tables 19 through 21 summarize data from soil samples collected for radiological analysis. The samples were counted by gamma spectroscopy and a broad range of radionuclides was analyzed for as noted in the table footnote, however, only those nuclides for which results were reported appear in the tables. A summary of analysis methods is included in Appendix B.

The area encompassed by the RCA would be expected to be the most impacted by radioactivity from plant operations and that table does show the highest concentration of radioactive measurements. It would be expected that land areas outside and inside the industrial area would either be the same or the land areas outside the industrial area would be slightly lower. Precise comparisons of the data for these different areas of the site are difficult given the targeted nature of the sampling in the Industrial Area.

It is important to note that these data are interim characterization data and are used to support initial classification of areas for the FSS. Soil samples along with other survey data will be collected during the FSS in accordance with the FSS QAPP and approved procedures. The results from these samples will comprise the final record of radioactivity in soils at the site and will be used to demonstrate compliance with applicable DCGLs for NRC license termination and risk assessment.

4.2.2 *Oil and/or Hazardous Materials*

4.2.2.1 *Background Areas*

A total of 23 soil samples, which included three duplicate samples, were collected from ten background soil sample locations during the soil sampling event. Background soil sample locations are shown on Figures 15 and 16. Validated background soil analytical results are summarized in Table 22. None of the background samples exhibited OHM at levels exceeding Reportable Concentrations (RCs). None of the background soil samples were analyzed for Volatile Organic Compounds (VOCs) because Flame Ionization Detector (FID) field screening results were not greater than or equal to 5 ppm.

4.2.2.2 *Industrial Area*

A total of 250 soil samples, which included nine duplicate samples, were collected from 36 locations within the Industrial Area of the YNPS. Industrial Area soil sample locations are shown in Figure 16. Industrial Area soil analytical results are summarized on Table 22. Results exceeding applicable RCs are highlighted.

RCS-1 criteria were exceeded for beryllium at SB-001. A total of 11 confirmatory soil samples were collected and analyzed for beryllium at and in proximity to SB-001. All analytical sample results were below method detection limits (0.5 milligram per kilogram (mg/kg)). Therefore, the beryllium RC exceedance was not confirmed and is not plant related.

RCS-1 criteria were exceeded for EPH (C11 - C22 Aromatics) at SB-005. The detection of EPH at SB-005 may be associated with the overlying pavement at the sample location. Additional investigation is on-going.

RCS-1 criteria were exceeded for dioxin at SB-020, SB023, and SB-074. A total of 11 confirmatory soil samples were collected and analyzed for dioxin at and in proximity to SB-020. Sample location SB-020 and the samples collected on a 10-foot grid around SB-020 were all below the RC for dioxin total equivalent quantity (TEQ). However, two sample

locations along a 150-foot grid contained dioxin TEQs greater than the applicable RC. The detection of dioxin at SB-020, SB023, and SB-074 could be associated with operation of former incinerators at the YNPS. Additional investigation is proceeding.

The Department has proposed to increase the RCS-1 standard for dioxin TEQ from four picograms per gram (pg/g) to 20 pg/g. None of the samples for SB-020 or SB-023 exceed the proposed RCS-1 standard for dioxin TEQ. SB-074 does exceed the proposed RCS-1 standard for dioxin TEQ.

RCS-2 criteria were exceeded for PCBs at SB-032, SB-042, SB-078, and SB-092. The detection of PCBs at SB-032, located in an area targeted for soil excavation, is consistent with the findings of the Phase II - Comprehensive Site Assessment (CSA) (ERM, 2003) that addressed a release of PCB-containing paint chips. The detection of PCBs at SB-042, SB-078, and SB-092, located beyond the area targeted for soil excavation, will be addressed under future remedial actions for soil planned for 2005.

RCS-2 criteria were exceeded three PAHs (benzo(a)anthracene, benzo(a)pyrene and benzo(b)fluoranthene) at SB-056. The detection of PAHs at SB-056, located along a site access roadway, may be associated with incidental releases of petroleum from on-site vehicle use. Additional investigation is ongoing.

RCS-2 criteria were exceeded for two PAHs (benzo(a)anthracene and benzo(a)pyrene) at SB-071. The detection of PAHs at SB-071 may be associated with a former fuel oil AST. Additional investigation is ongoing.

4.2.2.3 *Non-Industrial Area*

A total of 192 soil samples, which included ten duplicate samples, were collected from 56 locations within the Non-Industrial Areas of the YNPS. Non-Industrial Area soil sample locations are shown in Figures 15 and 16. Non-Industrial Area soil analytical results are summarized on Table 22. Results exceeding RCs are highlighted.

RCS-1 criteria were exceeded for TPH at locations SB-157 and SB-158, which are located within the Visitor Center Parking Lot, and may be associated with incidental releases of petroleum from on-site vehicle use. Further soil sampling is planned to evaluate the extent of TPH impacted soils near the Visitor's Center.

RCS-2 criteria were exceeded for three PAHs (i.e., benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene) at SB-105. A total of 29 confirmatory soil samples were collected and analyzed for PAHs at and in proximity to SB-105. In addition to the three PAHs that had previously exceeded RCs, four additional PAHs (benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, ideno(1,2,3-cd)pyrene) were detected above RCs. Total PAH concentrations ranged from non-detect to greater than 300 mg/kg. The concentrations of PAHs increased with depth. Elevated levels of PAHs correlated with field observations of railroad ties and petroleum odors. Further soil sampling is planned to evaluate the extent of PAH impacted soils near SB-105.

RCS-2 criteria were exceeded for beryllium at SB-111. A total of 11 confirmatory soil samples were collected and analyzed for beryllium at and in proximity to SB-111. All analytical sample results were below method detection limits (0.5 milligram per kilogram (mg/kg)). Therefore, the beryllium RC exceedance was not confirmed and is not plant related.

RCS-2 criteria were exceeded for lead at SB-135. A total of 29 confirmatory soil samples were collected and analyzed for lead at and in proximity to SB-135. The analytical results ranged from 18 to 2,900 mg/kg and nine out of 13 samples exceeded the applicable RC of 600 mg/kg, thereby confirming the original results. At each sampling location the concentration of lead decreased with depth and did not exceed the RC for any 1-2 or 2-3 foot intervals. The detection of lead at SB-135 is attributed to former use of this portion of the site as the Old Shooting Range. Further soil sampling is necessary to evaluate the extent of lead-impacted soil near SB-135 and conduct abatement as necessary.

4.3 *GROUNDWATER*

4.3.1 *Site Conceptual Model*

Groundwater investigations began at YNPS in 1977, with drilling of the first monitoring well. Since then, a total of 65 additional monitoring wells have been drilled. Sampling of the wells has identified tritium in shallow ground water within a stratified drift aquifer beneath the site. The concentration of tritium in the shallow ground water is generally low, with a maximum of about 5,000 picocuries per liter (pCi/L).

The most recent round of drilling occurred during the summer of 2004, when ten wells were drilled to further refine the definition of hydrogeologic features that control the fate and transport of tritium that has been identified in groundwater beneath the site. This recently

completed investigation followed a comprehensive episode of drilling completed the previous year, which discovered an aspect of the tritium plume that was unrecognized earlier. The work completed in 2003 is reported in Hydrogeologic Report of 2003 Supplemental Investigation (Hydrogeologic Report) (YAEC, 2004b). Earlier groundwater investigations are summarized in Site Ground Water Data Collection for YNPS Decommissioning, Rev 1 (YAEC, 2003).

Before 2003, virtually all of the wells drilled were shallow and did not penetrate a lodgement till layer presumed not to contain groundwater, which is beneath the surficial stratified drift aquifer that underlies the site. During the summer 2003 drilling program, for the first time, several wells were drilled through the entire sequence of sediments overlying bedrock. These sediments were deposited by continental glaciers that occupied the region during the Pleistocene geologic epoch. The results of the 2003 investigation suggested that the lodgement till beneath the stratified drift was about thirty feet thick and was underlain by a thick sequence of glaciolacustrine sediments that had been deposited within a glacial lake. Several thin, discrete sand aquifers containing tritium at concentrations greater than those measured in the stratified drift were encountered and thought to be interlayered within the glaciolacustrine sequence.

The 2004 drilling included wells at two locations (MW-106 and 108) near the middle of the Deerfield River Valley. These were some of the deepest wells that have been drilled at YNPS and penetrated the stratified drift, lodgement till, and glaciolacustrine sediments that had been encountered elsewhere on site. Correlation of the sediments exposed by the 2003 and 2004 drilling campaigns reveals that the lodgement till is thicker and the top of the underlying glaciolacustrine sequence is deeper than originally thought. This interpretation implies that many of the thin, discrete sand aquifers are interlayered within the lodgement till rather than the glaciolacustrine sequence. Figures 17 and 18 show the stratigraphy along two cross sections A-A′ and C-C′, oriented northwest-southeast and north northwest-south southeast across the site, respectively. These cross sections are revised from those presented in the Hydrogeologic Report, and include the new wells MW-106 and MW-108.

The depositional process that produced this arrangement of sediments within the till can be described as follows. Short-term fluctuations in climate, causing warming that may have spanned a period of a few years to a few decades, resulted in a temporary stagnation or retreat in movement of the ice sheet and a net increase in melt water. This melt water deposited the relatively clean, well-sorted sand aquifers into crevasses and ice channels within or on the margins of the glacier. As the climate reverted to colder temperatures that were more normal

throughout the Pleistocene, there occurred a net increase in snow accumulation and decrease in melt water. Under these conditions, the ice front advanced, once again depositing lodgement till beneath its base and overriding the crevasse and ice-channel filling.

This sequence of fluctuating climate repeated during several episodes, resulted in a series of thin, discrete sand aquifers that were found interlayered within the lodgement till at YNPS. The process by which the sand aquifers apparently were deposited suggests that they are isolated, discontinuous, poorly connected and of limited extent. This stratigraphy has obvious implications for the transport of contaminants in groundwater and suggests that the thin, discrete sand aquifers do not provide a mechanism for flow of tritium over large distances.

4.3.2 *Radiological Impacts to Site Groundwater*

The preliminary results of the 2004 drilling campaign, conducted on the margins of the presumed perimeter of the tritium contamination, confirm that monitoring well clusters MW-106, MW-108 and MW-109 outline the extent of tritium contamination to the north, west and southwest of both the shallow and deeper tritium plumes. Only minor concentrations of tritium (less than 1,000 pCi/L compared to the EPA MCL of 20,000 pCi/L) were detected in the shallow aquifer at MW-106 and in two of the deeper thin, discrete sands at MW-109.

Figures 17 and 18 show the distribution of tritium in May 2004 in cross section, while Figures 19 and 20 show the tritium plume in May in plan view, at two depths. Figures 21, 22 and 23 show the groundwater elevations and direction of flow in May 2004 in the shallow aquifer, in sands about 100 feet deep and in the bedrock, respectively. Each of these three maps shows a predominant component of flow to the northwest, toward the Deerfield River below Sherman Reservoir.

Groundwater has been sampled quarterly since July 2003 in all accessible monitoring wells. Each sample is collected using the low-flow sampling technique and is analyzed for tritium, gamma-emitting radionuclides, gross alpha and gross beta activity. Most samples are also analyzed for a list of ten transuranic and hard-to-detect radionuclides. Procedure AP-8601 details the sampling schedule and list of analytes for each monitoring well. Tritium continues to be the only plant-related radionuclide detected in groundwater at YNPS. Gross beta activity is detected in all wells and gross alpha in some, but this is naturally-occurring activity associated with transformations within the uranium and thorium series, which occur within the local metamorphic bedrock.

4.3.3 *Oil and/or Hazardous Material Impacts to Groundwater*

4.3.3.1 *OHM Parameters*

The monitoring well locations, corresponding to each reporting category, and analytical results exceeding RCs are presented on Figure 24. Groundwater analytical results for 2003 and 2004 are summarized on Table 23. Results exceeding RCs are highlighted.

4.3.3.2 *Shallow Monitoring Wells*

Each of the 36 shallow interval monitoring wells were sampled during either the 2003 or 2004 groundwater sampling events.

RCGW-2 criteria were exceeded for PCBs in shallow monitoring well MW-5. Analytical data from the most recent sampling event (August 2004) indicates a detection of PCBs in unfiltered samples (as particulates), but no significant dissolved phase impact. Additional monitoring for dissolved phase PCBs will be conducted at MW-5 during future groundwater sampling events.

4.3.3.3 *Intermediate Monitoring Wells*

Each of the 11 intermediate monitoring wells were sampled during either the 2003 or 2004 groundwater sampling events.

RCGW-2 criteria were exceeded for 1,1-dichloroethene (DCE) at MW-105C. Chlorinated VOCs were used/stored in the nearby Turbine Building (Figure 24). Therefore, the source, nature, and extent of DCE in groundwater will require further evaluation. Additional sampling for DCE will be conducted at MW-105C during future groundwater sampling events.

RCGW-2 criteria were exceeded for VPH (i.e., C5-C8 Aliphatics) at MW-101C. Review of the analytical data and resulting chromatographs indicate that the exceedance of VPH at MW-101C is likely attributable to interference by either acetone or isopropyl alcohol and is not attributable to petroleum hydrocarbons. Therefore, the VPH exceedance of the RC does not require notification to Department. Acetone and isopropyl alcohol sample results at MW-101C are below applicable RC criteria.

RCGW-2 criteria were exceeded for PCBs at MW-107D. The exceedance of RCGW-2 for PCBs at MW-107D is attributable to PCB-containing paint chips. Analytical data from the most recent sampling events (i.e., May and August 2004) indicate that PCBs were not detected in the dissolved

phase. Additional sampling for dissolved phase PCBs will be conducted at MW-107D during future groundwater sampling events.

4.3.3.4 *Bedrock Monitoring Wells*

Each of the 11 bedrock monitoring wells were sampled during either the 2003 or 2004 groundwater sampling events.

RCGW-2 criteria were exceeded for PCBs at MW-107B. The exceedance of PCBs at MW-107B is attributable to PCB paint chips. Analytical data from the most recent sampling event (August 2004) indicate that PCBs were not detected in the dissolved phase. Additional sampling for dissolved phase PCBs will be conducted at MW-107B during future groundwater sampling events.

RCGW-2 criteria were exceeded for bis(2-ethylhexyl)phthalate (DEHP) at MW-108B. Additional sampling will be conducted to confirm the RC exceedance.

4.3.3.5 *Water Supply Wells*

The two water supply wells were sampled during the 2003 and 2004 groundwater sampling events. No compounds were detected above applicable RCs for either the Facility Water Supply Well (Figure 2) or the Visitor Center Water Supply Well (Figure 1).

4.3.3.6 *Sherman Spring*

Sherman Spring was sampled during the 2003 and 2004 groundwater sampling events. No compounds were detected above the method detection limits at Sherman Spring.

4.3.4 *On-going Assessment & Remedial Considerations*

The data gathered during the summer 2004 drilling program are currently being evaluated, interpreted and compiled into a comprehensive hydrogeologic report that will be released in early Spring 2005. That report will include updated plume maps, groundwater flow maps and cross sections that reflect the information learned from the drilling program and the groundwater analytical data resulting from four quarters of sampling during 2004. The report will compare tritium concentrations to groundwater levels in each well, to determine if a seasonal trend can be identified. The report will also draw conclusions regarding completeness of the body of information describing the nature and extent of tritium impacts to the groundwater at YNPS.

Ongoing demolition of structures at YNPS has restricted access to suspected source areas of tritium in the groundwater. These suspected source areas include the spent fuel pool, the ion exchange pit, the vicinity of a breach in the chemical laboratory radioactive waste sump pipeline, and the vicinity of a failed drain pipe in the PCA storage facility.

Access to these areas should become available later in 2005. YAEC may wish to investigate these and other areas by drilling additional monitoring wells to determine the areal and vertical distribution of tritium or other radionuclides in their vicinity. The resulting information would be useful in further defining the extent of impacts to the groundwater in suspect areas not yet fully investigated, the relation between any new impacts identified and those already known, and in demonstrating the breadth of the area where the concentration of tritium may exceed a regulatory guideline.

4.4 *SEDIMENT & SURFACE WATER*

4.4.1 *Radiological*

The Sherman Reservoir has been used as a source of cooling water and discharge (including stormwater discharge) for YNPS. These uses resulted in the introduction of small amounts of plant-related radioactivity into the reservoir and subsequently into the sediments.

Sediment samples from the Sherman Reservoir and other parts of the Deerfield River have been collected routinely and analyzed for radionuclide content, beginning before the start of plant operations as a part of the Radiological Environmental Monitoring Program (REMP). REMP sediment samples were collected two to three times per year in a varying number of locations in support of plant operation and analyzed using gamma spectroscopy to identify the presence of plant-related radioactivity. The REMP included analyses Ac-228, Ac/Th-228, Ag-108m, Ag-110m, Am-241, Ba-140, Be-7, Bi-212, Bi-214, Ce-141, Ce-144, Co-57, Co-58, Co-60, Cr-51, Cs-134, Cs-137, Eu-152, Fe-59, I-131, I-133, K-40, Mn-54, Mo-99, Nb-95, Np-239, Pb-212, Pb-214, Ra-226, Ru-103, Ru-106, Sb-124, Sb-125, Se-75, Sr-90, Te/I-132, Tl-208, Zn-65, and Zr-95. Special REMP sampling for specific investigations, mostly in Sherman Reservoir, has also been conducted over the years. Additionally, a study of river and reservoir sediment (Bellini, 2000) was undertaken as a part of site characterization studies in support of license termination, using approved plant procedures and preferred sampling techniques. These samples were analyzed using gamma spectroscopy.

As expected, due to licensed liquid releases, Co-60 and Cs-137 were the only plant-related radionuclides consistently identified as being present and were found in low-levels in bottom sediment samples taken from the south end of Sherman Reservoir near the Circulating Water outfall. Slightly higher levels were found in the south end of the reservoir, most likely due to the increased amount of organic material in the sediments of that area. In general the amounts of Cs-137 and Co-60 decrease with distance downstream from the reservoir, and thus the impacts are localized to the south end of the reservoir and the areas in the immediate proximity of the storm drain outlets. Samples from other areas of the Sherman Reservoir and the Deerfield River contained no detectable amounts of plant-related radioactivity.

A follow-up sediment study (Bellini, 2001) implemented the recommendations for additional sediment sampling in the original study and reviewed more recent REMP data. In addition to performing gamma spectroscopy, sediment samples in the follow-up study were also analyzed for Sr-90. Although detected, the results for Sr-90 were consistent with background from fallout associated with nuclear weapons testing. The follow-up sediment sampling resulted in the identification of no significant presence of plant-related radioactivity in Wheeler Brook stream-bed upstream and the Deerfield River canals downstream of YNPS. The study did recommend follow-up sediment sampling as a part of the final status survey, which has been incorporated in the LTP.

A compilation of Sherman Reservoir sediment data from the HSA for Survey Area OOL-01 is included in Table 24.

4.4.2 *Oil and/or Hazardous Materials*

4.4.2.1 *Comparison to Background*

Sediment sampling results for Sherman Reservoir, West Storm Drain, Deerfield River, and Wheeler Brook were compared to background sediment results. Sampling results were compared to the maximum concentrations detected in background sediment samples for total VOCs, total SVOCs, DRO, and individual metals. Total PCBs were not detected in background sediment samples. Therefore, PCB results were compared to the average method detection limit for total PCBs in background sediment samples.

4.4.2.2 *Sherman Reservoir*

In August 2003, a total of 44 sediment samples, which included one duplicate, were collected from 36 sample locations in Sherman Reservoir

(SD-002 to SD-041). Sample results are detailed in Table 25 and presented in Figure 23. Within Sherman Reservoir, copper (SD-008 and SD-009) and lead (SD-011) were detected at concentrations greater than five times background. Lead (SD-012) was detected at concentrations greater than three times background. Metals detected at concentrations above background are near the circulating water discharge structure (SD-008 and SD-009) and the cooling water intake pipe (SD-011 and SD-012).

TPH-DRO was detected at concentrations greater than three times background at SD-041. This detection does not appear to be related to known site activities due to its distance from the site (approximately 700 feet from the shoreline), and its upstream location in relation to the site.

4.4.2.3 Deerfield River

In August 2003, a total of seven surficial sediment samples, which included one duplicate, were collected and analyzed from the Deerfield River (SD-201 to SD-206). Sample results are detailed in Table 25 and are presented in Figure 25.

Within the Deerfield River, copper (SD-204) was detected at concentrations greater than three times background. SD-204 is located in proximity to the confluence of the Deerfield River and the West Storm Drain Ditch.

In July 2004, 12 additional sediment samples, including 2 duplicates, were collected from the Deerfield River in proximity to SD-205, which is located near the confluence of the Deerfield River and the West Storm Drain Ditch. All 12 samples were submitted for analysis of PCBs. Sample results ranged from non-detect to 300 ug/kg.

4.2.2.4 West Storm Drain Ditch

In August 2003, a total of six shallow sediment samples, which included one duplicate, were collected from the West Storm Drain Ditch (SD-301 to SD-305), which discharges to the Deerfield River. Sample results are detailed in Table 25 and are presented in Figure 25. Within the West Storm Drain Ditch, total SVOCs (SD-303) and lead (SD-301) were detected at concentrations greater than five times background. Total SVOCs (SD-302) and lead (SD-304) were detected at concentrations greater than three times background and may be associated with runoff from parking areas at YNPS.

In June 2004, seven sediment samples, which included one duplicate, were collected from the West Storm Ditch to confirm the results of SD-302 and

SD-303. Sample locations SD-302 and SD-303 were resampled and additional samples were collected in proximity to these locations. The analytical results for total SVOCs ranged from non-detect to 4,893 ug/Kg. These sample results were substantially lower than the previous results, indicating that the previously detected levels of total SVOCs were not reproducible.

4.2.2.5 *Wheeler Brook*

In August 2003, a total of six surficial sediment samples were collected and analyzed from Wheeler Brook (SD-101 to SD-106). Sample results are detailed in Table 25 and are presented in Figure 25. All compounds and compound groups detected in Wheeler Brook were below site-specific background concentrations.

A total of 11 surface water samples, including one duplicate, were collected from five locations along Wheeler Brook (SW-1 to SW-5). Metals and VOCs were detected in surface water analytical results.

4.5 *FISH*

4.5.1 *Radiological Assessment*

Radiological assessment of fish in both Sherman Reservoir and at a control location, Harriman Reservoir, is provided in YNPS Annual REMP Reports. Samples are collected semi-annually. As expected in biological matter, naturally occurring K-40 was detected in all samples. No other gamma emitting radionuclides other than Cs-137 were detected in fish samples. The average Cs-137 concentrations are considered to be consistent with fallout from above ground nuclear weapons testing.

4.5.2 *OHM Assessment*

Fish samples were collected at the site to evaluate whether the release of PCBs related to the paint chip release were present in fish in Sherman Reservoir. Fish were collected during the Phase II Comprehensive Site Assessment from the East Storm Drain Area, the northern end of Sherman Reservoir and from Harriman Reservoir. PCBs were detected in the fish tissue samples collected in the East Storm Drain Area. The Phase II risk characterization determined that the levels of PCBs in fish detected near the East Storm Drain Outfall do not pose a risk to consumers of recreationally-caught fish. Both the carcinogenic and non-carcinogenic risks are below the Department's risk management criteria. Subsequently,

the fish tissues were analyzed for PCB congeners. The congener results were consistent with the PCB aroclor results.

5.0 *SITE DECOMMISSIONING, INVESTIGATION SCHEDULE AND CLOSURE PATHWAY*

Decommissioning activities are being completed in three phases:

- Phase 1: Mechanically/electrically isolate the Spent Fuel Pool, remove SSCs not supporting fuel storage, and remove fuel and GTCC waste from the SFP.
- Phase 2: Dismantlement and disposition of remaining systems, structures, and components (SSCs).
- Phase 3: Termination of the Part 50 license.

As discussed herein, Phase 1 has been completed. Phase 2 activities are ongoing. Site investigation and remedial actions are being conducted concurrent with Phase 2 decommissioning. Phase 3 is intended to occur following completion of all radiological decommissioning activities.

The following are general decontamination and dismantlement considerations that are being incorporated, as appropriate, into the activities for decommissioning the systems, components, and structures at YNPS.

- Radiological characterization survey data has been used to identify the systems, structures, and components to be decontaminated and dismantled. Characterization data have also been collected for soils and sediments in the vicinity of the plant.

- Detailed decommissioning work documents are being developed, reviewed, and approved in accordance with project and plant programs and procedures. These documents include plans for sampling for radioactivity in soils as demolition progresses. These data add to the characterization data and may be used to direct further excavation and decontamination as appropriate.

- Plant tag-out procedures are being used to de-energize electrical and control equipment, isolate and drain fluid systems, and isolate and depressurize pneumatic systems. Radiation Protection procedures will be used to ensure compliance with radiological requirements for contamination control and worker protection and ALARA programs. Occupation safety standards will be observed.

- Components are being identified prior to removal. The components are then removed using the techniques and methods as specified in the

decommissioning work packages. Components are either decontaminated or shipped to a low-level radioactive waste disposal facility or, if appropriate, shipped to an approved landfill.

- Contaminated structural steel components, on which a volume reduction process is being applied, may be moved to a processing area and packaged into containers for shipment to an off-site waste processing facility.

- Remaining portions of basements and slabs will be perforated to allow for groundwater and/or surface water infiltration.

- Remaining buried contaminated components (e.g., piping, drains, and conduit) are being excavated. After excavation, the components will be examined to ensure that they are physically sound prior to cutting and removal. Most buried contaminated piping is located in steel conduits (i.e., pipes enclosed in pipes).

- After completion of decommissioning and/or remediation activities and prior to final status survey, isolation and controls will be implemented.

- A final status survey will be performed to verify removal of contamination to below release levels.

Coatings will be removed, as required by local, state, and federal regulations. PCB paints will be removed from exposed concrete surfaces as required by the Alternate Method of Disposal Authorization (AMDA) requirements prior to demolition of the structure, as authorized by the EPA on 8 October 2002 and subsequent changes thereto.

In addition to dismantlement and decontamination activities, YAEC's proposed pathway and general schedule for completing the integrated assessment of radiological and OHM impacts to the environment at the site is summarized in Figure 26. Ongoing activities to support site closure are highlighted in the green blocks (ongoing through December 2005), key reporting components are highlighted in the yellow blocks (including this Phase II Report and the Site Closure Risk Assessment scheduled from October 2005 through March 2006) and the end-point to the closure process is described in the red block (targeted for the period from January to July 2006). Key components of the proposed closure pathway include:

- Ongoing coordination with MADEP (as the lead agency), other regulatory and public stakeholders on the results of site investigation and remedial actions. *January 2005 through July 2006.*

- Iterative site investigation (development of Field Sampling Plans, data collection and analysis), risk screening to determine the likelihood and/or need for remedial response actions by comparison of results to DCGLs and/or conservative risk-based thresholds (MCP Method 1 Standards), interim remedial measures as Release Abatement Measures (RAMs) for OHM or in accordance with NRC/DPH requirements for the management of radioactive materials and verification sampling and analysis to confirm compliance with target site closure requirements. *January 2005 through December 2005.*
- Completion of a site closure risk assessment integrating results of final radiological and OHM testing post-remediation, site restoration activities (re-grading and planting) and consideration of institutional controls (deed restrictions) to demonstrate that site conditions ensure long-term protection of human health, safety, public welfare and the environment. *October 2005 through March 2006.*
- Preparation of a final site closure documentation consistent with the MCP (targeting a Permanent Solution as a Class A-3 RAO), public meetings, DEP written approval of site closure and execution of ongoing monitoring and maintenance plans necessary to ensure compliance with site closure requirements and approvals. *January 2006 through June 2006 and on.*

YAEC's proposed environmental site closure pathway is intended to provide a general framework for coordination with the Department (as the lead regulatory agency) in an effort to establish agreement on specific deliverables and a schedule that will meet both YAEC's, the Department's and other regulatory and public stakeholders needs. YAEC encourages the Department and other regulatory and public stakeholders to provide constructive comment and input regarding this proposed pathway so that YAEC can achieve site closure on schedule in a safe responsible and reliable manner.

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Tables

Table 1
Sources of Radioactive Release
Plant Operations & Maintenance
Yankee Nuclear Power Station
Rowe, MA

Date	Mechanism or Structure	Radionuclides of Concern	Release Impact	Survey Area
Circa 1960's	Due to mechanical wear and corrosion from the initial set of control rods	Radioactive silver and nickel - Ag-108m and Ni-63	Into the reactor coolant	Resulted in distribution of radioactive silver in plant systems and on equipment used during the first refueling
	Storage of the refueling equipment and prepared radioactive waste outdoors	Radioactive silver	Within the Radiologically Controlled Area (RCA) yard area	MARRSIM Class 1 survey areas
	Snow removal activities performed in the RCA caused a redistribution of accumulated surface contamination		Area outside the RCA where snow was relocated. The areas affected were inside the industrial area fence on property governed by the YNPS NRC license, areas outside the fenced industrial area, along the rail road bed outside the east gate, and along existing roadways	MARSSIM Class 2 and 3 survey areas
	Rain falling on the surface of yard areas in the RCA	Small amounts of radioactive material have been observed in the catch basins over the years	Redistribution of radiological contamination into low areas of the RCA and into the storm drain system	Portions of the drains as well as any sediment or soil found above detectable radioactive concentrations will be disposed of as radioactive waste.
	A defect in the construction of the IX Pit concrete	Believed to be the source of the tritium contamination observed in the ground water at the site	Leaks in the radioactive systems in the Ion Exchange (IX) Pit resulted in contamination of the water in the IX Pit	Allowed contaminated water to leak, resulting in contamination of the subsurface soils, asphalt and concrete around the IX Pit and adjoining structures.
	These leaks as well as possible leaks from the Spent Fuel Pool (SFP) that abuts the IX Pit			Groundwater contamination continues to be investigated by YNPS and more will be learned as the decommissioning progresses and these buildings are demolished
	Wear on internal valve components made of stellite resulted in the introduction of wear particles into the reactor primary system	These particles were activated to gamma emitting Co-60 during plant power operations. Some particles associated with fuel fragments were also generated during plant operations	Although not a frequent occurrence, Co-60 particles have been identified and removed during surveys of the RCA. The environmental impact of these particles has been observed to be very minor as they are microscopic in size and are insoluble as they are essentially metal chips	The particles associated with fuel fragments have not been identified in the RCA, but were confined to controlled contamination areas.
	Out of doors decontamination facilities (North and South decontamination pads)		Resulted in contamination of the soils around the pads. These areas have been assigned the FSS survey area designation of NSY-01	MARRSIM Class 1 survey areas
	The repair of a damaged reactor cooling pump motor on the normally clean turbine deck		Resulted in contamination of the turbine building generally and on the turbine deck and control room specifically. All radioactive contamination was contained within the turbine building structure.	MARRSIM Class 3survey areas however this area may be reclassified due to some decon activities performed during demolition
Mid 1970s	YNPS converted from stainless steel to zirconium clad fuel pins. Some of the zirconium fuel pins failed in the reactor due to vibrational stress from water jetting. The pin failure resulted in a release of fuel pellets directly into the reactor coolant system.	Detectable quantities of fission products such as Cs-137 and Cs-134 were dispersed throughout the primary side plant systems and the fuel handling facility for the first time in the plant operating history	Resulted in a release of fuel pellets directly into the reactor coolant system. clarify as "fuel pellet fragment" and delete the word "directly"	Contributed to changes in the radionuclide profile at the plant
1981	Relocating the reactor head to its outside storage location, the reactor head made contact with the wall above the equipment hatch in the Vapor Container.	The impact dislodged particulate radioactivity adhered to the underside of the reactor head.	This resulted in contamination of the RCA yard area under and around the equipment hatch.	MARRSIM Class 1 survey areas
1984	PVC drainpipe that connected the PCA storage building to the Waste Disposal Building. The PVC pipe joints failed allowing liquid to flow from the drainpipe into the surrounding soil.		This event occurred in survey area WST-02 (Figure 3). The line ran diagonally from survey area WST-01 (old PCA) to survey area WST-03 through the NE quadrant of the warehouse (Figure 3). The line was excavated and repaired and the affected soil disposed off-site as radioactive waste	MARRSIM Class 1 survey areas
Circa 1994	Use of an underwater plasma torch to section of the reactor internals resulted in the release of highly radioactive cutting debris into the shield tank cavity shield water.	This changed the radionuclide mix of the residual contamination in the shield tank cavity and, to a certain extent, in the Spent Fuel Pool.	This cutting debris was contained within the plant system and was essentially insoluble due to its metallic nature. No environmental release was observed.	Contributed to a change in the radionuclide profile at the plant

All events listed in chronological order

Table 2
Radiological Source References
Yankee Nuclear Power Station
Rowe, MA

Category	Types of Documents Reviewed
License and Technical Specifications	• Technical Specification and Changes • License amendments
Original Plant Design	• Function and purpose of systems and structures • Plant operating parameters • Plant operating procedures
Original Plant Construction Drawings and Photographs	• Specifications for systems and structures • Field Changes/As-Built drawings • Site Conditions
Plant Operating History	• Abnormal Operating Reports (AOR) • Licensee Event Reports (LER) • Plant Information Reports (PIR) • Radiological Occurrence Reports (ROR) • Radiological Incident Reports (RIR) • Condition Reports (CR) • Plant Operating Procedures Regarding Spills and Unplanned Releases • Plant Operations Logbooks • Radiological Environmental Monitoring Program and Radiological Environmental Technical Specification Reports (REMP & RETS) • Monthly Plant Operations Reports • Semi-Annual Plant Operations Reports
Work Control Documents and Site Modifications	• Job Orders • Plant Alterations • Engineering Design Change Requests (EDCR) • Plant Modifications • Maintenance Requests
Radiological Surveys and Assessments	• Radiological surveys performed in support of normal plant operations and maintenance • Radiological surveys performed in support of special plant operations and maintenance • Radiological assessments performed in response to radioactive spills or events • Scoping and characterization surveys performed as part of Decommissioning Plan development • Remediation support surveys conducted during decommissioning activities • Surveys conducted under the guidance of NUREG/CR-5849 (Reference 2-4)
The YAEC Decommissioning Plan	• Decommissioning Work Plans • Secondary Side Work Plans • Engineering Change Notifications • Field Change Notifications • Temporary Change Requests
Data from personal exit interviews regarding plant operational history	
The historical evaluations performed for the previously submitted LTP	
Documentation of remediation area stabilization and restoration activities	

Table 3
Sources of Radioactive Release
Unplanned Releases
Yankee Nuclear Power Station
Rowe, MA

Date	Name of Release	Radionuclides of Concern	Description	AOR/PIR #	Impacted Survey Areas	Impacted Subsurface Areas/Structures
9/20/1961	Radioactive Spill	The sample contained approximately 35 mCi (specific radionuclide data not available).	A half-liter container of reactor coolant water was dropped on the asphalt in the Potentially Contaminated Area between the Primary Auxiliary Building and the Waste Disposal Building. The spill was absorbed using absorbent paper and the area decontaminated by mopping. The fixed contamination remaining was approximately 0.05 mr/hr at 1 inch from the pavement.	61-15	NOL-2/NOL-5	
9/18/1963	Shield Tank Cavity Fill Water Spill	Contamination levels were 10^6 to 10^7 dpm (specific radionuclide data not available) over areas of several square inches.	A one-half inch sampling valve located over the IX Pit was inadvertently left open while filling the shield tank cavity. This resulted in a spill of approximately 10 gallons of water from the Safety Injection Tank. A portion of the spill ran off the deck of the pit and onto a section of the blacktop surface to the west of the pit. The radiation level in the immediate area was 70-100 mr/hr measured at one inch. Run off water resulted in contamination levels of 20-60,000 dpm/ft^2 (Sic).	63-12	NOL-1/NOL-2	NSY-2
10/8/1963	De-watering Pump Packing Leakage	At the time the leak was identified, 6 to 8 inches of water had accumulated in the barrel with activity of 6×10^{-5} mCi/ml (specific radionuclide data not available).	A water leak from the fuel chute de-watering pump was routed, via a small utility hose, to a 30-gallon collection drum placed in a storm drain catch basin (ECB-005) located between the railroad tracks and the NE corner of the spent fuel pit. It was determined that the bottom rim of the barrel was corroded, and water was leaking from the bottom of the barrel. It was believed only a small amount of water was leaked to the storm system.	63-17	OOL-5/OOL-6/NOL-01	East Storm Drain System
9/3/1964	Seal Water Tank Spill	An estimated 35 gallons of water containing a total activity of 270 mCi (specific radionuclide data not available) was released.	Shutdown cooling pump seals leaked reactor coolant water and back-flowed into the seal water tank. This caused the tank to overflow through the vent connection, into the common relief valve discharge line and onto the Primary Auxiliary Building roof. The Roof Drain System drained into the Storm Drain System via a subsurface piping connection. A sample of the storm drain (WCB-009) was determined to contain 1×10^{-6} mCi/ml. The predominant isotopes were Co-58, Co-60, and Mn-54 (distribution of the radionuclides in the sample not available). Service Water was diverted to the storm drain to flush the system.	64-08	AUX-1	West Storm Drain System

Table 3
Sources of Radioactive Release
Unplanned Releases
Yankee Nuclear Power Station
Rowe, MA

Date	Name of Release	Radionuclides of Concern	Description	AOR/PIR #	Impacted Survey Areas	Impacted Subsurface Areas/Structures
10/3/1964	IX Pit High Level – Leakage Coming Up through Pavement	The radionuclides and concentrations identified were: Ag-110m at 5×10^{-7} mCi/ml and Co-60 at 1×10^{-6} mCi/ml.	After filling the Ion Exchange Pit to its normal operating level, the operator failed to close the fill valve. Water continued to flow into the pit from the Primary Water Storage Tank by gravity feed. Later, the operator noticed water seeping through the blacktop on the west side of the pit, diagnosed the cause, and closed the valve. The water on the blacktop was sampled and was found to contain radioactivity. The blacktop was rinsed down with Service Water to the storm drain (ECB-005).	64-13	NOL-1/NSY-2 and OOL-5/OOL-6	East Storm Drain System internal and external to piping (backfill) / SFP-02 sub-floor / NSY-09 / AUX-01 North external perimeter (backfill) / SFP-01 West external perimeter (backfill) / BRT-01 Eastern external perimeter
9/27/1966	Spent Fuel Pit Water Spill	This occurrence resulted in a total release of 4 mCi gross b-g and 670 mCi of tritium (more specific radionuclide data not available).	A two-inch priming valve for the Spent Fuel Pit (SFP) cooling and purification pump was left open; however an upstream valve isolating make up water to the Low Pressure Surge Tank (LPST) was correctly closed. The LPST make up pump was started to provide make up water to a hose connection located between the two valves to wash down a shipping cask as it was removed from the pit. Water flowed through the open priming valve to the SFP in sufficient quantity to result in actuation of the high level alarm. The reason for the high level alarm was not immediately determined and by the time the reason was identified water had overflowed from the SFP. Approximately 33 gallons of water flowed down the SFP exterior wall, over a small section of asphalt paving and into an immediately adjacent storm drain, ECB-005. A continuous service water flush of the east side culvert system (ECB-005) was initiated and continued for a 24-hour period.	66-07	SFP-01 North external wall /NOL-01/OOL-01	East Storm Drain System internal and external to piping (backfill between SFP-01 and ECB-005)
9/27/1966	Abnormal Activity in Storm Drain	This occurrence resulted in a total release of 0.8 mCi gross b-g and 3.32 mCi tritium.	Water from the west storm drain culvert was sampled (the SFP water released discussed above discharged to the east side only). An average of two samples from the west side showed gross activity of 6.7×10^{-7} mCi/ml (specific radionuclide data not available). Investigation found a relief valve on the safety injection tank heating system to be slowly leaking into a floor drain in the PAB. The floor drains in that section of the building were traced to discharge to a storm drain located on the outside of the building (WCB-009). Further investigation indicated that the relief valve leak could not have existed for more than one day and that the maximum volume did not exceed eight gallons during that period. A sample of culvert water collected 24 hours after the occurrence indicated a gross activity of 1.2×10^{-8} mCi/ml and tritium activity of 5.1×10^{-5} mCi/ml.	66-08	OOL-5/OOL-6	West Storm Drain system

Table 3
Sources of Radioactive Release
Unplanned Releases
Yankee Nuclear Power Station
Rowe, MA

Date	Name of Release	Radionuclides of Concern	Description	AOR/PIR #	Impacted Survey Areas	Impacted Subsurface Areas/Structures
11/1/1966	Hose Failure	Approximately 10 gallons of water with an activity of 3.0 x 10^{-3} mCi/ml (for a total of 113 mCi) was released.	The hose used for a routine draining of the fuel chute pump discharge line burst. Less than 10 gallons of contaminated water flowed into a storm drain served by the east culvert (ECB-005). The spill area was flushed with service water. The east culvert was sampled after the spill.	66-09	NOL-1/OOL-1	East Storm Drain system
1/16/1968	Waste Hold-up Tank Moat Spill	A total of 520 mCi b-g and 698 mCi tritium were spilled into the moat.	The suction line from the waste hold-up tank was found to be frozen. Approximately 200 gallons of water spilled from a valve bonnet failure caused by the freezing of the suction line. The spill was contained within the moat structure.	68-01	NSY-7	
7/16/1975	Yard Area Contamination	An area of land near the Ion Exchange Pit was identified with a contamination level of approximately 500,000 dpm.	Over the next few days, the entire restricted area was surveyed. Fourteen areas, ten of which were in areas previously identified as a "clean area," were found to be contaminated at levels greater than 1000 dpm/100 cm^2. Most of the contamination was removed, and the remaining contamination was sealed in place using asphalt sealer and covered with clean soil.	75-07	NOL-01 through NOL-06 and SVC-03	SVC-03 beneath slab in old RCA access alley
12/21/1977	Service Building Radioactive Sump Transfer Line Puncture		A boring bit inadvertently punctured the 2.5-inch stainless steel line leading from the Service Building Sump Tanks to the PAB while conducting core borings inside the Radiation Control Area. The sump line ran at a depth of 15 feet underground, where the damage occurred, and the boring depth was 61.5 feet. The damage was not detected until the next day when the sump pump started and water issued from the borehole. The sump pump ran through two cycles resulting in 20 gallons of water discharged from the rupture. The water contained the following:	77-16	NOL-2	Soils surrounding perforation and transfer line backfill/Soils to a depth of 61.5 feet and below along the bore hole.

Radionuclide	Total Activity, mCi	Concentration, mCi/ml	Fraction of MPC
I-131	16.5	2.18×10^{-4}	3.63
I-133	2.76	3.65×10^{-5}	0.18
Cs-134	0.34	4.46×10^{-6}	0.01
Cs-137	0.5	6.67×10^{-6}	0.02
Co-60	0.58	7.69×10^{-6}	0.01

No measurable levels of activity were released off-site or to the storm drain. The line was repaired, and a sand and concrete casing was poured around it.

Table 3
Sources of Radioactive Release
Unplanned Releases
Yankee Nuclear Power Station
Rowe, MA

Date	Name of Release	Radionuclides of Concern	Description	AOR/PIR #	Impacted Survey Areas	Impacted Subsurface Areas/Structures
8/6/1980	Resin Spill	Radiation readings on contact with the resin were 1 mrad/hr and the spilled liquid reading were up to several hundred thousand dpm/100 cm^2 (sic) (specific radionuclide data not available).	A hose developed a pinhole leak, while pumping resin to a cask. The failure of the hose allowed the release of several gallons of water and one quart of resin. A 15- by 20-foot area of the RCA yard was contaminated. Decontamination included removal and disposal of some of the blacktop.	80-09	NOL-2/NSY-2	South and East exterior walls of NSY-02. The sub-slab area of NSY-02 (IX-pit) was also impacted due to transfer of contamination by surface water (i.e., water used in decontamination and rainwater) into cracks between asphalt and IX Pit walls
5/15/1981	Contamination of Yard Area During Rx Head Removal	Removable radioactivity immediately below the equipment hatch was 200 mrad/hr beta. The total activity released to the ground was approximately 250 mCi, with approximately 10mCi (specific radionuclide data not available) discharged to Sherman Pond.	While positioning the reactor vessel head over the equipment hatch in preparation to lower the head through the equipment hatch, the reactor head made contact with the shield wall. This resulted in the spread of removable radioactivity outside of the Vapor Container (VC). The area was cleaned, but due to rainfall trace radioactive material levels were detected in the east storm drains.	81-09	NOL-1/NOL-6/OOL-12/OOL-13 and OOL-1	BRT-01/in cracks and crevices under VC Equipment Hatch and along rails/ties in OOL-12 and OOL-13 and the East Storm Drain System due to surface water run-off.
9/10/1984	Drain Pipe Failure	Soil samples from around the pipe identified the presence of Co-60 and Cs-137 and the excavation of the pipe continued. The area of maximum contamination was measured at 25-35 mR/hr (specific radionuclide data not available), with a hot spot of 29,300 pCi/gm Co-60 in this same area.	An excavated drainpipe from the Potentially Contaminated Area (PCA) storage building to the Waste Disposal building was found to be leaking. The pipe from the edge of the old PCA building to the edge of the waste disposal building and approximately 420 ft^3 of dirt and rock were removed as radioactive waste. The soil remaining at the bottom of the excavation contained Co-60 at an average concentration of 30 pCi/gm.	84-16	WST-1/WST-2 and WST-3	WST-02 at a depth in excess of 9 feet below grade, activity remains potentially in excess of the soil DCGL. WST-03 at ash dewatering sump in drumming pit. Decommissioning standards had not yet been developed at the time this partial remediation was performed. Radiological decay since 1984 may have reduced the radionuclide concentration below the soil DCGL. Further scoping data will be collected below the 9 foot clean backfill to confirm this evaluated condition.

Table 3
Sources of Radioactive Release
Unplanned Releases
Yankee Nuclear Power Station
Rowe, MA

Date	Name of Release	Radionuclides of Concern	Description	AOR/PIR #	Impacted Survey Areas	Impacted Subsurface Areas/Structures
2/17&18/94	Leakage from Frozen Fuel Chute Dewatering Line	A 3.5-liter sample from the fuel chute line indicated 1,000 net cpm, and a sample from the NST telltale line indicated the presence of Co-60 and Cs-137.	On February 17 and 18, 1994, a fuel chute dewatering line and a neutron shield tank telltale drain line ruptured due to freezing. The ground below the rupture, as well as the area adjacent to the railroad tracks and pumpback house, showed no contamination. However, the snow pile along the south side of the rails by the new fuel vault indicated the presence of Co-60, Cs-137, and Mn-54. All snow piles with positive radiation measurements were sent to the rad drains and the areas de-posted.	94-03	NOL-1	
2/23/1994	NST Tell-Tales/Fuel Chute Dewatering Line	A 3.5-liter sample from the fuel chute line indicated 1,000 net cpm, and a sample from the NST telltale line indicated the presence of Co-60 and Cs-137.	On February 17 and 18, 1994, a fuel chute dewatering line and a neutron shield tank telltale drain line ruptured due to freezing. The ground below the rupture, as well as the area adjacent to the railroad tracks and pumpback house, showed no contamination. However, the snow pile along the south side of the rails by the new fuel vault indicated the presence of Co-60, Cs-137, and Mn-54. All snow piles with positive radiation measurements were sent to the rad drains and the areas de-posted.	94-09	NOL-1	

Table 4
Summary of Materials/Chemical Usage
Yankee Nuclear Power Station
Rowe, MA

System	Location	Materials/Chemical Usage
Water treatment room	Service Building Drain/trench discharged to circulating water system	Clay Separan (coagulant) Soda Ash (caustic hypochloride) Alum (Aluminum Sulfide) Resin Sulfuric Acid Sodium Bicarbonate Sodium Sulfate Trisodium Phosphate Bisodium Phosphate Monosodium Phosphate Ammonia Hydrazine Morpholine Lithium Hydroxide Potassium Dichromate (chromium)
Reactor Rod Refueling (early 1960s)	Shield tank inside VC Equipment wash-down south decon pad west wall of Turbine Building drained to primary drain tank	Cyanide (Silver cyanide waste removed from rods)
Secondary steam system Feedwater Condensate	Condensers - pump room to Secondary steam generators - VC	Hydrazine Morpholine Trisodium Phosphate
Circulating water system condensers	Sherman Pond screen well house to condensers outflow weir Water treatment drain/trench and neutralization tank discharged into circulating water system	AF 501 (thought to be antifoulant) calgon
Electrical systems and transformers	Plant wide Main transformers located at west end of Turbine Building and Turbine Bldg Cable Tray room	Oil PCB
Ion exchange	Ion Exchange pit	Boron Potassium Dichromate (chromium)
Oil storage	Lube room - by water treatment Garage North wall lower level PAB Waste oil drums next to old SI Tank	Virgin oils and grease (lubricants)

Table 4
Summary of Materials/Chemical Usage
Yankee Nuclear Power Station
Rowe, MA

System	Location	Materials/Chemical Usage
Component cooling Neutron shield tank	All primary systems Drains under component cooling coolers discharged to storm drain (WCB-009) prior to 1966	Potassium chromate (chromium) Sodium hydroxide
Septic system	North of parking lot (PG&E) Middle parking	Hand cleaning chemicals
Auxillary Boilers and building heating system	Boiler room and all heated (steam) buildings	Hydrazine Trisodium Phosphate Sodium Sulfate
Main coolant system Safety injection Emergency core cooling Low pressure surge tank Boric acid mix tank Shut down cooling	Vapor container (VC) PAB IX pit Designed leakage to waste disposal	Boron Hydrazine Lithium Hydroxide
Diesel motors	Security diesel generator (outside of gate house) Emergency diesels-SIDG Building Fire system Diesel-Fire water tank FTE - SDG by TK-39	Lubricating oil Diesel fuel oil Anti freeze Batteries - lead, sulfuric acid Ethylene glycol
Pumps, motors, motor operated valves	All areas	Lubricating oil Fuel oil Hydraulic oils Grease
Hazardous waste storage areas	Old PCA Building East end of Stores warehouse West end of Stores warehouse Turbine Bldg/Lube Oil Room	PCB Oil Lead Mercury (instruments) Paint Light bulbs
Rad-waste drain system	Floor drain from VC, PAB, SFP, waste disposal, old PCA storage SIDG building, North & South Decon Room (N+SDR) drains, control point, Primary and Secondary chemistry labs. Rad-waste tanks and pumps outside (south) of control point	Chemlab waste Personnel decon water Reactor component decon water
Waste disposal evaporator	Waste disposal building	Inflows of rad-waste drain system

Table 4
Summary of Materials/Chemical Usage
Yankee Nuclear Power Station
Rowe, MA

System	Location	Materials/Chemical Usage
Rad-waste evaporator skid	Evaporator trailer and 20,000 gal tank	Antifoam Primary drain effluent (FTE, Chemlab, Control point, Decon sink) Freon (in chiller) Ethylene glycol Propylene glycol
Turbine/generator	Turbine Hall - Turbine building	Hydrogen gas (coolant) Seal oil Lube oil 1,1,1-Trichloroethane (TCA) used to clean centrifuge Kerosene used to clean centrifuge CCl_4 - carbon tetra-chloride used to clean centrifuge (early period)
Buildings/Structures	Surfaces, Paint & Insulation	Asbestos PCB and Lead paint
Plant Trash and Waste Incinerators	North of SS Bldg Waste Disposal Building	Discontinued ~1967 - 1969 Discontinued circa early 1970s
Weed Control	Power line right of way	Herbicides
Above Ground Storage Tanks (ASTs)	Beside Spent Fuel Building Turbine Bldg /Lube Oil Room Turbine Building Portable Tank Visitor Center Safe Shut-Down Building Security Building Fire Pump Building Fire Training/Middle Parking Lot Safety Injection/Diesel Generator (SI/DG) Building	30,000 Fuel Oil - Closed 2001 6,700 Lube Oil - Closed 1999 4,500 Lube Oil - Closed 1999 500 Diesel - Active 330 Fuel Oil - Active (2) 275 Fuel Oil - Closed 2004 (2) 275 Diesel - Active 275 Diesel - Closed 2004 275 Diesel - Closed 275 Diesel - Closed 2001
Underground Storage Tanks (USTs)	Safe Shut Down Building area East of Turbine Building East side of Garage Visitor Center East side Security Building	4,000 Diesel - Closed 1994 2,000 Waste Oil - Closed 1994 1,000 Gasoline - Closed 1990 550 Fuel Oil - Closed 2003 500 Diesel - Closed 1994

NOTE - Table reprinted from Quality Assurance Project Plan, Site Closure, Yankee Nuclear Power Station, Rowe, MA Gradient Corporation 2003

Table 5
Summary of Common Fission Radionuclides
Yankee Nuclear Power Station
Rowe, MA

Radionuclide	Half Life, YEARS
I-133	2.37E-03
La-140	4.60E-03
Y-90	7.31E-03
I-131	2.20E-02
Ba-140	3.49E-02
Cs-136	3.59E-02
Ce-141	8.90E-02
Te-129m	9.21E-02
Nb-95	9.63E-02
Ru-103	1.08E-01
Sr-89	1.38E-01
Sb-124	1.65E-01
Zr-95	1.75E-01
Ce-144	7.79E-01
Cs-134	2.06E+00
Sb-125	2.77E+00
Eu-155	4.96E+00
Eu-154	8.81E+00
Ba-133	1.07E+01
Nb-93m	1.36E+01
Pm-145	1.77E+01
Sr-90	2.91E+01
Cs-137	3.00E+01
Sn-121m	5.50E+01
Sm-151	9.01E+01
Tb-158	1.50E+02
Mo-93	3.50E+03
Nb-94	2.03E+04
Tc-99	2.13E+05
Zr-93	1.53E+06
Cs-135	2.30E+06
I-129	1.57E+07
Sm-146	1.03E+08

Table 6
Summary of Common Activation Radionuclides
Yankee Nuclear Power Station
Rowe, MA

Radionuclide	Half Life, YEARS
Cr-51	7.59E-02
Fe-59	1.22E-01
Co-58	1.94E-01
Zn-65	6.68E-01
Ag-110m	6.85E-01
Co-57	7.42E-01
Mn-54	8.56E-01
Na-22	2.60E+00
Fe-55	2.70E+00
Co-60	5.27E+00
H-3	1.24E+01
Eu-152	1.33E+01
Ni-63	9.61E+01
Ag-108m	1.27E+02
C-14	5.73E+03
Ni-59	7.51E+04
Cl-36	3.01E+05
Mn-53	3.70E+06

Table 7
Summary of Long-Lived Transuranic Radionuclides
Yankee Nuclear Power Station
Rowe, MA

Radionuclide	Half Life, YEARS
Pu-241	1.44E+01
Cm-243/244	2.85E+01
Pu-238	8.78E+01
Am-241	4.32E+02
Pu-239/240	2.41E+04

Table 8
Summary of DCGLs for Different Media Types
Yankee Nuclear Power Station
Rowe, MA

Radionuclide	Soil (pCi/g)[1]	Building Surface (dpm/100 cm2)[2]	Subsurface Partial Structures (pCi/g)[3]	Analysis
H-3	3.50E+02	3.40E+08	1.35E+02	LSC
C-14	5.20E+00	1.00E+07	2.34E+03	LSC
Fe-55	2.80E+04	4.00E+07	-	LSC
Co-60	3.80E+00	1.80E+04	3.45E+03	Gamma Spec.
Ni-63	7.70E+02	3.70E+07	6.16E+04	LSC
Sr-90	1.60E+00	1.40E+05	1.39E+01	LSC
Nb-94	6.80E+00	2.60E+04	-	Gamma Spec.
Tc-99	1.30E+01	1.40E+07	-	Gamma Spec.
Ag-108m	6.90E+00	2.50E+04	-	Gamma Spec.
Sb-125	3.00E+01	1.00E+05	-	Gamma Spec.
Cs-134	4.70E+00	2.90E+04	-	Gamma Spec.
Cs-137	8.20E+00	6.30E+04	1..45E+03	Gamma Spec.
Eu-152	9.50E+00	3.70E+04	-	Gamma Spec.
Eu-154	9.00E+00	3.40E+04	-	Gamma Spec.
Eu-155	3.80E+02	6.50E+05	-	Gamma Spec.
Pu-238	3.10E+01	5.70E+03	-	Alpha Spec.
Pu-239	2.80E+01	5.10E+03	-	Alpha Spec.
Pu-241	9.30E+02	2.50E+05	-	Alpha Spec.
Am-241	2.80E+01	5.00E+03	-	Alpha Spec.
Cm-243	3.00E+01	7.20E+03	-	Alpha Spec.

Notes:
[1] Represents a dose of 23.73 mrem/yr
[2] Represents a dose of 25 mrem/yr
[3] Represents a dose of 0.5 mrem/yr

Table 9
Summary Statistics of All Detected Soil Analytical Data
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Materials	Site						MADEP	Local Conditions			Chemicals of Potential Concern	Comment
	Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Background	Minimum	Average	Maximum		
Total Petroleum Hydrocarbon (mg/Kg)												
TPH	29	36	81%	2.3	682.59	11000					Yes	
TPH-DRO	143	186	77%	2.2	26.88	680		4.4	4.4	4.4	Yes	
TPH-GRO	2	62	3%	4.6	3.79	150					No	Less than 5% detected
VPH												
C5-C8 Aliphatics	2	49	4%	5.54	4.22	19.3					No	Less than 5% detected
EPH												
C11-C22 Aromatics	54	179	30%	7.17	24.02	788					Yes	
C19-C36 Aliphatics	61	179	34%	7.84	29.30	1010					Yes	
C9-C18 Aliphatics	7	179	4%	9.38	6.20	202					No	Less than 5% detected
Total EPH (ug/g DW)	3	6	50%	22.7	26.32	70.5					Yes	
Volatile Organic Compounds (ug/Kg)												
1,1,1,2-Tetrachloroethane	1	178	1%	2.7	13.62	2.7					No	Less than 5% detected
1,1,1-Trichloroethane	2	178	1%	6.5	15.40	88					No	Less than 5% detected
1,2-Dichloroethane	1	178	1%	9.3	13.60	9.3					No	Less than 5% detected
2-Butanone	40	178	22%	1.4	60.05	1400					Yes	
4-Isopropyltoluene	3	178	2%	3.1	14.07	73					No	Less than 5% detected
4-Methyl-2-pentanone	1	178	1%	4.1	25.77	4.1					No	Less than 5% detected
Acetone	52	178	29%	3.7	145.64	980					Yes	
Benzene	1	178	1%	4.9	13.58	4.9					No	Less than 5% detected
Carbon disulfide	7	178	4%	2.7	13.76	9					No	Less than 5% detected
Carbon tetrachloride	1	178	1%	6.5	15.04	6.5					No	Less than 5% detected
Chloroform	1	178	1%	6.3	16.49	6.3					No	Less than 5% detected
Diethyl Ether	16	174	9%	3.2	30.71	79					Yes	
Ethylbenzene	1	178	1%	4.4	13.58	4.4					No	Less than 5% detected
Isopropylbenzene	1	178	1%	2.4	13.62	2.4					No	Less than 5% detected
m+p-Xylenes	3	178	2%	1.8	13.56	2.8					No	Less than 5% detected
Methylene chloride	26	178	15%	4.2	33.10	420					Yes	
Methyl-t-butyl ether	1	178	1%	12	16.64	12					No	Less than 5% detected
n-Butylbenzene	1	178	1%	35	13.80	35					No	Less than 5% detected
o-Xylene	1	178	1%	1.8	13.56	1.8					No	Less than 5% detected
Tetrachloroethene	2	178	1%	4.3	14.73	230					No	Less than 5% detected
Toluene	59	178	33%	1.5	14.94	27					Yes	
Trichlorofluoromethane	8	178	4%	2	49.88	5.6					No	Less than 5% detected

Table 9
Summary Statistics of All Detected Soil Analytical Data
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Materials	Site						MADEP	Local Conditions			Chemicals of Potential Concern?	Comment
	Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Background	Minimum	Average	Maximum		
Semi-Volatile Organic Compounds (ug/Kg)												
2,4-Dimethylphenol	1	180	1%	160	215.28	160		ND	ND	ND	No	Less than 5% detected
2-Methylnaphthalene	4	180	2%	100	301.53	12000	500	ND	ND	ND	Yes	
3+4-Methylphenol	3	180	2%	81	209.63	340		ND	ND	ND	No	Less than 5% detected, below MADEP Bkgd
Acenaphthene	10	180	6%	80	371.27	13000	500	ND	ND	ND	Yes	
Acenaphthylene	13	180	7%	110	273.81	5100	500	ND	ND	ND	Yes	
Anthracene	26	180	14%	74	591.74	25000	1000	ND	ND	ND	Yes	
Benzo(a)anthracene	42	182	23%	76	854.41	29000	2000	ND	ND	ND	Yes	
Benzo(a)pyrene	39	182	21%	74	584.38	16000	2000	ND	ND	ND	Yes	
Benzo(b)fluoranthene	37	180	21%	80	854.38	34000	2000	ND	ND	ND	Yes	
Benzo(g,h,i)perylene	31	180	17%	94	410.11	13000	1000	ND	ND	ND	Yes	
Benzo(k)fluoranthene	34	180	19%	81	665.79	19000	1000	ND	ND	ND	Yes	
Benzoic acid	2	180	1%	2400	1058.06	3500		3500	1457.14	3500	No	Less than 5% detected
bis(2-Ethylhexyl)phthalate	12	180	7%	74	224.63	780		ND	ND	ND	Yes	
Butyl benzyl phthalate	1	180	1%	500	211.67	500		ND	ND	ND	No	Less than 5% detected
Carbazole	10	154	6%	87	263.97	5100		ND	ND	ND	Yes	
Chrysene	41	180	23%	85	1068.24	36000	2000	ND	ND	ND	Yes	
Dibenzo(a,h)anthracene	17	180	9%	73	272.86	3800	500	ND	ND	ND	Yes	
Dibenzofuran	8	180	4%	85	369.47	11000		ND	ND	ND	No	Less than 5% detected
Di-n-butyl phthalate	3	180	2%	74	208.23	84		ND	ND	ND	No	Less than 5% detected
Fluoranthene	59	180	33%	72	2595.58	110000	4000	ND	ND	ND	Yes	
Fluorene	13	180	7%	83	449.63	16000	1000	ND	ND	ND	Yes	
Indeno(1,2,3-cd)pyrene	27	180	15%	100	488.08	16000	1000	ND	ND	ND	Yes	
Naphthalene	4	180	2%	220	381.64	27000	500	ND	ND	ND	Yes	
Phenanthrene	33	180	18%	80	1241.46	75000	3000	ND	ND	ND	Yes	
Pyrene	52	180	29%	70	1844.31	86000	4000	ND	ND	ND	Yes	
Polychlorinated Biphenyls (ug/Kg)												
Aroclor-1254	237	468	51%	5.7	5117.34	480000					Yes	
Aroclor-1260	37	468	8%	15	158.23	4400					Yes	

Table 9
Summary Statistics of All Detected Soil Analytical Data
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Materials	Site Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	MADEP Background	Local Conditions Minimum	Local Conditions Average	Local Conditions Maximum	Chemicals of Potential Concern?	Comment
Inorganics (mg/Kg)												
Aluminum	1	1	100%	24000	24000	24000	10000				Yes	
Antimony	5	113	4%	0.56	2.38	24	1				No	Less than 5% detected
Arsenic	347	491	71%	0.66	2.16	27	20	0.7	1.79	3.2	Yes	
Barium	191	191	100%	14	67.55	670	50				Yes	
Beryllium	3	323	1%	0.5	0.38	2	0.4	ND	ND	ND	No	Less than 5% detected
Boron	5	9	56%	18	106.33	520		18	18.50	19	Yes	
Cadmium	5	485	1%	0.3	0.77	7.2	2	ND	0.54		No	Less than 5% detected
Chromium	491	491	100%	1	13.95	490	30	6.3	16.01	34	Yes	
Copper	281	308	91%	1.8	15.50	350	40	2.3	5.07	19	Yes	
Iron	8	8	100%	1100	13725	19300	20000				No	Below MADEP Bkgd Concentration
Lead	551	555	99%	0.43	129.67	18200	100	0.97	8.84	57	Yes	
Lithium	8	8	100%	12	17	26		23	24.50	26	Yes	
Magnesium	1	1	100%	830	830	830	5000				No	Below MADEP Bkgd Concentration
Manganese	8	8	100%	107	458.50	2300	300				Yes	
Mercury	68	483	14%	0.006	0.20	2.6	0.3	ND	ND	ND	Yes	
Molybdenum	1	1	100%	8.6	8.60	8.6					Yes	
Nickel	267	301	89%	3.5	13.54	230	20	3.8	11.67	29	Yes	
Selenium	52	484	11%	4.2	3.43	16	0.5	ND	ND	ND	Yes	
Silver	7	481	1%	0.81	0.29	3	0.6	ND	ND	ND	No	Less than 5% detected
Thallium	3	301	1%	0.6	1.01	0.82	0.6	0.73	0.43	0.73	No	Less than 5% detected
Vanadium	1	1	100%	1.8	1.80	1.8	30				No	Below MADEP Bkgd Concentration
Zinc	214	308	69%	20	72.71	1200	100	36	56.78	77	Yes	
Dioxin/Furan (pg/g)												
1,2,3,4,5,6,7,8-OCDD	22	25	88%	0.62	43.88	320		21	11.68	21	Yes	
1,2,3,4,5,6,7,8-OCDF	20	25	80%	0.36	39.99	820		1.7	0.93	1.7	Yes	
1,2,3,4,6,7,8-HpCDD	18	25	72%	0.55	6.44	43		3.8	2.38	3.8	Yes	
1,2,3,4,6,7,8-HpCDF	22	25	88%	0.09	6.91	95		0.3	0.7	1.1	Yes	
1,2,3,4,7,8,9-HpCDF	15	25	60%	0.16	3.39	71		ND	ND	ND	Yes	
1,2,3,4,7,8-HxCDD	10	25	40%	0.21	0.19	0.56		0.23	0.16	0.23	Yes	
1,2,3,4,7,8-HxCDF	20	25	80%	0.07	4.97	100		0.29	0.43	0.57	Yes	
1,2,3,6,7,8-HxCDD	11	25	44%	0.3	0.37	2.2		0.3	0.20	0.3	Yes	
1,2,3,6,7,8-HxCDF	17	25	68%	0.13	0.64	6.3		0.21	0.12	0.21	Yes	
1,2,3,7,8,9-HxCDD	11	25	44%	0.26	0.37	1.7		0.35	0.22	0.35	Yes	
1,2,3,7,8,9-HxCDF	4	25	16%	0.14	0.08	0.26		ND	ND	ND	Yes	
1,2,3,7,8-PeCDD	4	25	16%	0.18	0.14	0.74		ND	ND	ND	Yes	
1,2,3,7,8-PeCDF	11	25	44%	0.2	0.39	3.1		0.22	0.15	0.22	Yes	
2,3,4,6,7,8-HxCDF	15	25	60%	0.12	0.42	2.4		0.28	0.16	0.28	Yes	
2,3,4,7,8-PeCDF	16	25	64%	0.12	0.83	12		0.14	0.26	0.38	Yes	
2,3,7,8-TCDD	5	25	20%	0.32	0.39	4.2		ND	ND	ND	Yes	
2,3,7,8-TCDF	10	25	40%	0.27	0.60	3.1		ND	ND	ND	Yes	

Notes
Averages represent the mean of those detected and 1/2 the detection limit of those not detected
Summary Statistics only include detections
Blanks - Not Analyzed
MADEP Bkgd = Massachusetts Department of Environmental Protection Background Concentrations (MADEP, 2002)

Table 10
Summary Statistics of All Detected Sediment Analytical Data - Sherman Reservoir
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Material	Site						Local Conditions			Chemicals of Potential Concern?	Comment
	Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Minimum	Average	Maximum		
Total Petroleum Hydrocarbon (mg/Kg)											
TPH-DRO (Diesel Range)	38	49	78%	2.5	43.90	250	19	31.75	80	No	Maximum detect located at least 700 feet from shoreline and upstream from site
Volatile Organic Compounds (ug/Kg)											
1,1-Dichloroethene	14	22	64%	3.5	12.89	40	15	17.58	24	Yes	
1,2,4-Trimethylbenzene	1	22	5%	4.2	3.15	4.2	ND	ND	ND	Yes	
2-Butanone	16	22	73%	2.6	27.70	140	11	28.75	67	Yes	
4-Methyl-2-Pentanone	2	22	9%	2.8	3.11	3.2	ND	ND	ND	Yes	
Acetone	17	22	77%	3	96.55	280	42	117.92	280	Yes	
Carbon Disulfide	3	22	14%	5.2	3.54	8.8	ND	ND	ND	Yes	
Toluene	13	22	59%	11	16.74	52	12	20.83	31	Yes	
Semi-Volatile Organic Compounds (ug/Kg)											
2-Methylphenol	1	22	4.5%	150	287.5	150	150	330.83	150	No	Less than 5% detected
3+4-Methylphenol	1	22	4.5%	230	285.23	230	230	322.5	230	No	Less than 5% detected
Acenaphthene	1	22	4.5%	160	293.18	160	ND	ND	ND	Yes	
Anthracene	1	22	5%	240	296.82	240	ND	ND	ND	Yes	
Benzo(a)anthracene	4	22	18%	130	271.14	320	180	267.5	200	Yes	
Benzo(a)pyrene	2	22	9%	230	286.82	270	230	316.67	230	Yes	
Benzo(b)fluoranthene	1	22	5%	220	283.18	220	220	315	220	Yes	
Benzo(g,h,i)perylene	1	22	5%	120	291.36	120	ND	ND	ND	Yes	
Benzo(k)fluoranthene	1	22	5%	220	283.18	220	220	315	220	Yes	
Bis(2-ethylhexyl)phthalate	2	22	9%	140	288.86	140	ND	ND	ND	Yes	
Chrysene	5	22	23%	120	262.05	290	170	240.83	230	Yes	
Dibenzofuran	1	22	5%	120	291.36	120	ND	ND	ND	No	Less than 5% detected
Di-n-octyl phthalate	1	22	5%	320	299.77	320	ND	ND	ND	No	Less than 5% detected
Fluoranthene	11	22	50%	120	277.5	700	170	321.67	430	Yes	
Fluorene	1	22	5%	180	294.09	180	ND	ND	ND	Yes	
Indeno(1,2,3-cd)pyrene	1	22	5%	110	290.91	110	ND	ND	ND	Yes	
Phenanthrene	2	22	9%	140	316.14	740	140	345.83	140	Yes	
Pyrene	9	22	41%	120	266.14	520	130	290	380	Yes	
Polychlorinated Biphenyls (ug/Kg)											
Aroclor-1254	107	195	55%	18	4257.76	550000	ND	ND	ND	Yes	
Inorganics (mg/Kg)											
Antimony	2	16	13%	1.7	0.59	3.9	ND	ND	ND	Yes	
Arsenic	35	51	69%	0.7	1.33	4.8	1.6	1.6	2.8	Yes	
Barium	5	5	100%	35	93.2	180	ND	ND	ND	Yes	
Beryllium	3	48	6%	0.2	0.73	0.3	ND	ND	ND	Yes	
Cadmium	3	50	6%	0.5	0.85	6.7	ND	ND	ND	Yes	
Chromium	55	55	100%	2.6	14.93	34	4.5	14.55	21	Yes	
Copper	52	53	98%	6.4	47.28	570	6.4	31.1	45	Yes	
Lead	64	67	96%	0.51	12.84	75	0.65	2.8	5.2	Yes	
Lithium	3	3	100%	12	16.33	23	ND	ND	ND	Yes	
Mercury	4	50	8%	0.1	0.29	2.1	ND	ND	ND	Yes	
Nickel	53	53	100%	5	17.97	55	11	19.8	28	Yes	
Selenium	7	49	14%	2.9	2.45	6.4	3.9	3.02	4.9	Yes	
Silver	2	50	4%	0.3	0.24	0.4	0.4	0.3	0.4	No	Less than 5% detected, does not exceed local conditions
Thallium	1	48	2%	1.7	0.45	1.7	ND	ND	ND	No	Less than 5% detected
Zinc	52	53	98%	30	131.82	790	49	178.2	270	Yes	

Notes
Averages represent the mean of those detected and 1/2 the detection limit of those not detected
Summary Statistics only include detections
Summary Statistics subject to change with the inclusion of newly validated data

Table 11
Summary Statistics of All Detected Sediment Analytical Data - Deerfield River
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Material	Site						Local Conditions			Chemicals of Potential Concern	Comment
	Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Minimum	Average	Maximum		
Total Petroleum Hydrocarbons (mg/Kg)											
TPH-DRO	5	7	71%	2.2	19.36	62	19	31.75	80	No	Below local conditions
Volatile Organic Compounds (ug/Kg)											
2-Butanone	1	7	14%	12	6.29	12	11	28.75	67	Yes	
4-Isopropyltoluene	1	7	14%	2	2.5	2	ND	ND	ND	Yes	
Acetone	1	7	14%	76	22	76	42	117.92	280	Yes	
Chloromethane	1	7	14%	1.2	2.11	1.2	ND	ND	ND	Yes	
Semi-Volatile Organic Compounds (ug/Kg)											
Benzo(a)anthracene	1	7	14%	330	226.43	330	180	267.5	200	Yes	
Benzo(a)pyrene	3	7	43%	83	185.43	320	230	316.67	230	Yes	
Benzo(b)fluoranthene	3	7	43%	79	184.86	310	220	315	220	Yes	
Benzo(g,h,i)perylene	1	7	14%	210	209.29	210	ND	ND	ND	Yes	
Benzo(k)fluoranthene	2	7	29%	78	209	330	220	315	220	Yes	
Bis(2-ethylhexyl)phthalate	1	7	14%	120	196.43	120	ND	ND	ND	Yes	
Chrysene	3	7	43%	90	195	380	170	240.83	230	Yes	
Fluoranthene	3	7	43%	150	256.43	670	170	321.67	430	Yes	
Indeno(1,2,3-cd)pyrene	1	7	14%	200	207.86	200	ND	ND	ND	Yes	
Phenanthrene	2	7	29%	80	210.71	340	140	345.83	140	Yes	
Pyrene	3	7	43%	120	229.29	540	130	290	380	Yes	
Polychlorinated Biphenyls (ug/Kg)											
Aroclor-1254	16	25	64%	15	132.56	820	ND	ND	ND	Yes	
Aroclor-1260	3	25	12%	180	41.25	200	ND	ND	ND	Yes	
Inorganics (mg/Kg)											
Arsenic	5	7	71%	0.52	1.03	2.5	1.6	1.63	2.8	No	Below local conditions
Chromium	7	7	100%	6.6	10.11	17	4.5	14.55	21	No	Below local conditions
Copper	7	7	100%	7.6	37.19	150	6.4	31.07	45	Yes	
Lead	7	7	100%	1	5.64	13	0.65	2.81	5.2	Yes	
Nickel	7	7	100%	8.8	11.64	17	11	19.83	28	No	Below local conditions
Selenium	2	7	29%	2.8	1.85	3.5	3.9	3.02	4.9	No	Below local conditions
Zinc	7	7	100%	29	71.29	210	49	178.17	270	No	Below local conditions

Notes
Averages represent the mean of those detected and 1/2 the detection limit of those not detected
Summary Statistics only include detections
Summary Statistics subject to change with the inclusion of newly validated data

Table 12
Summary Statistics of All Detected Sediment Analytical Data - Wheeler Brook
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Material	Site						Local Conditions			Chemicals of Potential Concern?	Comment
	Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Minimum	Average	Maximum		
Total Petroleum Hydrocarbon (mg/Kg)											
TPH-DRO	4	6	67%	2.9	10.33	45	19	31.75	80	No	Below local conditions
Volatile Organic Compounds (ug/Kg)											
1,1-Dichloroethene	1	5	20%	3.3	2.66	3.3	15	17.58	24	Yes	
2-Butanone	2	5	40%	2.4	6.28	14	11	28.75	67	Yes	
Acetone	2	6	33%	18	42	190	42	117.92	280	Yes	
Inorganics (mg/Kg)											
Barium	6	6	100%	24	44.67	76	ND	ND	ND	Yes	
Chromium	12	12	100%	5	7.52	10	4.5	14.55	21	No	Below local conditions
Lead	8	11	73%	0.44	2.58	5.9	0.65	2.8	5.2	Yes	
Mercury	1	11	9%	0.046	0.10	0.046	ND	ND	ND	Yes	
Nickel	5	6	83%	5.6	6.66	12	11	19.8	28	No	Below local conditions

Notes
Averages represent the mean of those detected and 1/2 the detection limit of those not detected
Summary Statistics only include detections
Summary Statistics subject to change with the inclusion of newly validated data

Table 13
Summary Statistics of All Detected Sediment Analytical Data - Storm System
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Material?	On-Site						Local Conditions			Chemicals of Potential Concern?	
	Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Minimum	Average	Maximum		
Total Petroleum Hydrocarbons (mg/Kg)											
TPH	1	3	33%	65000	21667.33	65000	ND	ND	ND	Yes	
TPH-DRO	2	6	33%	25	17.17	30	19	31.75	80	No	E
Volatile Organic Compounds (ug/Kg)											
1,1-Dichloroethene	2	8	25%	11	14.63	21	15	17.58	24	Yes	
Methylene chloride	1	8	13%	1.1	23.58	1.1	ND	ND	ND	Yes	
Semi-Volatile Organic Compounds (ug/Kg)											
2-Methylnaphthalene	1	14	7%	280	195.01	280	ND	ND	ND	Yes	
Acenaphthene	3	14	21%	98	291.65	1800	ND	ND	ND	Yes	
Anthracene	4	14	29%	120	322.15	2200	ND	ND	ND	Yes	
Benzo(a)anthracene	8	14	57%	130	681.80	6600	180	267.5	200	Yes	
Benzo(a)pyrene	8	14	57%	100	624.65	5800	230	316.67	230	Yes	
Benzo(b)fluoranthene	6	14	43%	130	601.08	5600	220	315	220	Yes	
Benzo(g,h,i)perylene	6	14	43%	100	386.80	2900	ND	ND	ND	Yes	
Benzo(k)fluoranthene	6	14	43%	130	525.37	4600	220	315	220	Yes	
Benzoic acid	1	14	7%	130	855.77	130	ND	ND	ND	Yes	
bis(2-Ethylhexyl)phthalate	6	14	43%	86	169.37	200	ND	ND	ND	Yes	
Carbazole	1	13	8%	2200	357.69	2200	ND	ND	ND	Yes	
Chrysene	8	14	57%	140	660.37	6200	170	240.83	230	Yes	
Dibenzo(a,h)anthracene	1	14	7%	770	230.01	770	ND	ND	ND	Yes	
Dibenzofuran	1	14	7%	1300	267.87	1300	ND	ND	ND	Yes	
Fluoranthene	10	14	71%	100	1384.65	14000	170	321.67	430	Yes	
Fluorene	2	14	14%	100	303.58	1900	ND	ND	ND	Yes	
Indeno(1,2,3-cd)pyrene	6	14	43%	93	377.01	2900	ND	ND	ND	Yes	
Naphthalene	1	14	7%	470	208.58	470	ND	ND	ND	Yes	
Phenanthrene	8	14	57%	210	1211.80	13000	140	345.83	140	Yes	
Pyrene	8	14	57%	240	1028.23	9900	130	290	380	Yes	
Polychlorinated Biphenyls (ug/Kg)											
Aroclor-1254	57	80	71%	14	905.33	9200	ND	ND	ND	Yes	
Aroclor-1260	2	80	3%	1200	131.58	4800	ND	ND	ND	No	E

Table 13
Summary Statistics of All Detected Sediment Analytical Data - Storm System
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Material	Site						Local Conditions			Chemicals of Potential Concern?	
	Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Minimum	Average	Maximum		
Inorganics (mg/Kg)											
Antimony	10	17	59%	1	1.84	4.7	ND	ND	ND	Yes	
Arsenic	19	22	86%	1.4	5.97	17.4	1.6	1.6	2.8	Yes	
Barium	16	16	100%	18	1575.44	3800	ND	ND	ND	Yes	
Beryllium	1	17	6%	0.3	2.28	0.3	ND	ND	ND	Yes	
Cadmium	15	22	68%	1.2	38.90	130	ND	ND	ND	Yes	
Chromium	15	22	68%	4.2	16.35	94	4.5	14.55	21	Yes	
Copper	17	17	100%	16	457.22	2040	6.4	31.1	45	Yes	
Lead	34	34	100%	0.58	43.69	190	0.65	2.8	5.2	Yes	
Mercury	14	22	64%	0.12	0.78	4.7	ND	ND	ND	Yes	
Nickel	17	17	100%	5.3	202.35	539	11	19.8	28	Yes	
Selenium	3	22	14%	44	12.25	140	3.9	3.02	4.9	Yes	
Silver	4	22	18%	1.4	7.03	36	0.4	0.3	0.4	Yes	
Thallium	8	17	47%	3.6	3.91	12.8	ND	ND	ND	Yes	
Zinc	17	17	100%	59	2488.82	7270	49	178.2	270	Yes	

Notes
Averages represent the mean of those detected and 1/2 the detection limit of those not detected
Summary Statistics only include detections
Summary Statistics subject to change with the inclusion of newly validated data

Table 14
Summary Statistics of Detected Surface Water Analytical Data
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Oil or Hazardous Material	Site						Chemicals of Potential Concern?	Comment
	Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum		
Volatile Organic Compounds (ug/L)								
Acetone	5	11	45%	3.4	6.15	14	Yes	
Carbon disulfide	1	11	9%	0.83	2.35	0.83	Yes	
Chloromethane	4	11	36%	0.43	2.09	3.7	Yes	
Methylene chloride	5	11	45%	0.84	0.962	0.95	Yes	
Toluene	1	11	9%	0.41	2.31	0.41	Yes	
Inorganics (mg/L)								
Barium	16	16	100%	0.015	0.019	0.039	Yes	
Copper	11	11	100%	0.014	0.021	0.03	Yes	
Iron	11	11	100%	0.072	2.136	16	Yes	
Manganese	10	11	91%	0.017	0.164	0.82	Yes	
Selenium	1	12	8%	0.006	0.023	0.006	Yes	
Silver	1	11	9%	0.005	0.003	0.005	Yes	

Notes
Only includes all detected surface water samples
Averages represent the mean of those detected and 1/2 the detection limit of those not detected
Blanks - No Criterion

Table 15
Summary Statistics of All Detected Groundwater Analytical Data
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Non-Filtered

Oil or Hazardous Material	Site Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Chemicals of Potential Concern?	Comment
Total Petroleum Hydrocarbon (ug/L)								
TPH	1	2	50%	270	135.3	270	Yes	
TPH-DRO	31	55	56%	32	83.8	720	Yes	
TPH-GRO	3	52	6%	15	6.1	43	Yes	
VPH								
C5-C8 Aliphatics	17	74	23%	32.19	255.52	3470	Yes	
C9-C10 Aromatics	29	84	35%	23.9	48.10	117	Yes	
C9-C12 Aliphatics	2	49	4%	45.8	51.06	76.3	No	Less than 5% detected
EPH								
C11-C22 Aromatics	27	73	37%	36	62.46	408	Yes	
C19-C36 Aliphatics	14	67	21%	73	76.03	555	Yes	
C9-C18 Aliphatics	2	65	3%	61	45.77	63	No	Less than 5% detected
Volatile Organic Compounds (ug/L)								
1,1-Dichloroethane	14	226	6%	0.49	2.79	4.9	Yes	
1,1-Dichloroethene	5	226	2%	0.86	2.08	1.7	No	Less than 5% detected
1,2,4-Trimethylbenzene	3	226	1%	1.8	3.89	8.8	No	Less than 5% detected
1,3,5-Trimethylbenzene	3	226	1%	0.71	3.85	2.9	No	Less than 5% detected
2-Butanone	1	226	0.4%	26	7.90	26	No	Less than 5% detected
4-Isopropyltoluene	3	204	1%	0.33	2.47	1.1	No	Less than 5% detected
4-Methyl-2-pentanone	2	226	1%	0.82	5.63	5	No	Less than 5% detected
Acetone	37	225	16%	3	297.43	14000	Yes	
Benzene	1	226	0.4%	1.5	1.87	1.5	No	Less than 5% detected
Carbon disulfide	17	226	8%	0.28	6.70	78	Yes	
Chloroform	9	226	4%	0.49	2.05	2	No	Less than 5% detected
Chloromethane	11	226	5%	0.36	3.91	2.3	No	Less than 5% detected
Dichlorodifluoromethane	4	226	2%	0.62	5.42	3	No	Less than 5% detected
Ethylbenzene	3	226	1%	0.5	2.59	2.4	No	Less than 5% detected
Iodomethane	1	216	0.5%	1.2	4.89	1.2	No	Less than 5% detected
Isopropylbenzene	1	226	0.4%	0.74	2.68	0.74	No	Less than 5% detected
m+p-Xylenes	5	226	2%	2.6	2.82	25	No	Less than 5% detected
Methylene chloride	3	226	1%	0.57	4.84	15	No	Less than 5% detected
Methyl-t-butyl ether	46	226	20%	0.68	8.68	140	Yes	
n-Butylbenzene	1	226	0%	0.71	2.68	0.71	No	Less than 5% detected
n-Propylbenzene	2	226	1%	0.58	2.67	1.4	No	Less than 5% detected

Table 15
Summary Statistics of All Detected Groundwater Analytical Data
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Non-Filtered

Oil or Hazardous Material	Site Number Detected	Number Sampled	Percent Detected	Minimum	Average	Maximum	Chemicals of Potential Concern?	Comment
o-Xylene	5	226	2%	1.4	2.67	12	No	Less than 5% detected
Tetrachloroethene	1	226	0.4%	0.21	1.87	0.21	No	Less than 5% detected
Tetrahydrofuran	1	204	0.5%	69	11.31	69	No	Less than 5% detected
Toluene	14	226	6%	0.2	2.78	8.7	Yes	
Semi-Volatile Organic Compounds (ug/L)								
3+4-Methylphenol	1	109	1%	43	4.99	43	No	Less than 5% detected
Acenaphthene	4	123	3%	0.06	2.08	0.16	No	Less than 5% detected
Acenaphthylene	3	123	2%	0.1	2.07	0.38	No	Less than 5% detected
Anthracene	5	123	4%	0.1	2.07	0.27	No	Less than 5% detected
Benzidine	3	120	3%	2.1	9.46	3.7	No	Less than 5% detected
Benzo(a)anthracene	2	123	2%	0.15	2.06	0.23	No	Less than 5% detected
Benzo(a)pyrene	1	123	1%	0.13	2.06	0.13	No	Less than 5% detected
Benzo(b)fluoranthene	2	123	2%	0.16	2.06	0.16	No	Less than 5% detected
Benzo(g,h,i)perylene	2	123	2%	0.13	2.07	0.2	No	Less than 5% detected
Benzo(k)fluoranthene	1	123	1%	0.26	2.06	0.26	No	Less than 5% detected
bis(2-Ethylhexyl)phthalate	15	120	13%	2.6	5.81	86	Yes	
Chrysene	2	123	2%	0.15	2.07	0.32	No	Less than 5% detected
Dibenzo(a,h)anthracene	2	123	2%	0.11	2.06	0.27	No	Less than 5% detected
Diethyl phthalate	3	120	3%	3.5	4.76	16	No	Less than 5% detected
Fluoranthene	8	123	7%	0.1	2.06	0.22	Yes	
Fluorene	4	123	3%	0.06	2.09	1	No	Less than 5% detected
Indeno(1,2,3-cd)pyrene	2	123	2%	0.12	2.06	0.24	No	Less than 5% detected
Naphthalene	15	123	12%	0.06	2.08	0.51	Yes	
Pentachlorophenol	5	122	4%	2.1	10.31	14	No	Less than 5% detected
Phenanthrene	9	123	7%	0.1	2.07	0.18	Yes	
Phenol	2	109	2%	2.2	4.61	5.7	No	Less than 5% detected
Pyrene	8	123	7%	0.1	2.08	0.3	Yes	
Polychorinated Biphenyls (ug/L)								
Aroclor-1254	59	267	22%	0.25	1.00	69	Yes	
Aroclor-1260	12	266	5%	0.25	0.16	0.25	No	Less than 5% detected

Table 15
Summary Statistics of All Detected Groundwater Analytical Data
Identification of Chemicals of Potential Concern (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Non-Filtered

Oil or Hazardous Material	Site Number Detected	Site Number Sampled	Site Percent Detected	Minimum	Average	Maximum	Chemicals of Potential Concern?	Comment
Inorganics (mg/L)								
Antimony	1	74	1%	0.0063	0.003	0.0063	No	Less than 5% detected
Arsenic	4	139	3%	0.019	0.005	0.068	No	Less than 5% detected
Barium	69	84	82%	0.011	0.089	0.93	Yes	
Boron	57	164	35%	0.067	0.12	1.9	Yes	
Cadmium	5	138	4%	0.003	0.002	0.0085	No	Less than 5% detected
Chromium	17	161	11%	0.0054	0.007	0.088	Yes	
Copper	22	96	23%	0.0034	0.007	0.036	Yes	
Iron	19	19	100%	0.084	68.5	300	Yes	
Lead	41	165	25%	0.0034	0.005	0.11	Yes	
Manganese	19	19	100%	0.047	5.9	11	Yes	
Mercury	1	161	1%	0.0003	0.0001	0.0003	No	Less than 5% detected
Nickel	20	96	21%	0.0031	0.007	0.053	Yes	
Selenium	3	138	2%	0.0052	0.018	0.05	No	Less than 5% detected
Silver	1	144	1%	0.009	0.002	0.009	No	Less than 5% detected
Zinc	4	74	5%	0.12	0.039	0.83	Yes	
Alcohols (mg/L)								
iso-Propyl Alcohol	2	7	29%	140	40.7	140	Yes	

Filtered

Oil or Hazardous Material	Site Number Detected	Site Number Sampled	Site Percent Detected	Minimum	Average	Maximum	Chemicals of Potential Concern?	Comment
Polychlorinated Biphenyl (ug/L)								
Aroclor-1254	6	24	25%	0.38	0.48	2.9	Yes	

Notes
Averages represent the mean of those detected and 1/2 the detection limit of those not detected
Summary Statistics only include detections
Summary Statistics subject to change with the inclusion of newly validated data

Table 16
Summary of Radiological & Non-Radiological COCs
Yankee Nuclear Power Station
Rowe, MA

Radionuclides
H-3
C-14
Fe-55
Co-60
Ni-63
Sr-90
Nb-94
Tc-99
Ag-108m
Sb-125
Cs-134
Cs-137
Eu-152
Eu-154
Eu-155
Pu-238
Pu-239
Pu-241
Am-241
Cm-243

Oil or Hazardous Materials
Total Petroleum Hydrocarbons
TPH
TPH-DRO
VPH
C5-C8 Aliphatics
C9-C10 Aromatics
EPH
C11-C22 Aromatics
C19-C36 Aliphatics
Volatile Organic Compounds
2-Butanone
Acetone
Carbon Disulfide
Chloromethane
Diethyl Ether
1,1-Dichloroethene
4-Isopropyltoluene
1,2,4-Trimethylbenzene
Methylene chloride
Methyl-t-butyl ether
4-Methyl-2-Pentanone
Toluene

Oil or Hazardous Materials
Semi-Volatile Organic Compounds
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
bis(2-Ethylhexyl)phthalate
Carbazole
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Isodrin
Isophorone
Methyl Methanesulfonate
Naphthalene
Phenanthrene
Pyrene

Oil or Hazardous Materials
Inorganics
Aluminum
Arsenic
Antimony
Barium
Beryllium
Boron
Cadmium
Calcium
Chromium
Copper
Iron
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Potassium
Selenium
Thallium
Zinc

Oil or Hazardous Materials
Dioxin/Furan
1,2,3,4,5,6,7,8-OCDD
1,2,3,4,5,6,7,8-OCDF
1,2,3,4,6,7,8-HpCDD
1,2,3,4,6,7,8-HpCDF
1,2,3,4,7,8,9-HpCDF
1,2,3,4,7,8-HxCDD
1,2,3,4,7,8-HxCDF
1,2,3,6,7,8-HxCDD
1,2,3,6,7,8-HxCDF
1,2,3,7,8,9-HxCDD
1,2,3,7,8,9-HxCDF
1,2,3,7,8-PeCDD
1,2,3,7,8-PeCDF
2,3,4,6,7,8-HxCDF
2,3,4,7,8-PeCDF
2,3,7,8-TCDD
2,3,7,8-TCDF
Polychlorinated Biphenyls
Aroclor-1254
Aroclor-1260

Table 17
Summary of Floor and Total Area of Buildings and Features
Yankee Nuclear Power Station
Rowe, MA

SURVEY AREA	DESCRIPTION	MARSSIM CLASS	FLOOR AREA (m^2)	TOTAL AREA (m^2)	RATIO (total floor)
SVC-01	NORTH PART OF SERVICE BLDG (CLEAN SIDE)	3	921	921	1
SVC-02	RAD PORTIONS OFSERVICE BLDG AND ANNEX	1	444	444	1
SVC-03	CLEAN SIDE OF SERVICE BLDG ANNEX	3	366	366	1
TBN-01	TURBINE BLDG AND OFFICE PADS	3	1517	1517	1
SPF-Ol	SPENT FUEL POOL AND TRANSFER CHUTE	1	60	302	5.03
SPF-02	NEW FUEL VAULT	1	95	141	1.48
BRT-01	CONCRETE PEDESTALS	1			
NSY-Ol	NORTH AND SOUTH DECON PADS AND FTE	1	224	224	1
NSY-02	IX-PIT	1			
NSY-03	SI DIESEUACCUMULATOR TANK/BATTERY ROOM	1	380	482	1.12
NSY-04	SAFE SHUTDOWN	1	103	120	1.16
NSY-05	FIRE WATER TANK AND PUMP HOUSE	1	184	184	1
NSY-06	PCA#2 (NEW)	1	219	219	1
NSY-07	WHT / ADT / WASTE GAS PADS	1	390	390	1
NSY-08	NEW SI TANK	1	80	80	1
NSY-09	ELEVATOR SHAFT	1	6	21	4.5
NSY-I0	ISFSI	3	985	1078	1.09
NSY-Il	CHEM WASTEPIT	1	17	78	4.5
NSY-12	TANK #1 BASE	1	31	31	1
NSY-13	TANK #39 BASE	1	70	70 -	1
WST-01	PCA #1 (OLD)	1	109	109	1
WST-02	PCA WAREHOUSE	1	604	604	
WST-03	WASTE DISPOSAL BLDG	1	230		
WST-04	COMPCTOR BLDG	1			
AUX-01	P AB/ EAST END	1			
AUX-02	P AB / WEST END	1	130	189	1.45
OMB-01	PUMPHOUSE AND SCREENWELL	3	230	541	2.35
OMB-02	SECURITY GATEHOUSE AND DIESEL GENERATOR	3	270	868	3.2
OMB-03	ADMINISTRATION BUILDING	3	297	798	2.6
OMB-04	WAREHOUSE AND LOADING DOCK PAD	3	625	625	1
OMB-05	FURLON HOUSE	3	432		
OMB-06	SEAL PIT	3	120		

Table 18
Summary of Open Area Land Survey Areas
Yankee Nuclear Power Station
Rowe, MA

SURVEY AREA	DESCRIPTION	MARSSIM CLASS	AREA (m2)
OOL-01	SHERMAN POND SEDIMENTS	3'	73971
OOL-02	YANKEE NON-RAD YARD AREAS	3	7134
OOL-03	SHERMAN RESERVOIR DAM AND SOUTH SHORELINE	3	16177
OOL-04	US GENERATION / SHERMAN STATION OVERLYING GROUNDWATER PLUME	3	17870
OOL-05	US GENERATION / DEERFIELD RIVER FRONTAGE	3	28574
OOL-06	YANKEE WESTERN ACCESS	3	37281
OOL-07	SOILS DEPOSIT AREA	2	2108
OOL-08	YANKEE SITE EXCLUSION ZONE	3	133368
OOL-09	SOUTHEAST CONSTRUCTION FILL AREA	3	2387
OOL-10	ISFSI/ACCESS, EXCLUSION ZONE, BUFFER ZONE	2	8408
OOL-11	EAST RCA BUFFER ZONE	2	1220
OOL-12	WAREHOUSE RAIL SPUR	1	876
OOL-13	US GENERATION/RAIL SPUR TERMINUS	1	1148
OOL-14	US GENERATION/WHEELER BROOK FRONTAGE	3	2354
OOL-15	US GENERATION/SHERMAN RESERVOIR EAST SHORELINE	3	4662
OOL-16	FURLON HOUSE PARKING LOT	3	2481
OOL-17	ASPHALT BRICK AND CONCRETE STORAGE YARD	3	3247
NOL-01	EASTERN LOWER RCA YARD	1	1364
NOL-02	NORTHEASTERN UPPER RCA YARD	1	1990
NOL-03	SOUTHEASTERN UPPER RCA YARD	1	1575
NOL-04	SOUTHWESTERN UPPER RCA YARD	1	1753
NOL-05	NORTHWESTERN UPPER RCA YARD	1	1586
NOL-06	WESTERN LOWER RCA YARD	1	1329
NOL-07	ISFSI RCA YARD	3	1717

Table 19
Statistical Data Summary for Soils (Radiological)
Land Areas within the Radiologically Controlled Area
Yankee Nuclear Power Station
Rowe, MA

Nuclide	# of Sample Results	# of Detects	Mean (pCi/g)	Std. Dev	Min (pCi/g)	Max (pCi/g)	Median (pCi/g)
Ag-108m	329	54	7.361	21.245	0.031	99.714	0.241
Am-241	190	0	N/A	N/A	N/A	N/A	N/A
Co-60	346	151	8.928	82.495	0.029	1008.8	0.272
Cs-134	346	9	0.160	0.227	0.027	0.756	0.087
Cs-137	346	161	1.606	6.489	0.033	61.209	0.207
Eu-152	9	2	0.217	0.018	0.205	0.230	0.217
Nb-94	2	0	N/A	N/A	N/A	N/A	N/A
Sb-125	22	0	N/A	N/A	N/A	N/A	N/A

* Table provides for results of radionuclides determined to be potentially of concern at YNPS. Analyses were performed for the following radionuclides: Ac-228, Ag-108m, Ag-110m, Am-241, Ba-133, Ba-140, Bi-212, Bi-214, Ce-139, Ce-141, Ce-144, Co-57, Co-58, Co-60, Cr-51, Cs-134, Cs-136, Cs-137, Eu-152, Fe-59, I-131, I-132, I-133, K-40, Kr-85, La-140, Mn-54, Mo-99, Nb-94, Nb-95, Np-239, Pb-212, Pb-214, Ra-226, Ru-103, Ru-106, Sb-124, Sb-125, Se-75, Tl-202, Tl-208, U-235, Zn-65, and Zr-95.

Table 20
Statistical Data Summary for Soils (Radiological)
Land Area Within the Industrial Area (Outside RCA)
Yankee Nuclear Power Station
Rowe, MA

Nuclide	# of Sample Results	# of Detects	Mean (pCi/g)	Std. Dev	Min (pCi/g)	Max (pCi/g)	Median (pCi/g)
Ag-108m	70	2	0.029	0.004	0.026	0.031	0.029
Am-241	69	0	N/A	N/A	N/A	N/A	N/A
Co-60	90	8	0.394	0.599	0.033	1.726	0.253
Cs-134	87	4	0.139	0.050	0.096	0.209	0.126
Cs-137	90	34	0.121	0.112	0.035	0.457	0.082
Eu-152	6	0	N/A	N/A	N/A	N/A	N/A
Nb-94	1	0	N/A	N/A	N/A	N/A	N/A
Sb-125	5	0	N/A	N/A	N/A	N/A	N/A

* Table provides for results of radionuclides determined to be potentially of concern at YNPS. Analyses were performed for the following radionuclides: Ac-228, Ag-108m, Ag-110m, Am-241, Ba-133, Ba-140, Bi-212, Bi-214, Ce-144, Co-58, Co-60, Cs-134, Cs-136, Cs-137, Eu-152, Fe-59, I-131, K-40, Kr-85, La-140, Mn-54, Nb-94, Nb-95, Np-239, Pb-212, Pb-214, Ra-226, Ru-103, Ru-106, Sb-124, Sb-125, Se-75, Te-132, Tl-208, Zn-65, and Zr-95.

Table 21
Statistical Data Summary for Soils (Radiological)
Impacted Portions of the YNPS Site Outside of the Industrial Area
Yankee Nuclear Power Station
Rowe, MA

Nuclide*	# of Sample Results	# of Detects	Mean (pCi/g)	Std. Dev	Min (pCi/g)	Max (pCi/g)	Median (pCi/g)
Ag-108m	422	5	0.032	0.008	0.023	0.044	0.034
Am-241	355	0	N/A	N/A	N/A	N/A	N/A
Co-60	446	16	0.246	0.354	0.039	1.384	0.119
Cs-134	446	9	0.063	0.031	0.033	0.124	0.058
Cs-137	446	103	0.504	0.573	0.040	4.225	0.311
Eu-152	22	4	0.788	0.701	0.208	1.755	0.595
Nb-94	1	0	N/A	N/A	N/A	N/A	N/A
Sb-125	39	1	0.215	N/A	0.215	0.215	0.215

* Table provides for results of radionuclides determined to be potentially of concern at YNPS. Analyses were performed for the following radionuclides: Ac-228, Ag-108m, Ag-110m, Am-241, Ba-133, Ba-140, Bi-212, Bi-214, Ce-141, Ce-144, Co-58, Co-60, Cr-51, Cs-134, Cs-136, Cs-137, Eu-152, Fe-59, I-131, I-132, I-133, K-40, Kr-85, La-140, Mn-54, Nb-94, Nb-95, Np-239, Pb-212, Pb-214, Ra-226, Ru-103, Ru-106, Sb-124, Sb-125, Se-75, Sn-113, Tl-202, Tl-208, U-235, Y-88, Zn-65, and Zr-95

Table 22
OHM in Soil (Non-Radiological)
Background Samples (160-169)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-160	SB-160	SB-161	SB-161	SB-162	SB-162	SB-162	SB-163	SB-163	SB-164	SB-164	SB-164	SB-165	SB-165	SB-166	SB-166	SB-167	SB-167	SB-167	SB-168	SB-168	SB-169	SB-169
Sample Designation			SB-16000061	SB-1600203F	SB-16100061	SB-16102003F	SB-16200061	FD204102103	SB-16202102F	SB-16300061	SB-16301102F	SB-16400061	FD20100061	SB-16402003F	SB-16500061	SB-16501102F	SB-16600061	SB-16601102F	SB-16700061	FD20000061	SB-16702003F	SB-16800061	SB-16802003F	SB-16900061	SB-16902003F
Date Sampled			10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/16/2003	10/16/2003	10/16/2003	10/16/2003	10/16/2003	10/14/2003	10/14/2003	10/15/2003	10/15/2003	10/15/2003	10/15/2003	10/15/2003	10/16/2003	10/16/2003	10/16/2003	10/16/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2 DUP	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2 DUP[1]	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2 DUP	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																							
Petroleum Hydrocarbons (mg/kg)																									
TPH-DRO	200	2,000											4.4												
TPH-GRO	200	2,000																							
Volatile Organic Compounds (ug/Kg)																									
2-Butanone	300	40,000																							
Acetone	3,000	60,000																							
Nitrobenzene	500,000	5,000,000																							
Toluene	90,000	500,000																							
Semi-Volatile Organic Compounds (ug/Kg)																									
Acenaphthene	20,000	2,500,000			530 U	400 U						590 UJ		430 UJ					460 U	460 UJ	500 UJ				
Acenaphthylene	100,000	1,000,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Anthracene	1,000,000	2,500,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Benzo(a)anthracene	700	1,000			530 U	400 U						590 U		430 U					460 UJ	460 UJ	500 UJ				
Benzo(a)pyrene	700	700			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Benzo(b)fluoranthene	700	1,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Benzo(g,h,i)perylene	1,000,000	2,500,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Benzo(k)fluoranthene	7,000	10,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Benzoic acid	1,000,000	10,000,000			2600 U	1900 U						3500 J		2100 UJ					2200 UJ	2200 UJ	2400 UJ				
bis(2-Ethylhexyl)phthalate	100,000	300,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Butyl benzyl phthalate	100,000	1,000,000			530 U	400 U						590 U		430 U					460 UJ	460 UJ	500 UJ				
Carbazole	NA	NA			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Chrysene	7,000	10,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Dibenzo(a,h)anthracene	700	700			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Dibenzofuran	100,000	1,000,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Di-n-butyl phthalate	50,000	500,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Fluoranthene	1,000,000	1,000,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Fluorene	400,000	2,000,000			530 U	400 U						590 UJ		430 UJ					460 U	460 UJ	500 UJ				
Indeno(1,2,3-cd)pyrene	700	1,000			530 U	400 U						590 U		430 U					460 U	460 U	500 U				
Phenanthrene	100,000	100,000			530 U	400 U						590 UJ		430 UJ					460 U	460 UJ	500 UJ				
Pyrene	700,000	2,000,000			530 U	400 U						590 UJ		430 UJ					460 U	460 UJ	500 UJ				
Dioxin / Furan (pg/g)																									
Total Dioxin TEQ	4	6	1.1	0.6																					
Polychlorinated Biphenyls (ug/Kg)																									
Aroclor-1254			150 UJ	R																					
Aroclor-1260			150 UJ	R																					
Total PCBs	2,000	2,000																							
Inorganics (mg/Kg)																									
Antimony	10	40	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Arsenic	30	30	1.8	1.8	2.9	1.5	1.5	1.7	1.6	1.6	0.7	2.5	2.2	1.2	2.1	1.6	1.9	1.6	2.1	2	1.2	3.2	1.3	2	1.1
Beryllium	0.7	0.8	1.1 U	1.1 U	1.1 U	0.87 U	1.2 U	1.6 U	1 U	1.9 U	0.96 U	1.3 U	0.81 U	0.95 U	1.4 U	1.1 U	1.4 U	1.1 U	0.97 U	1 U	1.1 U	1 U	0.89 U	1.2 U	0.87 U
Boron	100	1,000	18	19																					
Cadmium	30	80	1 U	1 U	1.1 U	0.83 U	1.1 U	1.5 U	0.99 U	1.8 U	0.91 U	1.2 U	0.77 U	0.9 U	1.3 U	1 U	1.4 U	1.1 U	0.93 U	0.95 U	1 U	0.98 U	0.84 U	1.2 U	0.83 U
Chromium	1,000	2,500	11	14	13	14	14	21	17	6.3 J	15 J	20 J	10 J	29 J	7.9	17	11	16	15	15	15	15 J	23 J	15 J	34 J
Copper	1,000	10,000	1.7 U	1.6 U	1.7 U	6.4	1.8 U	2.4 U	2.6	5.9 J	3.6 J	8.5 J	19 J	10 J	2.1 U	2.4	4.5 J	1.7 U	3.8 J	3.4 J	2.3 J	9.3 J	11 J	7.4 J	10 J
Hexavalent Chromium	200	600																							
Lead	300	600	1.9 J	2.4 J	0.97 J	1.3 J	1.2 J	3.8 J	1.4 J	3.4 J	2 J	R	2.6 J	2.6 J	55	31	57 J	3.8 J	4.3 J	4.1 J	1.9 J	6.7 J	2.4 J	1.9 J	2.9 J
Lithium	100	1,000	23	26																					
Mercury	20	60	0.8 U	0.79 U	0.69 U	0.51 U	0.87 U	1.2 U	0.69 U	1.4 U	0.76 U	0.96 U	0.56 U	0.73 U	1.1 U	0.83 U	1.1 U	0.88 U	0.71 U	0.71 U	0.81 U	0.73 U	0.61 U	0.96 U	0.65 U
Nickel	300	700	5.5	7.1	3.8	11	8.1	11	9.3	9.3	17	12	16	20	6.5	7.5	10 J	8.4 J	9.3 J	9.6 J	8.9 J	11	28	10	29
Selenium	400	2,500	3.2 U	3.2 U	3.3 U	2.6 U	3.6 U	4.8 U	3.1 U	5.7 U	2.8 U	3.8 U	2.4 U	2.8 U	4.1 U	3.1 U	4.2 U	3.4 U	2.9 U	3 U	3.1 U	3.1 U	2.6 U	3.6 U	2.6 U
Silver	100	200	0.33 U	0.32 U	0.34 U	0.26 U	0.36 U	0.48 U	0.31 U	0.58 U	0.29 U	0.38 U	0.24 U	0.29 U	0.42 U	0.32 U	0.43 U	0.34 U	0.29 U	0.3 U	0.31 U	0.31 U	0.27 U	0.37 U	0.26 U
Thallium	8	30	0.76 U	0.75 U	0.78 U	0.61 U	0.84 U	1.1 U	0.73 U	1.3 U	0.67 U	0.89 U	0.57 U	0.66 U	0.97 U	1.5 U	1 U	0.79 U	0.68 U	0.7 U	0.73 U	0.72 U	0.62 U	0.86 U	0.73 J
Zinc	2,500	2,500	66	69	39	51	62	77	62	54	60	49	53	71	36	45	45 J	57 J	59 J	58 J	54 J	50	67	58	64

Notes:
Summary of detected compounds only
NA = Not Available
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
[1] = Duplicate not analyzed for same parameter list as original sample due to field error

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-096)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-001	SB-001	SB001-R	SB001	SB001-R	SB001-A	SB001-A	SB001-B	SB001-B	SB001-C	SB001-C	SB001-D	SB001-D	SB-002	SB-002	SB-003	SB-003	SB-004	SB-004	SB-005	SB-005
Sample Designation			SB--00100061	SB--0010203F	SB001-R00061	FD001-00061	SB001-R0203F	SB001-A00061	SB001-A0203F	SB001-B00061	SB001-B0203F	SB001-C00061	SB001-C0203F	SB001-D00061	SB001-D0203F	SB--00200061	SB-0020203F	SB-0030061	SB-0030203F	SB-0040061	SB-0040102F	SB-005 00061	SB-005 0203F
Date Sampled			10/23/2003	10/22/2003	7/9/2004	7/9/2004	7/9/2004	7/13/2004	7/13/2004	7/13/2004	7/13/2004	7/9/2004	7/9/2004	7/9/2004	7/9/2004	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/23/2003	9/7/2004	9/7/2004
Applicable MCP Soil Standard			RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-1
Comment	RCS-1	RCS-2				DUP																	
Petroleum Hydrocarbons (mg/kg)																							
TPH-DRO	200	2,000	6.8	7.4												10	3.2	9	16	11			
TPH-GRO	200	2,000	2.5 U	2.5 U																			
EPH C11-C22 Aromatics	200	2,000																				226	7.25 U
EPH C19-C36 Aliphatics	2,500	5,000																				163	7.25 U
EPH C9-C18 Aliphatics	1,000	2,500																				34.7 U	7.25 U
VPH C5-C8 Aliphatics	100	500																					
VPH C9-C10 Aromatics	100	500																					
VPH C9-C12 Aliphatics	1,000	2,500																					
Volatile Organic Compounds (ug/Kg)																							
2-Butanone	300	40,000																					
Acetone	3,000	60,000																					
Nitrobenzene	500,000	5,000,000																					
Toluene	90,000	500,000																					
Semi-Volatile Organic Compounds (ug/Kg)																							
Acenaphthene	20,000	2,500,000	430 U	400 U																			
Acenaphthylene	100,000	1,000,000	430 U	400 U																			
Anthracene	1,000,000	2,500,000	430 U	400 U																			
Benzo(a)anthracene	700	1,000	430 U	400 U																			
Benzo(a)pyrene	700	700	430 U	400 U																			
Benzo(b)fluoranthene	700	1,000	430 U	400 U																			
Benzo(g,h,i)perylene	1,000,000	2,500,000	430 U	400 U																			
Benzo(k)fluoranthene	7,000	10,000	430 U	400 U																			
Benzoic acid	1,000,000	10,000,000	2100 U	1900 U																			
bis(2-Ethylhexyl)phthalate	100,000	300,000	430 U	400 U																			
Butyl benzyl phthalate	100,000	1,000,000	430 U	400 U																			
Carbazole	NA	NA	430 U	400 U																			
Chrysene	7,000	10,000	430 U	400 U																			
Dibenzo(a,h)anthracene	700	700	430 U	400 U																			
Dibenzofuran	100,000	1,000,000	430 U	400 U																			
Di-n-butyl phthalate	50,000	500,000	430 U	400 U																			
Fluoranthene	1,000,000	1,000,000	430 U	400 U																			
Fluorene	400,000	2,000,000	430 U	400 U																			
Indeno(1,2,3-cd)pyrene	700	1,000	430 U	400 U																			
Phenanthrene	100,000	100,000	430 U	400 U																			
Pyrene	700,000	2,000,000	430 U	400 U																			
Dioxin / Furan (pg/g)																							
Dioxin TEQ	4	6																					
Polychlorinated Biphenyls (ug/Kg)																							
Aroclor-1254			40 U	40 U												190		40 U		130		35 U	
Aroclor-1260			45	97												140		310		43 U		35 U	
Total PCBs	2,000	2,000	45	97												330		310		130		-	
Inorganics (mg/Kg)																							
Antimony	10	40	R	R												R	R	R	R	R	R	5 U	5 U
Arsenic	30	30	1.7	1.5												2.6	1.7	1.1	1.9	1.2	0.46 U	5.3	12
Beryllium	0.7	0.8	0.9 U	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.86 U	0.8 U	0.87 U	0.83 U	0.95 U	0.83 U	0.5 U	0.5 U
Boron	100	1,000																					
Cadmium	30	80	0.86 U	0.79 U												0.82 U	0.76 U	0.83 U	0.79 U	0.9 U	0.79 U	2.5 U	2.5 U
Chromium	1,000	2,500	13	20												13	13	13	12	9.9	8.9	16	10
Copper	1,000	10,000	5.5	15												11	8.5	10	13	1.8	1.3 U	23	8.8
Hexavalent Chromium	200	600																					
Lead	300	600	3.3	4.7												2.9	1.3	3.3	6.5	1.8	2	6.1	6.8
Lithium	100	1,000																					
Mercury	20	60	0.65 U	0.62 U												0.68 U	0.6 U	0.66 U	0.55 U	0.63 U	0.62 U	0.5 U	0.5 U
Nickel	300	700	11	14												12	10	10	9.8	7	9.6	19	10 U
Selenium	400	2,500	2.7 U	2.5 U												2.6 U	2.4 U	2.6 U	2.5 U	2.8 U	2.5 U	10 U	10 U
Silver	100	200	0.27 U	0.25 U												0.26 U	0.24 U	0.26 U	0.25 U	0.29 U	0.25 U	1 U	1 U
Thallium	8	30	0.7 U	0.78 U												0.63 U	0.65 U	0.61 U	0.58 U	0.94 U	1.4 U	5 U	5 U
Zinc	2,500	2,500	55	84												61	55	63	67	54	51	150 U	150 U

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-096)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-006	SB-006	SB-007	SB-007	SB-008	SB-008	SB-009	SB-009	SB-010	SB-010	SB-011	SB-011	SB-011	SB-012	SB-012	SB-013	SB-013	SB-014	SB-014
Sample Designation			SB-006 0006I	SB-006 0203F	SB-007 0006I	SB-007 0203F	SB-0080006I	SB-0080102F	SB-0090006I	SB-0090102F	SB-010 0006I	SB-010 0203F	SB-011 0006I	SB-011 0203F	FD001-090704	SB-01200061	SB-0120203F	SB-01300061	SB-0130203F	SB-014 0006I	SB-014 0203F
Date Sampled			9/7/2004	9/7/2004	9/7/2004	9/7/2004	10/22/2003	10/22/2003	10/20/2003	10/20/2003	9/7/2004	9/7/2004	9/7/2004	9/7/2004	9/7/2004	10/22/2003	10/22/2003	10/20/2003	10/20/2003	9/8/2004	9/8/2004
Applicable MCP Soil Standard			RCS-1	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-1
Comment	RCS-1	RCS-2																			
Petroleum Hydrocarbons (mg/kg)																					
TPH-DRO	200	2,000					7.5	5.1	19	4.3						89	41	44	8.8		
TPH-GRO	200	2,000																			
EPH C11-C22 Aromatics	200	2,000	117	7.75 U	7.17 U	8.55 U					17.9	7.41 U	7.75 U	7.33 U	7.41 U					8.13 U	7.75 U
EPH C19-C36 *Aliphatics*	2,500	5,000	71.1	7.75 U	7.17 U	8.55 U					11.3	7.41 U	7.75 U	7.33 U	7.41 U					8.13 U	7.75 U
EPH C9-C18 Aliphatics	1,000	2,500	34.7 U	7.75 U	7.17 U	8.55 U					7.02 U	7.41 U	7.75 U	7.33 U	7.41 U					8.13 U	7.75 U
VPH C5-C8 Aliphatics	100	500																		23.8 U	7.15 U
VPH C9-C10 Aromatics	100	500																		23.8 U	7.15 U
VPH C9-C12 Aliphatics	1,000	2,500																		23.8 U	7.15 U
Volatile Organic Compounds (ug/Kg)																					
2-Butanone	300	40,000																		9.7 J,B	11 B
Acetone	3,000	60,000																		120 B	69 B
Nitrobenzene	500,000	5,000,000																			
Toluene	90,000	500,000																		2.2 J,B	2.4 J,B
Semi-Volatile Organic Compounds (ug/Kg)																					
Acenaphthene	20,000	2,500,000																		1900 U	380 U
Acenaphthylene	100,000	1,000,000																		1900 U	380 U
Anthracene	1,000,000	2,500,000																		1900 U	380 U
Benzo(a)anthracene	700	1,000																		1900 U	380 U
Benzo(a)pyrene	700	700																		1900 U	380 U
Benzo(b)fluoranthene	700	1,000																		1900 U	380 U
Benzo(g,h,i)perylene	1,000,000	2,500,000																		1900 U	380 U
Benzo(k)fluoranthene	7,000	10,000																		1900 U	380 U
Benzoic acid	1,000,000	10,000,000																		9200 U	1900 U
bis(2-Ethylhexyl)phthalate	100,000	300,000																		1900 U	380 U
Butyl benzyl phthalate	100,000	1,000,000																		1900 U	380 U
Carbazole	NA	NA																		1900 U	380 U
Chrysene	7,000	10,000																		1900 U	380 U
Dibenzo(a,h)anthracene	700	700																		1900 U	380 U
Dibenzofuran	100,000	1,000,000																		1900 U	380 U
Di-n-butyl phthalate	50,000	500,000																		1900 U	380 U
Fluoranthene	1,000,000	1,000,000																		400 J	380 U
Fluorene	400,000	2,000,000																		1900 U	380 U
Indeno(1,2,3-cd)pyrene	700	1,000																		1900 U	380 U
Phenanthrene	100,000	100,000																		1900 U	380 U
Pyrene	700,000	2,000,000																		400 J	380 U
Dioxin / Furan (pg/g)																					
Dioxin TEQ	4	6																		2.32	0.001
Polychlorinated Biphenyls (ug/Kg)																					
Aroclor-1254			35 U		36 U		150		53		34 U		38 U		37 U	16 J		140		190	38 U
Aroclor-1260			35 U		36 U		86		53 U		34 U		38 U		37 U	46 U		50 U		38 U	38 U
Total PCBs	2,000	2,000	-		-		236		53		-		-		-	16		140		190	-
Inorganics (mg/Kg)																					
Antimony	10	40	5 U	5 U	5 U	5 U	0.83 J	R	R	R	5 U	5 U	5 U	5 U	5 U	R	R	R	R	5 U	5 U
Arsenic	30	30	5.9	3.2	4.3	7.7	1.4	1.2	1.4 J	1.2 J	7.3	3.6	4.3	3.9	4.4	1.6	0.89	2.5 J	1.7 J	3.6	4.4
Beryllium	0.7	0.8	0.5 U	0.5 U	0.5 U	0.5 U	0.89 U	0.89 U	1.2 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.97 U	1.1 U	0.5 U	0.5 U	0.5 U
Boron	100	1,000																			
Cadmium	30	80	2.5 U	2.5 U	2.5 U	2.5 U	0.84 U	0.85 U	1.1 U	0.98 U	2.5 U	2.5 U	2.5 U	2.5 U	7.2	0.96 U	0.93 U	1 U	0.83 U	2.5 U	2.5 U
Chromium	1,000	2,500	24	16	11	9.3	11	12	12	15	20	9	17	15	14	9.8	20	12	12	10	9.3
Copper	1,000	10,000	13	19	14	5 U	12	14	1.7 U	1.6 U	7	12	18	21	13	1.5 U	2	1.6 U	1.3 U	13	6.8
Hexavalent Chromium	200	600																			
Lead	300	600	5.6	8.6	6.2	15	10	3.9	1.4 J	1.8 J	6.4	4.9	4.8	5.6	8.5	R	0.86 J	0.99 J	1.1 J	8	4.5
Lithium	100	1,000																			
Mercury	20	60	0.5 U	0.5 U	0.5 U	0.5 U	0.65 U	0.61 U	0.75 U	0.74 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.68 U	0.68 U	0.8 U	0.67 U	0.5 U	0.5 U
Nickel	300	700	22	14	10 U	10 U	10	14	5.6	7.9	18	10 U	17	15	12	4.5	7.7	4.9	6.2	10	10 U
Selenium	400	2,500	10 U	10 U	10 U	10 U	2.6 U	2.6 U	3.4 U	3 U	10 U	10 U	10 U	10 U	10 U	3 U	2.9 U	3.1 U	2.6 U	10 U	10 U
Silver	100	200	1 U	1 U	1 U	1 U	0.27 U	0.27 U	0.34 U	0.31 U	1 U	1 U	1 U	1 U	1 U	0.3 U	0.29 U	0.32 U	0.26 U	1 U	1 U
Thallium	8	30	5 U	5 U	5 U	5 U	0.62 U	0.62 U	0.8 U	0.72 U	5 U	5 U	5 U	5 U	5 U	0.71 U	0.68 U	0.73 U	0.61 U	5 U	5 U
Zinc	2,500	2,500	150 U	150 U	150 U	150 U	58	66	58	61	150 U	150 U	150 U	150 U	150 U	25 U	53	44	40	150 U	150 U

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-096)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-015	SB-015	SB-015	SB016	SB016	SB-017	SB-017	SB-018	SB-018	SB-019	SB-019	SB-020	SB-020	SB-020	SB020-R	SB020	SB020-A	SB020-B	SB020-C	SB020-D
Sample Designation			SB-015 00061	SB-015 0203F	FD005-090904	SB016-00061	SB016-0203F	SB-017 00061	SB-017 0203F	SB-0180006I	SB-0180203F	SB-0190006I	SB-0190102F	SB-0200061	SB-0200203F	FD205102203	SB020-R00061	FD003-00061	SB020-A00061	SB020-B00061	SB020-C00061	SB020-D00061
Date Sampled			9/9/2004	9/9/2004	9/9/2004	10/19/2004	10/19/2004	9/9/2004	9/9/2004	10/22/2003	10/22/2003	10/20/2003	10/20/2003	10/22/2003	10/22/2003	10/22/2003	7/8/2004	7/8/2004	7/8/2004	7/8/2004	7/8/2004	7/8/2004
Applicable MCP Soil Standard			RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2	RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1
Comment	RCS-1	RCS-2			DUP											DUP						
Petroleum Hydrocarbons (mg/kg)																						
TPH-DRO	200	2,000								190 J	32	140	40	7.4	2.4 U	2.4 U						
TPH-GRO	200	2,000								4.2 U	4.6											
EPH C11-C22 Aromatics	200	2,000	47.8	7.66 U	7.58 U	45	49.5	7.75 U	7.75 U													
EPH C19-C36 Aliphatics	2,500	5,000	59.4	7.66 U	7.58 U	79.8	89.4	22.6	7.75 U													
EPH C9-C18 Aliphatics	1,000	2,500	36.2 U	7.66 U	7.58 U	7.75 U	7.66 U	7.75 U	7.75 U													
VPH C5-C8 Aliphatics	100	500				8.86 U	7.13 U															
VPH C9-C10 Aromatics	100	500				8.86 U	7.13 U															
VPH C9-C12 Aliphatics	1,000	2,500				8.86 U	7.13 U															
Volatile Organic Compounds (ug/Kg)																						
2-Butanone	300	40,000				10 U	4.6 J															
Acetone	3,000	60,000				10 U	10 U															
Nitrobenzene	500,000	5,000,000																				
Toluene	90,000	500,000				4.4 J	4.3 J															
Semi-Volatile Organic Compounds (ug/Kg)																						
Acenaphthene	20,000	2,500,000				390 U	400 U			1600 U	430 U											
Acenaphthylene	100,000	1,000,000				390 U	400 U			1600 U	430 U											
Anthracene	1,000,000	2,500,000				390 U	400 U			1600 U	430 U											
Benzo(a)anthracene	700	1,000				390 U	400 U			1600 U	430 U											
Benzo(a)pyrene	700	700				390 U	400 U			1600 U	430 U											
Benzo(b)fluoranthene	700	1,000				390 U	400 U			1600 U	430 U											
Benzo(g,h,i)perylene	1,000,000	2,500,000				390 U	400 U			1600 U	430 U											
Benzo(k)fluoranthene	7,000	10,000				390 U	400 U			1600 U	430 U											
Benzoic acid	1,000,000	10,000,000				1900 U	2000 U			7700 U	2100 U											
bis(2-Ethylhexyl)phthalate	100,000	300,000				140 J	400 U			1600 U	430 U											
Butyl benzyl phthalate	100,000	1,000,000				390 U	400 U			1600 U	430 U											
Carbazole	NA	NA				390 U	400 U			1600 U	430 U											
Chrysene	7,000	10,000				390 U	400 U			1600 U	430 U											
Dibenzo(a,h)anthracene	700	700				390 U	400 U			1600 U	430 U											
Dibenzofuran	100,000	1,000,000				390 U	400 U			1600 U	430 U											
Di-n-butyl phthalate	50,000	500,000				390 U	400 U			1600 U	430 U											
Fluoranthene	1,000,000	1,000,000				390 U	400 U			1600 U	430 U											
Fluorene	400,000	2,000,000				390 U	400 U			1600 U	430 U											
Indeno(1,2,3-cd)pyrene	700	1,000				390 U	400 U			1600 U	430 U											
Phenanthrene	100,000	100,000				390 U	400 U			1600 U	430 U											
Pyrene	700,000	2,000,000				390 U	400 U			1600 U	430 U											
Dioxin / Furan (pg/g)																						
Dioxin TEQ	4	6												6.9	0.353	0.216	0.310	0.441	2.56	0.759	1.12	0.344
Polychlorinated Biphenyls (ug/Kg)																						
Aroclor-1254			38 U	38 U		180	390	1100	37 U	92 U	26 J	520 J		400								
Aroclor-1260			38 U	38 U		33 U	33 U	38 U	37 U	92 U	43 U	56 U		180								
Total PCBs	2,000	2,000	-	-		180	390	1100	-	-	26	520		580								
Inorganics (mg/Kg)																						
Antimony	10	40	5 U	5 U	5 U	5 U	5 U	5 U	5 U	R	R	R	R	R	R	0.76 J						
Arsenic	30	30	4.2	1 U	4.8	1.7	2.6	3.2	5.2	5	2.4	1.3 J	7.9 J	1.3	1.8	0.19 U						
Beryllium	0.7	0.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.97 U	1.2 U	1.1 U	0.86 U	0.83 U	0.85 U						
Boron	100	1,000																				
Cadmium	30	80	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	5 U	1.9 U	0.92 U	1.2 U	1.1 U	0.81 U	0.79 U	0.81 U						
Chromium	1,000	2,500	11	5.6	11	5.3	10	13	16	3.6	12	3.2	17	9.3	13	12						
Copper	1,000	10,000	12	8.4	14	5.8	7.4	9.8	13	3 U	1.5 U	2.5	1.7 U	6	2.9	3.5						
Hexavalent Chromium	200	600																				
Lead	300	600	4.5	3.4	5.5	3.5	5.4	5.7	6.8	150 J	0.72 J	R	R	27 J	2.4 J	1.2						
Lithium	100	1,000																				
Mercury	20	60	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 U	0.74 U	0.95 U	0.79 U	0.63 U	0.59 U	0.68 U						
Nickel	300	700	12	78	11	10 U	10 U	10	16	6.5	4.9	3.1 U	6.8	9.7	8	8.5						
Selenium	400	2,500	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.9 U	2.9 U	3.6 U	3.3 U	2.5 U	2.5 U	2.5 U						
Silver	100	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.6 U	0.29 U	0.36 U	0.34 U	0.26 U	0.25 U	0.26 U						
Thallium	8	30	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.4 U	0.68 U	0.94 U	0.79 U	0.6 U	0.58 U	0.6 U						
Zinc	2,500	2,500	150 U	150 U	150 U	150 U	150 U	150 U	150 U	50 U	35	34	86	62	62	68						

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
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J= Estimated result
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2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-096)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB020-E	SB020-F	SB020-G	SB020-H	SB020-H	SB020-I	SB-021	SB-021	SB-022	SB-022	SB-022	SB-023	SB-023	SB024	SB024	SB-025	SB-025	SB-026	SB-026	SB-027
Sample Designation			SB020-E00061	SB020-F00061	SB020-G00061	SB020-H00061	SB020-H0102F	SB020-I00061	SB-021 0006I	SB-021 0203F	SB-02200061	FD202102003	SB-0220102F	SB-023 00061	SB-023 0203F	SB024-00061	SB024-0203F	SB-02500061	SB-0250203F	SB-02600061	SB-0260203F	SB-02700061
Date Sampled			7/8/2004	7/8/2004	7/8/2004	7/8/2004	7/8/2004	7/8/2004	9/9/2004	9/9/2004	10/20/2003	10/20/2003	10/20/2003	9/8/2004	9/8/2004	10/7/2004	10/7/2004	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2	RCS-2	RCS-2 DUP	RCS-2	RCS-1	RCS-1	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																				
Petroleum Hydrocarbons (mg/kg)																						
TPH-DRO	200	2,000									28	25 J	14					14	8.7	680 J	45	2.2 U
TPH-GRO	200	2,000									3 U	3 U	2.5 U							6 U	3.5 U	
EPH C11-C22 Aromatics	200	2,000							121	8.03 U				63.5	9.17	7.66 U	7.49 U					
EPH C19-C36 Aliphatics	2,500	5,000							84.1	8.03 U				43.5	7.75 U	7.66 U	7.49 U					
EPH C9-C18 Aliphatics	1,000	2,500							38.3 U	8.03 U				23.8 U	7.75 U	7.66 U	7.49 U					
VPH C5-C8 Aliphatics	100	500							7.91 U	7.4 U				7.8 U	8.43 U							
VPH C9-C10 Aromatics	100	500							7.91 U	7.4 U				7.8 U	8.43 U							
VPH C9-C12 Aliphatics	1,000	2,500							7.91 U	7.4 U				7.8 U	8.43 U							
Volatile Organic Compounds (ug/Kg)																						
2-Butanone	300	40,000							6.2 J,B	6.8 J,B				10 U	33 B							
Acetone	3,000	60,000							24 B	45 B				10 U	130 B							
Nitrobenzene	500,000	5,000,000																				
Toluene	90,000	500,000							5 U	5.5 U				2.8 J,B	2.9 J,B							
Semi-Volatile Organic Compounds (ug/Kg)																						
Acenaphthene	20,000	2,500,000							170 J	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Acenaphthylene	100,000	1,000,000							370 U	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Anthracene	1,000,000	2,500,000							260 J	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Benzo(a)anthracene	700	1,000							640	400 U	460 U	430 U	400 U	120 J	350 U					960 U	830 U	
Benzo(a)pyrene	700	700							570	400 U	460 U	430 U	400 U	160 J	350 U					960 U	830 U	
Benzo(b)fluoranthene	700	1,000							540	400 U	460 U	430 U	400 U	160 J	350 U					960 U	830 U	
Benzo(g,h,i)perylene	1,000,000	2,500,000							330 J	400 U	460 U	430 U	400 U	110 J	350 U					960 U	830 U	
Benzo(k)fluoranthene	7,000	10,000							440	400 U	460 U	430 U	400 U	120 J	350 U					960 U	830 U	
Benzoic acid	1,000,000	10,000,000							1800 U	1900 U	2200 U	2100 U	1900 U	1800 U	1700 U					2400 J	4000 U	
bis(2-Ethylhexyl)phthalate	100,000	300,000							110 J	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Butyl benzyl phthalate	100,000	1,000,000							370 U	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Carbazole	NA	NA							110 J	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Chrysene	7,000	10,000							670	400 U	460 U	430 U	400 U	150 J	350 U					960 U	830 U	
Dibenzo(a,h)anthracene	700	700							100 J	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Dibenzofuran	100,000	1,000,000							370 U	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Di-n-butyl phthalate	50,000	500,000							370 U	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Fluoranthene	1,000,000	1,000,000							1300	400 U	460 U	430 U	400 U	170 J	84 J					960 U	830 U	
Fluorene	400,000	2,000,000							110 J	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Indeno(1,2,3-cd)pyrene	700	1,000							290 J	400 U	460 U	430 U	400 U	100 J	350 U					960 U	830 U	
Phenanthrene	100,000	100,000							780	400 U	460 U	430 U	400 U	370 U	350 U					960 U	830 U	
Pyrene	700,000	2,000,000							1100	400 U	460 U	430 U	400 U	170 J	75 J					960 U	830 U	
Dioxin / Furan (pg/g)																						
Dioxin TEQ	4	6	2.71	5.07	7.04	2.53	0.366	2.04						11.43	0.08							
Polychlorinated Biphenyls (ug/Kg)																						
Aroclor-1254									170	40 U	680	1100	40 U	37 U	35 U	41 U	38 U	43 U		1100	120	96
Aroclor-1260									37 U	40 U	46 U	43 U	40 U	820	35 U	41 U	38 U	43 U		580	59 U	36 U
Total PCBs	2,000	2,000							170	-	680	1100	-	820	-	-	-	-		1680	120	96
Inorganics (mg/Kg)																						
Antimony	10	40							5 U	5 U	R	R	R	5 U	5 U	5 U	5 U	R	R	R	R	R
Arsenic	30	30							3.5	4.1	2 J	0.22 UJ	3.9 J	3.3	4	1.3	1 U	1.3	1.4	4.4	2.1	0.68
Beryllium	0.7	0.8							0.5 U	0.5 U	1 U	0.97 U	0.86 U	0.5 U	0.5 U	0.5 U	0.5 U	0.93 U	0.97 U	2.1 U	1.3 U	0.8 U
Boron	100	1,000																				
Cadmium	30	80							2.5 U	2.5 U	0.95 U	0.92 U	0.81 U	2.5 U	2.5	2.5 U	2.5 U	0.88 U	0.92 U	2 U	1.2 U	0.76 U
Chromium	1,000	2,500							12	19	10	9.8	7.9	16	17	6.2	11	15	15	8.2	8.7	12
Copper	1,000	10,000							11	14	3.7	3	15	12	15	6.7	14	1.4 U	1.5 U	3.2 U	1.9 U	12
Hexavalent Chromium	200	600																				
Lead	300	600							7.3	5.5	R	R	1 J	13	13	5.2	3.7	0.69 J	0.99 J	R	R	2.4 J
Lithium	100	1,000																				
Mercury	20	60							0.5 U	0.5 U	0.76 U	0.68 U	0.67 U	0.5 U	0.5 U	0.5 U	0.5 U	0.69 U	0.69 U	1.5 U	0.91 U	0.53 U
Nickel	300	700							10	15	7.6	7.3	5.8	12	25	10 U	11	3.5	5.7	5.4 U	3.3 U	9.1
Selenium	400	2,500							10 U	10 U	3 U	2.9 U	2.5 U	10 U	10 U	10 U	10 U	2.7 U	2.9 U	6.2 U	3.8 U	2.4 U
Silver	100	200							1 U	1 U	0.3 U	0.29 U	0.26 U	1 U	1 U	1 U	1 U	0.28 U	0.29 U	0.63 U	0.38 U	0.24 U
Thallium	8	30							5 U	5 U	0.7 U	0.68 U	0.6 U	5 U	5 U	5 U	5 U	0.65 U	0.68 U	1.4 U	0.94 U	0.56 U
Zinc	2,500	2,500							150 U	150	46	43	88	150 U	150 U	150 U	150 U	32	34	56	32 U	55

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
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Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-096)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-027	SB028	SB029	SB029	SB-030	SB-030	SB-031	SB-031	SB-032	SB-032	SB-033	SB-033	SB-034	SB-034	SB-035	SB-035	SB-036	SB-036	SB037	SB037
Sample Designation			SB-0270102F	SB028-00061	SB029-00061	SB029-0203F	SB-0300061	SB-0300102F	SB-0310061	SB-0310102F	SB-0320061	SB-0320102F	SB-0330061	SB-0330102F	SB-034 00061	SB-034 0203F	SB-0350061	SB-0350102F	SB-036 00061	SB-036 0203F	SB037-00061	SB037-0203F
Date Sampled			10/22/2003	12/2/2004	10/19/2004	10/19/2004	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/20/2003	10/20/2003	10/22/2003	10/22/2003	9/8/2004	9/8/2004	10/20/2003	10/20/2003	9/8/2004	9/8/2004	10/7/2004	10/7/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-1	RCS-1
Comment	RCS-1	RCS-2																				
Petroleum Hydrocarbons (mg/kg)																						
TPH-DRO	200	2,000	2.4 U				240	18	39	26	42	33	2.8	3			31 J	60 J				
TPH-GRO	200	2,000															2.5 U	2.5 U				
EPH C11-C22 Aromatics	200	2,000		7.25 U	36.4	13.8									7.33 U	7.66 U			7.58 U	7.09 U	6.94 U	7.17 U
EPH C19-C36 Aliphatics	2,500	5,000		9.66	13.5	7.66 U									14.3	7.66 U			8.1	7.09 U	6.94 U	7.17 U
EPH C9-C18 Aliphatics	1,000	2,500		7.25 U	7.41 U	7.66 U									7.33 U	7.66 U			7.58 U	7.09 U	6.94 U	7.17 U
VPH C5-C8 Aliphatics	100	500			12.3 U	8.44 U																
VPH C9-C10 Aromatics	100	500			12.3 U	8.44 U																
VPH C9-C12 Aliphatics	1,000	2,500			12.3 U	8.44 U																
Volatile Organic Compounds (ug/Kg)																						
2-Butanone	300	40,000			3.6 J	2.9 J																
Acetone	3,000	60,000			61	12 U																
Nitrobenzene	500,000	5,000,000																				
Toluene	90,000	500,000			6 U	6 U																
Semi-Volatile Organic Compounds (ug/Kg)																						
Acenaphthene	20,000	2,500,000			370 U	380 U											350 U	340 U				
Acenaphthylene	100,000	1,000,000			370 U	380 U											350 U	340 U				
Anthracene	1,000,000	2,500,000			370 U	200 J											350 U	340 U				
Benzo(a)anthracene	700	1,000			230 J	730											350 U	340 U				
Benzo(a)pyrene	700	700			210 J	480											350 U	340 U				
Benzo(b)fluoranthene	700	1,000			190 J	440											350 U	340 U				
Benzo(g,h,i)perylene	1,000,000	2,500,000			120 J	230 J											350 U	340 U				
Benzo(k)fluoranthene	7,000	10,000			210 J	560											350 U	340 U				
Benzoic acid	1,000,000	10,000,000			1800 U	1800 U											1700 U	1700 U				
bis(2-Ethylhexyl)phthalate	100,000	300,000			260 J	380 U											350 U	340 U				
Butyl benzyl phthalate	100,000	1,000,000			370 U	380 U											350 U	340 U				
Carbazole	NA	NA			370 U	380 U											350 U	340 U				
Chrysene	7,000	10,000			250 J	830											350 U	340 U				
Dibenzo(a,h)anthracene	700	700			370 U	110 J											350 U	340 U				
Dibenzofuran	100,000	1,000,000			370 U	380 U											350 U	340 U				
Di-n-butyl phthalate	50,000	500,000			370 U	380 U											350 U	340 U				
Fluoranthene	1,000,000	1,000,000			510	2000											350 U	340 U				
Fluorene	400,000	2,000,000			370 U	380 U											350 U	340 U				
Indeno(1,2,3-cd)pyrene	700	1,000			120 J	240 J											350 U	340 U				
Phenanthrene	100,000	100,000			370 U	430											350 U	340 U				
Pyrene	700,000	2,000,000			420	1500											350 U	340 U				
Dioxin / Furan (pg/g)																						
Dioxin TEQ	4	6																				
Polychlorinated Biphenyls (ug/Kg)																						
Aroclor-1254			120		320	280	480		180		2500		570	150	36	38 U	530	33 U	630	36 U	97	36 U
Aroclor-1260			67		33 U	33 U	200		43 U		230 U		250	36 U	35 U	38 U	350	33 U	670	36 U	34 U	36 U
Total PCBs	2,000	2,000	187		320	280	680		180		2500		820	150	36	-	880	-	1300	-	97	-
Inorganics (mg/Kg)																						
Antimony	10	40	R		5 U	5 U	R	R	R	R	R	R	R	R	5 U	5 U	0.52 U	0.52 U	5 U	5 U	5 U	5 U
Arsenic	30	30	0.66		3	3.4	3.2	1.6	1.2	0.22 U	0.22 UJ	0.24 UJ	0.98	0.93	2.9	3.9	1.6	0.94	3.4	3.2	1.1	1.2
Beryllium	0.7	0.8	0.88 U		0.5 U	0.5 U	1.1 U	0.9 U	0.97 U	1 U	0.99 U	1.1 U	0.84 U	0.82 U	0.5 U	0.5 U	0.75 U	0.75 U	0.5 U	0.5 U	0.5 U	0.5 U
Boron	100	1,000																				
Cadmium	30	80	0.83 U		2.5 U	2.5 U	1.1 U	0.86 U	0.92 U	0.95 U	2.5	1 U	0.8 U	0.78 U	2.5 U	2.5 U	0.71 U	0.71 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	1,000	2,500	8.5		6.8	10	11	19	9.5	9.7	20	26	16	15	13	11	9.1	8.4	12	49	9.3	15
Copper	1,000	10,000	8.5		8.2	9.3	1.7 U	1.4 U	2	1.5 U	24	7.6	49	16	14	11	31	13	16	20	14	27
Hexavalent Chromium	200	600																				
Lead	300	600	2.7 J		6.1	6.7	R	0.68 J	2 J	0.76 J	R	R	3.1 J	3 J	13	9.1	1.8 J	0.46 J	8.2	8.5	3.7	7.8
Lithium	100	1,000																				
Mercury	20	60	0.54 U		0.5 U	0.5 U	0.83 U	0.7 U	0.7 U	0.73 U	0.67 U	0.4 U	0.52 U	0.4 U	0.5 U	0.5 U	0.64 U	0.54 U	0.5 U	0.5 U	0.5 U	0.5 U
Nickel	300	700	8.1		10 U	10	5	9.5	5.7	5	8.9	14	15	15	10 U	10 U	11	9.2	11	15	11	16
Selenium	400	2,500	2.6 U		10 U	10 U	3.3 U	2.7 U	2.9 U	3 U	2.9 U	3.2 U	2.5 U	2.4 U	10 U	10 U	2.2 U	2.2 U	10 U	10 U	10 U	10 U
Silver	100	200	0.26 U		1 U	1 U	0.34 U	0.27 U	0.29 U	0.3 U	0.3 U	0.32 U	0.25 U	0.25 U	1 U	1 U	0.23 U	0.22 U	1 U	1 U	1 U	1 U
Thallium	8	30	0.61 U		5 U	5 U	0.78 U	0.63 U	0.68 U	0.7 U	0.69 U	0.75 U	0.59 U	0.57 U	5 U	5 U	0.52 U	0.52 U	5 U	5 U	5 U	5 U
Zinc	2,500	2,500	46		150 U	150 U	28 U	51	54	79	750	330	67	63	150 U	150 U	84	35	150 U	150 U	150 U	150 U

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-096)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB037	SB038	SB038	SB038	SB039	SB039	SB039	SB040	SB040	SB040	SB041	SB041	SB041	SB041	SB042	SB042	SB042	SB-044	SB-044	SB-044
Sample Designation			SB037-0910F	SB038-0006I	SB038-0203F	SB038-0506F	SB039-0006I	SB039-0203F	SB039-1415F	SB040-0006I	SB040-0203F	SB040-01415F	SB041-0006I	SB041-0203F	FD-007-100704	SB041-1415F	SB042-0006I	SB042-0203F	SB042-0510F	SB-044 0005I	SB-044 0203F	FD003-090804
Date Sampled			10/7/2004	12/2/2004	12/2/2004	12/2/2004	10/24/2004	10/24/2004	10/24/2004	12/1/2004	12/1/2004	12/1/2004	10/7/2004	10/7/2004	10/7/2004	10/7/2004	10/24/2004	10/24/2004	10/24/2004	9/8/2004	9/8/2004	9/8/2004
Applicable MCP Soil Standard			RCS-1	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2													DUP							
Petroleum Hydrocarbons (mg/kg)																						
TPH-DRO	200	2,000																				
TPH-GRO	200	2,000																				
EPH C11-C22 Aromatics	200	2,000	7.41 U	7.25 U	7.02 U	7.25 U	7.09 U	7.09 U	7.25 U	12.8	7.17 U	7.49 U	7.17 U	9.1	7.33 U	7.25 U	575	24.7	13.3	21.7	14.4	
EPH C19-C36 Aliphatics	2,500	5,000	7.41 U	10.5	7.02 U	7.25 U	7.09 U	7.09 U	7.25 U	20.8	7.17 U	7.49 U	7.17 U	7.25 U	7.33 U	7.25 U	528	7.25 U	36.6	28.4	14.1	
EPH C9-C18 Aliphatics	1,000	2,500	7.41 U	7.25 U	7.02 U	7.25 U	7.09 U	7.09 U	7.25 U	7.25 U	7.17 U	7.49 U	7.17 U	7.25 U	7.33 U	7.25 U	137 U	7.25 U	7.75 U	7.41 U	6.94 U	
VPH C5-C8 Aliphatics	100	500		5.46 U	5.67 U	5.72 U							8.15 U	7.23 U	7.57 U	8.12 U	8.16 U	7.71 U	6.87 U	6.91 U	5.38 U	
VPH C9-C10 Aromatics	100	500		5.46 U	5.67 U	5.72 U							8.15 U	7.23 U	7.57 U	8.12 U	8.16 U	7.71 U	6.87 U	6.91 U	5.38 U	
VPH C9-C12 Aliphatics	1,000	2,500		5.46 U	5.67 U	5.72 U							8.15 U	7.23 U	7.57 U	8.12 U	8.16 U	7.71 U	6.87 U	6.91 U	5.38 U	
Volatile Organic Compounds (ug/Kg)																						
2-Butanone	300	40,000											10 U	14 U	12 U	10 U	15 J	6.9 J	12	14 U	5 U	
Acetone	3,000	60,000											10 U	6.9 J,B	12 U	14 B	20 U	10 U	47	21 B	8.3 JB	
Nitrobenzene	500,000	5,000,000											25 U	35 U	30 U	25 U						
Toluene	90,000	500,000											8.5	11	10	7.2	9.2 J	5 U	2 J	5.3 J,B	8 B	
Semi-Volatile Organic Compounds (ug/Kg)																						
Acenaphthene	20,000	2,500,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Acenaphthylene	100,000	1,000,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Anthracene	1,000,000	2,500,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Benzo(a)anthracene	700	1,000											520 J	89 J	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Benzo(a)pyrene	700	700											370 J	74 J	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Benzo(b)fluoranthene	700	1,000											410 J	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Benzo(g,h,i)perylene	1,000,000	2,500,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Benzo(k)fluoranthene	7,000	10,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Benzoic acid	1,000,000	10,000,000											8600 U	1700 U	1800 U	1700 U	1700 U	1800 U	2000 U	1700 U	1600 U	1700 U
bis(2-Ethylhexyl)phthalate	100,000	300,000											1800 U	320 J	380	520	360 U	370 U	410 U	350 U	340 U	340 U
Butyl benzyl phthalate	100,000	1,000,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Carbazole	NA	NA											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Chrysene	7,000	10,000											580 J	89 J	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Dibenzo(a,h)anthracene	700	700											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Dibenzofuran	100,000	1,000,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Di-n-butyl phthalate	50,000	500,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Fluoranthene	1,000,000	1,000,000											1000 J	180 J	110 J	360 U	78 J	370 U	410 U	85 J	340 U	340 U
Fluorene	400,000	2,000,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Indeno(1,2,3-cd)pyrene	700	1,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Phenanthrene	100,000	100,000											1800 U	350 U	370 U	360 U	360 U	370 U	410 U	350 U	340 U	340 U
Pyrene	700,000	2,000,000											910 J	130 J	86 J	360 U	72 J	370 U	410 U	350 U	340 U	340 U
Dioxin / Furan (pg/g)																						
Dioxin TEQ	4	6																				
Polychlorinated Biphenyls (ug/Kg)																						
Aroclor-1254			38 U				33 U	33 U					150	540	360	36 U	2600	660	62	600	34 U	
Aroclor-1260			38 U				33 U	33 U					35 U	35 U	37 U	36 U	66 U	33 U	33 U	240	34 U	
Total PCBs	2,000	2,000	-				-	-					150	540	360	-	2600	660	62	840	-	
Inorganics (mg/Kg)																						
Antimony	10	40	5 U				5 U	5 U	5 U				5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	
Arsenic	30	30	1 U				7.3	2	4.1				2.3	1.7	1.2	1.4	2.4	2.1	1.3	3.4	2.3	
Beryllium	0.7	0.8	0.5				0.5 U	0.5 U	0.5 U				0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Boron	100	1,000																				
Cadmium	30	80	2.5 U				2.5 U	2.5 U	2.5 U				2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	
Chromium	1,000	2,500	8.7				8.2	7.4	19				13	10	9.2	12	8.1	6.9	11	11	16	
Copper	1,000	10,000	10				7.3	11	10				13	19	16	20	10	9.7	12	14	6	
Hexavalent Chromium	200	600																				
Lead	300	600	3.4				6.3	4.2	4.7				22	4.1	5.3	6.3	5.1	4.8	3.9	9.4	3.5	
Lithium	100	1,000																				
Mercury	20	60	0.5 U				0.5 U	0.5 U	0.5 U				0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Nickel	300	700	10				10 U	10 U	14				11	10	12	13	10 U	10 U	10	13	110	
Selenium	400	2,500	10 U				10 U	10 U	10 U				10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
Silver	100	200	1 U				1 U	1 U	1 U				1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Thallium	8	30	5 U				5 U	5 U	5 U				5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	
Zinc	2,500	2,500	150 U				150 U	150 U	150 U				150 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U	150 U	

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
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2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-096)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB045	SB045	SB045	SB-046	SB-046
Sample Designation			SB045-00061	SB045-0203F	SB045-0607F	SB046 00061	SB046 0506F
Date Sampled			12/2/2004	12/2/2004	12/2/2004	9/30/2004	9/30/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2					
Petroleum Hydrocarbons (mg/kg)							
TPH-DRO	200	2,000					
TPH-GRO	200	2,000					
EPH C11-C22 Aromatics	200	2,000	38	13.5	16.1	6.87 U	6.94 U
EPH C19-C36 Aliphatics	2,500	5,000	35	28	16.4	10.3	6.94 U
EPH C9-C18 Aliphatics	1,000	2,500	7.33 U	8.23 U	7.58 U	6.87 U	6.94 U
VPH C5-C8 Aliphatics	100	500	5.54	6.26 U	6.17 U	5.65 U	8.97 U
VPH C9-C10 Aromatics	100	500	5.42 U	6.26 U	6.17 U	5.65 U	8.97 U
VPH C9-C12 Aliphatics	1,000	2,500	5.42 U	6.26 U	6.17 U	5.65 U	8.97 U
Volatile Organic Compounds (ug/Kg)							
2-Butanone	300	40,000				10 U	12 U
Acetone	3,000	60,000				10 U	12 U
Nitrobenzene	500,000	5,000,000				25 U	30 U
Toluene	90,000	500,000				27	23
Semi-Volatile Organic Compounds (ug/Kg)							
Acenaphthene	20,000	2,500,000				340 U	340 U
Acenaphthylene	100,000	1,000,000				340 U	340 U
Anthracene	1,000,000	2,500,000				340 U	340 U
Benzo(a)anthracene	700	1,000				340 U	340 U
Benzo(a)pyrene	700	700				340 U	340 U
Benzo(b)fluoranthene	700	1,000				340 U	340 U
Benzo(g,h,i)perylene	1,000,000	2,500,000				340 U	340 U
Benzo(k)fluoranthene	7,000	10,000				340 U	340 U
Benzoic acid	1,000,000	10,000,000				1700 U	1700 U
bis(2-Ethylhexyl)phthalate	100,000	300,000				340 U	340 U
Butyl benzyl phthalate	100,000	1,000,000				340 U	340 U
Carbazole	NA	NA				340 U	340 U
Chrysene	7,000	10,000				340 U	340 U
Dibenzo(a,h)anthracene	700	700				340 U	340 U
Dibenzofuran	100,000	1,000,000				340 U	340 U
Di-n-butyl phthalate	50,000	500,000				340 U	340 U
Fluoranthene	1,000,000	1,000,000				340 U	340 U
Fluorene	400,000	2,000,000				340 U	340 U
Indeno(1,2,3-cd)pyrene	700	1,000				340 U	340 U
Phenanthrene	100,000	100,000				340 U	340 U
Pyrene	700,000	2,000,000				340 U	340 U
Dioxin / Furan (pg/g)							
Dioxin TEQ	4	6					
Polychlorinated Biphenyls (ug/Kg)							
Aroclor-1254						1400	920
Aroclor-1260						35 U	34 U
Total PCBs	2,000	2,000				1400	920
Inorganics (mg/Kg)							
Antimony	10	40				5 U	5 U
Arsenic	30	30				4.6	3.1
Beryllium	0.7	0.8				0.5 U	0.5 U
Boron	100	1,000					
Cadmium	30	80				2.5 U	2.5 U
Chromium	1,000	2,500				20	11
Copper	1,000	10,000				16	14
Hexavalent Chromium	200	600					
Lead	300	600				5.9	6.1
Lithium	100	1,000					
Mercury	20	60				0.5 U	0.5 U
Nickel	300	700				19	12
Selenium	400	2,500				10 U	10 U
Silver	100	200				1 U	1 U
Thallium	8	30				5 U	5 U
Zinc	2,500	2,500				150 U	150 U

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
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Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-097)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-047	SB-047	SB-047	SB-048	SB-048	SB-049	SB-049	SB050	SB050	SB051	SB051	SB052	SB-053	SB-053	SB-054	SB-054	SB-054	SB-056	SB-056	SB-056	SB-056
Sample Designation			SB-047-0006I	SB-047-0203F	SB-047-0607F	SB-048-0480061	SB-0480203F	SB-0490061	SB-0490203F	SB050-0006I	SB050-0203F	SB051-0006I	SB051-0203F	SB052-0006I	SB-053 0006I	SB-053 0203F	SB-0540061	SB-0540203F	SB-0541415F	SB-056 0006I	SB-056 0203F	SB-056 1415F	FD002-090704
Date Sampled			9/30/2004	9/30/2004	9/30/2004	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/24/2004	10/24/2004	10/16/2004	10/16/2004	12/2/2004	9/8/2004	9/8/2004	10/30/2003	10/30/2003	10/30/2003	9/7/2004	9/7/2004	9/7/2004	9/7/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																					
Petroleum Hydrocarbons (mg/Kg)																							
TPH-DRO	200	2,000				59 J	4.1	2.4 U	14								71 J	2 U	2.2 U				
TPH-GRO	200	2,000				2.5 U	150										2.5 U	2.5 U	2.5 U				
EPH C11-C22 Aromatics	200	2,000	7.33 U	65.6	7.17 U					109	33	7.25 U	7.41 U	7.02 U	45.6	57.8				7.25 U	7.33 U	7.09 U	
EPH C19-C36 Aliphatics	2,500	5,000	7.33 U	132	7.17 U					210	183	7.25 U	24	18.6	70.8	92.6				7.25 U	7.33 U	7.09 U	
EPH C9-C18 Aliphatics	1,000	2,500	7.33 U	7.66 U	7.17 U					7.49 U	8.03 U	7.25 U	7.41 U	7.02 U	9.38	6.8 U				7.25 U	7.33 U	7.09 U	
VPH C5-C8 Aliphatics	100	500								7.22 U	13.5 U			7.15 U						6.91 U	6.35 U	6.07 U	7.25 U
VPH C9-C10 Aromatics	100	500								7.22 U	13.5 U			7.15 U						6.91 U	6.35 U	6.07 U	7.25 U
VPH C9-C12 Aliphatics	1,000	2,500								7.22 U	13.5 U			7.15 U						6.91 U	6.35 U	6.07 U	7.25 U
Volatile Organic Compounds (ug/Kg)																							
2-Butanone	300	40,000					10 U			3.7 J	6.6 J									12 U	11 U	11 U	11 U
Acetone	3,000	60,000					86 J			12 U	3.7 J									6.9 J,B	11 U	200	73
Nitrobenzene	500,000	5,000,000					35																
Toluene	90,000	500,000					5 U			3.3 J	3.1 J									9.7 B	11 B	5.1 J,B	2.6 J,B
Semi-Volatile Organic Compounds (ug/Kg)																							
Acenaphthene	20,000	2,500,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	530	360 U	350 U	
Acenaphthylene	100,000	1,000,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	360 U	360 U	350 U	
Anthracene	1,000,000	2,500,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	1500	360 U	350 U	
Benzo(a)anthracene	700	1,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	1600	360 U	350 U	
Benzo(a)pyrene	700	700				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	1400	360 U	350 U	
Benzo(b)fluoranthene	700	1,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	1300	360 U	350 U	
Benzo(g,h,i)perylene	1,000,000	2,500,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	660	360 U	350 U	
Benzo(k)fluoranthene	7,000	10,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	1300	360 U	350 U	
Benzoic acid	1,000,000	10,000,000				6600 U	1800 U			2000 U	1900 U						8100 U	1600 U	1700 U	1700 U	1800 U	1700 U	
bis(2-Ethylhexyl)phthalate	100,000	300,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	360 U	360 U	350 U	
Butyl benzyl phthalate	100,000	1,000,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	360 U	360 U	350 U	
Carbazole	NA	NA				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	810	360 U	350 U	
Chrysene	7,000	10,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	1600	360 U	350 U	
Dibenzo(a,h)anthracene	700	700				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	190 J	360 U	350 U	
Dibenzofuran	100,000	1,000,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	450	360 U	350 U	
Di-n-butyl phthalate	50,000	500,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	360 U	360 U	350 U	
Fluoranthene	1,000,000	1,000,000				1400 U	380 U			410 U	83 J						1700 U	340 U	350 U	4000	360 U	350 U	
Fluorene	400,000	2,000,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	750	360 U	350 U	
Indeno(1,2,3-cd)pyrene	700	1,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	360 U	360 U	350 U	
Phenanthrene	100,000	100,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	4000	360 U	350 U	
Pyrene	700,000	2,000,000				1400 U	380 U			410 U	390 U						1700 U	340 U	350 U	2400	360 U	350 U	
Dioxin / Furan (pg/g)																							
Dioxin TEQ	4	6																					
Polychlorinated Biphenyls (ug/Kg)																							
Aroclor-1254			82	400		120	210	260	36 U	82	47	37 U			320	34 U	33 U	33 U	33 U	57	36 U	35 U	
Aroclor-1260			36 U	38 U		70	110	110	36 U	58	33 U	37 U			36 U	34 U	33 U	33 U	33 U	36 U	36 U	35 U	
Total PCBs	2,000	2,000	82	400		190	320	370	-	140	47	-			320	-	-	-	-	57	-	-	
Inorganics (mg/Kg)																							
Antimony	10	40	5 U	5 U	5 U	R	R	R	R	5 U	5 U	5 U	5 U		5 U	5 U	R	R	R	5 U	5 U	5 U	
Arsenic	30	30	8.7	7.8	1.1	4 J	1.2 J	3 J	0.18 U	5.9	5.4	3.1	2.7		3.5	1.8	1.2 J	1.2 J	0.86 J	3.5	3	4.3	
Beryllium	0.7	0.8	0.5 U	0.5 U	0.5 U	0.74 U	0.82 U	0.83 U	0.82 U	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.73 U	0.73 U	0.76 U	0.5 U	0.5 U	0.5 U	
Boron	100	1,000																					
Cadmium	30	80	2.5 U	2.5 U	2.5 U	0.71 U	0.78 U	0.79 U	0.78 U	2.5 U	2.5 U	2.5 U	2.5 U		2.5 U	2.5 U	0.7 U	0.7 U	0.73 U	2.5 U	2.5 U	2.5 U	
Chromium	1,000	2,500	26	21	23	10	16	8.6	21	17	44	8.7	15		13	12	13	20	4.5	18	11	16	
Copper	1,000	10,000	21	15	13	15	19	12	25	15	94	9.3	16		21	19	15	23	4.4	21	20	16	
Hexavalent Chromium	200	600																					
Lead	300	600	4.5	9.3	3.3	0.48 J	1.1 J	0.63 J	1.5 J	18	30	4.7	10		9.9	3.2	R	0.85 J	R	8.5	5.8	4.8	
Lithium	100	1,000																					
Mercury	20	60	0.5 U	0.5 U	0.5 U	0.011 J	0.014 J	0.008 J	0.007 J	0.5 U	0.5 U	0.5 U	0.5 U		0.5 U	0.5 U	0.009 J	0.007 J	0.009 J	0.5 U	0.5 U	0.5 U	
Nickel	300	700	28	19	14	16	17	11	23	12	100	10 U	11		13	16	16	14	5.6	10 U	12	15	
Selenium	400	2,500	10 U	10 U	10 U	5.3	9.2	9.2	11	10 U	10 U	10 U	10 U		10 U	10 U	6.4	7.6	9.3	10 U	10 U	10 U	
Silver	100	200	1 U	1 U	1 U	0.22 U	0.25 U	0.25 U	0.25 U	1 U	1 U	1 U	1.4		1 U	1 U	0.22 U	0.22 U	0.23 U	1 U	1 U	1 U	
Thallium	8	30	5 U	5 U	5 U	0.52 U	0.56 U	0.58 U	0.57 U	5 U	5 U	5 U	5 U		5 U	5 U	0.51 U	0.51 U	0.53 U	5 U	5 U	5 U	
Zinc	2,500	2,500	150 U	150 U	150 U	49	70	520	82	150 U	220	150	150 U		150 U	150 U	45	61	57	150 U	150 U	150 U	

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-097)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-057	SB-057	SB-057	SB-057	SB-058	SB-058	SB-058	SB-059	SB-059	SB-059	SB-060	SB-060	SB-061	SB-061	SB-061	SB-062	SB-062	SB-062	SB-063	SB-063	SB-063	SB064	SB064
Sample Designation			SB-0570006I	SB-0570203F	SB-0571415F	FD-208	SB-0580006I	SB-0580203F	SB-0580506F	SB-0590006I	SB-0590203F	SB-0591415F	SB-0600006I	SB-0600203F	SB-0610006I	SB-0610203F	SB-0611415F	SB-0620006I	SB-0620203F	SB-0620506F	SB-063 00061	SB-063 0203F	SB-063 1415F	SB064-0006I	SB064-0203F
Date Sampled			10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	10/30/2003	9/30/2004	9/30/2004	9/30/2004	9/30/2004	9/30/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2				DUP																			
Petroleum Hydrocarbons (mg/kg)																									
TPH-DRO	200	2,000	8.2	4.8	2.2 U	2 U	20 J	2.5	2.2 U	2 U	2.5	2.2 U	17 J	16 J											
TPH-GRO	200	2,000					2.5 U	2.5 U	2.5 U						2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U					
EPH C11-C22 Aromatics	200	2,000																			788	6.94 U	12.8	37.5	7.33 U
EPH C19-C36 Aliphatics	2,500	5,000																			1010	6.94 U	21.4	116	7.33 U
EPH C9-C18 Aliphatics	1,000	2,500																			30.5	6.94 U	7.09 U	7.25 U	7.33 U
VPH C5-C8 Aliphatics	100	500																							
VPH C9-C10 Aromatics	100	500																							
VPH C9-C12 Aliphatics	1,000	2,500																							
Volatile Organic Compounds (ug/Kg)																									
2-Butanone	300	40,000																					10 U		
Acetone	3,000	60,000																					10 U		
Nitrobenzene	500,000	5,000,000																					25 U		
Toluene	90,000	500,000																					6.1		
Semi-Volatile Organic Compounds (ug/Kg)																									
Acenaphthene	20,000	2,500,000					140 J	360 U	370 U														350 U		
Acenaphthylene	100,000	1,000,000					360 U	360 U	370 U														350 U		
Anthracene	1,000,000	2,500,000					130 J	360 U	370 U														350 U		
Benzo(a)anthracene	700	1,000					380	130 J	370 U														350 U		
Benzo(a)pyrene	700	700					310 J	92 J	370 U														350 U		
Benzo(b)fluoranthene	700	1,000					320 J	86 J	370 U														350 U		
Benzo(g,h,i)perylene	1,000,000	2,500,000					180 J	360 U	370 U														350 U		
Benzo(k)fluoranthene	7,000	10,000					280 J	92 J	370 U														350 U		
Benzoic acid	1,000,000	10,000,000					1700 U	1800 U	1800 U														1700 U		
bis(2-Ethylhexyl)phthalate	100,000	300,000					360 U	360 U	370 U														350 U		
Butyl benzyl phthalate	100,000	1,000,000					360 U	360 U	370 U														350 U		
Carbazole	NA	NA					150 J	360 U	370 U														350 U		
Chrysene	7,000	10,000					410	110 J	370 U														350 U		
Dibenzo(a,h)anthracene	700	700					360 U	360 U	370 U														350 U		
Dibenzofuran	100,000	1,000,000					110 J	360 U	370 U														350 U		
Di-n-butyl phthalate	50,000	500,000					360 U	360 U	370 U														350 U		
Fluoranthene	1,000,000	1,000,000					940	260 J	370 U														350 U		
Fluorene	400,000	2,000,000					140 J	360 U	370 U														350 U		
Indeno(1,2,3-cd)pyrene	700	1,000					230 J	360 U	370 U														350 U		
Phenanthrene	100,000	100,000					830	200 J	370 U														350 U		
Pyrene	700,000	2,000,000					690	200 J	370 U														350 U		
Dioxin / Furan (pg/g)																									
Dioxin TEQ	4	6																							
Polychlorinated Biphenyls (ug/Kg)																									
Aroclor-1254			36 J				350	36 U	49	33 U			190	200									35 U		
Aroclor-1260			43 U				190	36 U	36 U	33 U			120	140									35 U		
Total PCBs	2,000	2,000	36				540	-	49	-			310	340									-		
Inorganics (mg/Kg)																									
Antimony	10	40	R	R	R	R	R	R	R	R	R	R	R	R			R			R			5 U		
Arsenic	30	30	1.6	1.7	1.8	2.6	27	1.6	2.4	2	1.3	3.1	2.5 J	1.2 J			0.93 J			1.7 J			2.4		
Beryllium	0.7	0.8	0.98 U	0.81 U	0.77 U	0.75 U	0.78 U	0.8 U	0.79 U	0.76 U	0.82 U	0.87 U	0.78 U	0.79 U			0.78 U			0.79 U			0.5 U		
Boron	100	1,000											140	240											
Cadmium	30	80	0.93 U	1 U	0.73 U	0.71 U	0.74 U	0.76 U	0.75 U	0.72 U	0.78 U	0.83 U	0.75 U	0.76 U			0.74 U			0.75 U			2.5 U		
Chromium	1,000	2,500	13	11	19	18	20	17	14	20	14	25	18	14			8.2			13			18		
Copper	1,000	10,000	19	16	16	25	36	17	22	15	17	23	29	42			20			18			16		
Hexavalent Chromium	200	600																							
Lead	300	600	R	0.52 J	R	0.75 J	0.57 J	1 J	0.88 J	0.44 J	R	0.54 J	5.6 J	1.7 J			R			1 J			7.2		
Lithium	100	1,000											13	12											
Mercury	20	60	0.019	0.016	0.008	0.006	0.015	0.019	0.015	0.006 U	0.014	0.009	0.011 J	0.012 J			0.007 J			0.01 J			0.5 U		
Nickel	300	700	14	13	13	16	16	15	19	15	15	22	17	24			13			14			14		
Selenium	400	2,500	2.9 U	7.4	8.7	8.2	2.3 U	8.2	6.3	6.6	6.6	12	5.3	5.9			11			5.6			10 U		
Silver	100	200	0.29 U	0.24 U	0.23 U	0.23 U	0.23 U	0.24 U	0.24 U	0.23 U	0.25 U	0.26 U	0.24 U	0.24 U			0.24 U			0.24 U			1 U		
Thallium	8	30	0.68 U	0.57 U	0.54 U	0.52 U	0.54 U	0.56 U	0.55 U	0.53 U	0.57 U	0.61 U	0.55 U	0.56 U			0.55 U			0.55 U			5 U		
Zinc	2,500	2,500	44	50	51	61	57	61	59	47	48	86	87	200			81			58			150 U		

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-097)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB064	SB065	SB065	SB065	SB066	SB066	SB067	SB067	SB067	SB-068	SB-068	SB-068	SB-069	SB-069	SB-069	SB071	SB072	SB072	SB073	SB073
Sample Designation			SB064-1415F	SB065-00061	SB065 0203F	SB065 1415F	SB066-00061	SB066-0203F	SB067-00061	SB067-0203F	SB067-1415F	SB-0680061	SB-0680203F	SB-0680809F	SB-0690061	SB-0690203F	SB-0691415F	SB071-00061	SB072-00061	SB072-0203F	SB073-00061	SB073-0203F
Date Sampled			9/30/2004	9/30/2004	9/30/2004	9/30/2004	11/30/2004	11/30/2004	10/7/2004	10/7/2004	10/7/2004	10/29/2003	10/29/2003	10/29/2003	10/30/2003	10/30/2003	10/30/2003	10/19/2004	10/19/2004	10/19/2004	11/16/2004	11/16/2004
Applicable MCP Soil Standard			RCS-2	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																				
Petroleum Hydrocarbons (mg/kg)																						
TPH-DRO	200	2,000										12 J	2.2 U	35	2.2 U	2.2 U	2.2 U					
TPH-GRO	200	2,000																				
EPH C11-C22 Aromatics	200	2,000	7.41 U	7.58 U	7.25 U	51.2	6.94 U	6.94 U	6.94 U	7.66 U	7.49 U								7.94 U	24.5	15.8	7.66 U
EPH C19-C36 Aliphatics	2,500	5,000	7.41 U	7.58 U	7.25 U	89.4	6.94 U	6.94 U	6.94 U	7.66 U	7.49 U								7.94 U	7.66 U	12.1	7.66 U
EPH C9-C18 Aliphatics	1,000	2,500	7.41 U	7.58 U	7.25 U	7.09 U	6.94 U	6.94 U	6.94 U	7.66 U	7.49 U								7.94 U	7.66 U	7.25 U	7.66 U
VPH C5-C8 Aliphatics	100	500																				
VPH C9-C10 Aromatics	100	500																				
VPH C9-C12 Aliphatics	1,000	2,500																				
Volatile Organic Compounds (ug/Kg)																						
2-Butanone	300	40,000	10 U			10 U					12 U							3.2 J	12 U			
Acetone	3,000	60,000	10 U			10 U					9.2 J,B							10 U	12 U			
Nitrobenzene	500,000	5,000,000	25 U			25 U					30 U											
Toluene	90,000	500,000	8.2			2.8 J					22							5 U	2.7 J			
Semi-Volatile Organic Compounds (ug/Kg)																						
Acenaphthene	20,000	2,500,000	360 U			350 U					370 U	360 U	370 U					80 J	93 J			
Acenaphthylene	100,000	1,000,000	360 U			350 U					370 U	360 U	370 U					380 U	390 U			
Anthracene	1,000,000	2,500,000	360 U			350 U					370 U	360 U	370 U					580	120 J			
Benzo(a)anthracene	700	1,000	360 U			350 U					370 U	360 U	370 U					1800	420			
Benzo(a)pyrene	700	700	360 U			350 U					370 U	360 U	370 U					1000	380 J			
Benzo(b)fluoranthene	700	1,000	360 U			350 U					370 U	360 U	370 U					970	340 J			
Benzo(g,h,i)perylene	1,000,000	2,500,000	360 U			350 U					370 U	360 U	370 U					290 J	200 J			
Benzo(k)fluoranthene	7,000	10,000	360 U			350 U					370 U	360 U	370 U					990	360 J			
Benzoic acid	1,000,000	10,000,000	1700 U			1700 U					1800 U	1800 U	1800 U					1800 U	1900 U			
bis(2-Ethylhexyl)phthalate	100,000	300,000	470			74 J					780	360 U	370 U					380 U	230 J			
Butyl benzyl phthalate	100,000	1,000,000	360 U			350 U					370 U	360 U	370 U					380 U	390 U			
Carbazole	NA	NA	360 U			350 U					370 U	360 U	370 U					380 U	89 J			
Chrysene	7,000	10,000	360 U			350 U					370 U	360 U	370 U					1700	500			
Dibenzo(a,h)anthracene	700	700	360 U			350 U					370 U	360 U	370 U					190 J	92 J			
Dibenzofuran	100,000	1,000,000	360 U			350 U					370 U	360 U	370 U					380 U	390 U			
Di-n-butyl phthalate	50,000	500,000	360 U			350 U					370 U	360 U	370 U					380 U	390 U			
Fluoranthene	1,000,000	1,000,000	360 U			350 U					370 U	360 U	370 U					2600	1100			
Fluorene	400,000	2,000,000	360 U			350 U					370 U	360 U	370 U					100 J	390 U			
Indeno(1,2,3-cd)pyrene	700	1,000	360 U			350 U					370 U	360 U	370 U					340 J	210 J			
Phenanthrene	100,000	100,000	360 U			350 U					370 U	360 U	370 U					1300	720			
Pyrene	700,000	2,000,000	360 U			350 U					370 U	360 U	370 U					2200	830			
Dioxin / Furan (pg/g)																						
Dioxin TEQ	4	6																				
Polychlorinated Biphenyls (ug/Kg)																						
Aroclor-1254			36 U			36 U																
Aroclor-1260			36 U			36 U																
Total PCBs	2,000	2,000	-			-																
Inorganics (mg/Kg)																						
Antimony	10	40	5 U			5 U					5 U			R			R					
Arsenic	30	30	1.8			2.1					1 U			1.7 J			1.4					
Beryllium	0.7	0.8	0.5 U			0.5 U					0.5 U			0.81 UJ			0.8 U					
Boron	100	1,000																				
Cadmium	30	80	2.5 U			2.5 U					2.5 U			0.77 U			0.76 U					
Chromium	1,000	2,500	6.6			10					26			18 J			16					
Copper	1,000	10,000	11			21					7.8			20 J			16					
Hexavalent Chromium	200	600																				
Lead	300	600	3.7			5.1					4.3			1.7 J			0.48 J					
Lithium	100	1,000																				
Mercury	20	60	0.5 U			0.5 U					0.5 U			0.61 UJ			0.009					
Nickel	300	700	10 U			17					18			16 J			17					
Selenium	400	2,500	10 U			10 U					10 U			8.7 J			13					
Silver	100	200	1 U			1 U					1 U			0.24 UJ			0.24 U					
Thallium	8	30	5 U			5 U					5 U			0.57 UJ			0.56 U					
Zinc	2,500	2,500	150 U			150 U					150 U			60 J			78					

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-097)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-074	SB-074	SB-074	SB-074	SB075	SB075	SB075	SB075	SB075	SB076	SB076	SB076	SB-078	SB-078	SB079	SB079	SB079	SB080	SB080	SB080	SB081	SB081	SB082
Sample Designation			SB-074 0006I	SB-074 0203F	SB-074 1213F	FD004-090804	SB075A-0006I	SB075A-0203F	SB075A-1415F	SB075B-0006I	SB075B-0203F	SB076-0006I	SB076-0203F	SB076-0809F	SB0780006I	SB0780102F	SB079-0006I	SB079-0203F	SB079-1415F	SB080-0006I	SB080-0203F	SB080-1415F	SB081-0006I	SB081-0203F	SB082-0006I
Date Sampled			9/8/2004	9/8/2004	9/8/2004	9/8/2004	12/1/2004	12/1/2004	12/1/2004	12/2/2004	12/2/2004	12/2/2004	12/2/2004	12/2/2004	9/27/2004	9/27/2004	10/24/2004	10/24/2004	10/24/2004	11/30/2004	11/30/2004	11/30/2004	12/2/2004	12/2/2004	12/2/2004
Applicable MCP Soil Standard	RCS-1	RCS-2	RCS-1	RCS-1	RCS-1	RCS-1 DUP	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1
Comment																									
Petroleum Hydrocarbons (mg/kg)																									
TPH-DRO	200	2,000																							
TPH-GRO	200	2,000																							
EPH C11-C22 Aromatics	200	2,000	17	17.1	7.25 U		17.9	7.33 U	8.23 U	7.02 U	8.84	14.4	7.02 U	7.33 U	7.58 U	7.94 U	7.09 U	7.09 U	7.17 U	7.75 U	10.5	19.7	44.5	7.09 U	11.9
EPH C19-C36 Aliphatics	2,500	5,000	15.4	9.89	7.25 U		20	7.33 U	8.23 U	7.02 U	10.1	33.3	7.02 U	7.33 U	7.58 U	7.94 U	24.6	7.09 U	7.17 U	7.75 U	7.84	7.02 U	9.22	7.09 U	17.3
EPH C9-C18 Aliphatics	1,000	2,500	7.02 U	7.09 U	7.25 U		7.09 U	7.33 U	8.23 U	7.02 U	7.02 U	7.17 U	7.02 U	7.33 U	7.58 U	7.94 U	7.09 U	7.09 U	7.17 U	7.75 U	25.2	7.02 U	7.25 U	7.09 U	6.94 U
VPH C5-C8 Aliphatics	100	500										3.9 U			3.45 U		7.62 U			7.45 U			19.3		7.82 U
VPH C9-C10 Aromatics	100	500										3.9 U			3.45 U		7.62 U			7.45 U			6.34 U		7.82 U
VPH C9-C12 Aliphatics	1,000	2,500										3.9 U			3.45 U		7.62 U			7.45 U			6.34 U		7.82 U
Volatile Organic Compounds (ug/Kg)																									
2-Butanone	300	40,000													10 U	10 U	3.8 J								
Acetone	3,000	60,000													10 U	10 U	10 U								
Nitrobenzene	500,000	5,000,000																							
Toluene	90,000	500,000													5 U	5 U	5 U								
Semi-Volatile Organic Compounds (ug/Kg)																									
Acenaphthene	20,000	2,500,000	340 U	350 U											370 U		340 U								
Acenaphthylene	100,000	1,000,000	340 U	350 U											370 U		340 U								
Anthracene	1,000,000	2,500,000	340 U	350 U											370 U		340 U								
Benzo(a)anthracene	700	1,000	340 U	350 U											370 U		340 U								
Benzo(a)pyrene	700	700	340 U	350 U											370 U		340 U								
Benzo(b)fluoranthene	700	1,000	340 U	350 U											370 U		340 U								
Benzo(g,h,i)perylene	1,000,000	2,500,000	340 U	350 U											370 U		340 U								
Benzo(k)fluoranthene	7,000	10,000	340 U	350 U											370 U		340 U								
Benzoic acid	1,000,000	10,000,000	1700 U	1700 U											1800 U		1700 U								
bis(2-Ethylhexyl)phthalate	100,000	300,000	340 U	350 U											370 U		340 U								
Butyl benzyl phthalate	100,000	1,000,000	340 U	350 U											370 U		340 U								
Carbazole	NA	NA	340 U	350 U											370 U		340 U								
Chrysene	7,000	10,000	340 U	350 U											370 U		340 U								
Dibenzo(a,h)anthracene	700	700	340 U	350 U											370 U		340 U								
Dibenzofuran	100,000	1,000,000	340 U	350 U											370 U		340 U								
Di-n-butyl phthalate	50,000	500,000	340 U	350 U											370 U		340 U								
Fluoranthene	1,000,000	1,000,000	87 J	350 U											370 U		340 U								
Fluorene	400,000	2,000,000	340 U	350 U											370 U		340 U								
Indeno(1,2,3-cd)pyrene	700	1,000	340 U	350 U											370 U		340 U								
Phenanthrene	100,000	100,000	340 U	350 U											370 U		340 U								
Pyrene	700,000	2,000,000	76 J	350 U											370 U		340 U								
Dioxin / Furan (pg/g)																									
Dioxin TEQ	4	6	36.9	0.026	0.001	0.001																			
Polychlorinated Biphenyls (ug/Kg)																									
Aroclor-1254			34 U	35 U											520		33 U								
Aroclor-1260			130	35 U											37 U		33 U								
Total PCBs	2,000	2,000	130	-											520		-								
Inorganics (mg/Kg)																									
Antimony	10	40	5 U	5 U	5 U										5 U	5 U	5 U	5 U	5 U						
Arsenic	30	30	9.6	3.3	3.3										2.1	1.6	2.2	5.8	3						
Beryllium	0.7	0.8	0.5 U	0.5 U	0.5 U										0.5 U	0.5 U	0.5 U	0.5 U	0.5 U						
Boron	100	1,000																							
Cadmium	30	80	2.5 U	2.5 U	2.5 U										2.5 U	2.5 U	2.5 U	2.5 U	2.5 U						
Chromium	1,000	2,500	19	17	8.7										10	9	13	13	14						
Copper	1,000	10,000	17	12	15										22	12	14	6.5	7						
Hexavalent Chromium	200	600																							
Lead	300	600	9.3	5.7	2.9										4.9	3.9	4.3	8.2	3.8						
Lithium	100	1,000																							
Mercury	20	60	0.5 U	0.5 U	0.5 U										0.5 U	0.5 U	0.5 U	0.5 U	0.5 U						
Nickel	300	700	23	12	13										13	12	10 U	11	10 U						
Selenium	400	2,500	10 U	10 U	10 U										10 U	10 U	10 U	10 U	10 U						
Silver	100	200	1 U	1 U	1 U										1 U	1 U	1 U	1.2	1 U						
Thallium	8	30	5 U	5 U	5 U										5 U	5 U	5 U	5 U	5 U						
Zinc	2,500	2,500	150 U	150 U	150 U										150 U	150 U	150 U	150 U	150 U						

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-097)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB082	SB082	SB-083	SB-083	SB084	SB084	SB084	SB085	SB085	SB086	SB086	SB-087	SB-087	SB-088	SB-088	SB-089	SB-089	SB-090	SB-090	SB091	SB092	SB092	SB092
Sample Designation			SB082-0203F	SB082-0708F	SB-0830006I	SB-0830203F	SB084-0006I	SB084-0203F	SB084-1415F	SB085-0006I	SB085-0203F	SB086-0006I	SB086-0203F	SB-0870006I	SB-0870102F	SB-0880006I	SB-0880102F	SB-0890006I	SB-0890102F	SB-0900006I	SB-0900102F	SB091-0006I	SB092-0006I	SB092-0203F	SB092-1415F
Date Sampled			12/2/2004	12/2/2004	10/30/2003	10/30/2003	10/16/2004	10/16/2004	10/16/2004	10/19/2004	10/19/2004	10/17/2004	10/17/2004	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/24/2004	10/17/2004	10/17/2004	10/17/2004
Applicable MCP Soil Standard			RCS-1	RCS-1	RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																							
Petroleum Hydrocarbons (mg/kg)																									
TPH-DRO	200	2,000			2 U	11								6.5 J	5.4 J	3.4	2.2 U	5.6	2 U	15	6.5				
TPH-GRO	200	2,000																							
EPH C11-C22 Aromatics	200	2,000	7.17	6.94 U			7.94 U	7.49 U	8.23 U	7.17 U	7.41 U	7.02 U	7.02 U									7.02 U	84	12	7.17 U
EPH C19-C36 Aliphatics	2,500	5,000	9.73	6.94 U			14	7.49 U	8.23 U	7.17 U	7.41 U	7.02 U	7.02 U									11.7	116	38.5	7.17 U
EPH C9-C18 Aliphatics	1,000	2,500	6.8 U	6.94 U			7.94 U	7.49 U	8.23 U	7.17 U	7.41 U	7.02 U	7.02 U									7.02 U	202	22.7	7.17 U
VPH C5-C8 Aliphatics	100	500					9.63 U			7.48 U		9.09 U										8.39 U	5.13 U		
VPH C9-C10 Aromatics	100	500					9.63 U			7.48 U		9.09 U										8.39 U	5.13 U		
VPH C9-C12 Aliphatics	1,000	2,500					9.63 U			7.48 U		9.09 U										8.39 U	5.13 U		
Volatile Organic Compounds (ug/Kg)																									
2-Butanone	300	40,000					5.3 J			12 U		6.4 J										6 J	3.5 J		
Acetone	3,000	60,000					11			12 U		23										6.9 J	24		
Nitrobenzene	500,000	5,000,000					25 U					25 U											25 U		
Toluene	90,000	500,000					5 U			6 U		8.3										4.5 J	2.9 J		
Semi-Volatile Organic Compounds (ug/Kg)																									
Acenaphthene	20,000	2,500,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Acenaphthylene	100,000	1,000,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Anthracene	1,000,000	2,500,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Benzo(a)anthracene	700	1,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Benzo(a)pyrene	700	700			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Benzo(b)fluoranthene	700	1,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Benzo(g,h,i)perylene	1,000,000	2,500,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Benzo(k)fluoranthene	7,000	10,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Benzoic acid	1,000,000	10,000,000			1600 U	1800 U	1700 U			1700 U		1700 U										1700 U	1600 U		
bis(2-Ethylhexyl)phthalate	100,000	300,000			330 U	380 U	360 U			360 U		340 U										360 U	140 J		
Butyl benzyl phthalate	100,000	1,000,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Carbazole	NA	NA			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Chrysene	7,000	10,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Dibenzo(a,h)anthracene	700	700			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Dibenzofuran	100,000	1,000,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Di-n-butyl phthalate	50,000	500,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Fluoranthene	1,000,000	1,000,000			330 U	110 J	360 U			360 U		340 U										360 U	340 U		
Fluorene	400,000	2,000,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Indeno(1,2,3-cd)pyrene	700	1,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Phenanthrene	100,000	100,000			330 U	380 U	360 U			360 U		340 U										360 U	340 U		
Pyrene	700,000	2,000,000			330 U	96 J	360 U			360 U		340 U										360 U	340 U		
Dioxin / Furan (pg/g)																									
Dioxin TEQ	4	6																							
Polychlorinated Biphenyls (ug/Kg)																									
Aroclor-1254							64			33 U		200		110	51	83	36 U	300	33 U	510	120	33 U	34 U	3100	37 U
Aroclor-1260							36 U			33 U		34 U		74	36 U	40 U	36 U	400	33 U	33 U	36 U	33 U	34 U	71 U	37 U
Total PCBs	2,000	2,000					64			-		200		184	51	83	-	700	-	510	120	-	-	3100	-
Inorganics (mg/Kg)																									
Antimony	10	40			R	R	5 U	5 U	5 U	5 U	5 U	5 U	5 U									5 U	5 U	5 U	5 U
Arsenic	30	30			4.1 J	1.8 J	2.6	3.3	2.8	1 U	2.7	10	4.5									2	9.8	7.4	4.5
Beryllium	0.7	0.8			0.72 U	0.83 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U									0.5 U	0.5 U	0.5 U	0.5 U
Boron	100	1,000																							
Cadmium	30	80			0.69 U	0.79 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U									2.5 U	2.5 U	2.5 U	2.5 U
Chromium	1,000	2,500			12	6.4	20	7.6	34	13	6.7	35	8.2									10	32	15	15
Copper	1,000	10,000			2.1	8	6.6	5 U	6.8	8	5 U	15	11									14	93	7.3	15
Hexavalent Chromium	200	600																							
Lead	300	600			0.85 J	0.58 J	2.7	3	3	8.6	5.2	5.5	5.7									3.7	4.6	42	12
Lithium	100	1,000																							
Mercury	20	60			0.007 J	0.011 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U									0.5 U	0.5 U	0.5 U	0.5 U
Nickel	300	700			23	8.1	15	10 U	28	16	10 U	25	10 U									12	26	10 U	14
Selenium	400	2,500			2.1 U	2.5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U									10 U	10 U	10 U	10 U
Silver	100	200			0.22 U	0.25 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U									1 U	1 U	1.4	1 U
Thallium	8	30			0.5 U	0.58 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U									5 U	5 U	5 U	5 U
Zinc	2,500	2,500			26	42	150 U	150 U	150 U	150 U	150 U	150 U	150									150 U	150	150 U	150 U

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
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2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Industrial Area (001-097)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB093	SB093	SB093	SB093	SB094	SB094	SB095	SB095	SB095	SB095	SB-096	SB-096	SB-096	SB097	SB097
Sample Designation			SB093-00061	FD-008-101704	SB093-0203F	SB093-1415F	SB094-00061	SB094-0203F	SB095-00061	FD 009-102104	SB095-0203F	SB095-1213F	SB-096 00061	FD006-090904	SB-096 0203F	SB097-00061	SB097-0203F
Date Sampled			10/17/2004	10/17/2004	10/17/2004	10/17/2004	10/20/2004	10/20/2004	10/24/2004	10/21/2004	10/24/2004	10/24/2004	9/9/2004	9/9/2004	9/9/2004	11/30/2004	11/30/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-2	RCS-2
Comment	RCS-1	RCS-2		DUP										DUP			
Petroleum Hydrocarbons (mg/kg)																	
TPH-DRO	200	2,000															
TPH-GRO	200	2,000															
EPH C11-C22 Aromatics	200	2,000	8.66 U	8.13 U	7.09 U	7.41 U	7.49 U	7.09 U	7.25 U	7.17 U	6.8 U	6.94 U	7.17 U	7.84 U	7.66 U	227	7.09 U
EPH C19-C36 Aliphatics	2,500	5,000	8.66 U	8.13 U	7.09 U	7.41 U	7.49 U	7.09 U	22	7.17 U	6.8 U	6.94 U	7.17 U	7.84 U	7.66 U	259	7.09 U
EPH C9-C18 Aliphatics	1,000	2,500	8.66 U	8.13 U	7.09 U	7.41 U	7.49 U	7.09 U	7.25 U	7.17 U	6.8 U	6.94 U	7.17 U	7.84 U	7.66 U	35.5 U	7.09 U
VPH C5-C8 Aliphatics	100	500	9.86 U	8.82 U													
VPH C9-C10 Aromatics	100	500	9.86 U	8.82 U													
VPH C9-C12 Aliphatics	1,000	2,500	9.86 U	8.82 U													
Volatile Organic Compounds (ug/Kg)																	
2-Butanone	300	40,000	12 U	10 U					3.6 J	5.7 J							
Acetone	3,000	60,000	12 U	10 U					10 U	14 U							
Nitrobenzene	500,000	5,000,000	30 U	25 U													
Toluene	90,000	500,000	6 U	3.2 J					5 U	3.8 J							
Semi-Volatile Organic Compounds (ug/Kg)																	
Acenaphthene	20,000	2,500,000	400 U	400 U					340 U	360 U							
Acenaphthylene	100,000	1,000,000	400 U	400 U					340 U	360 U							
Anthracene	1,000,000	2,500,000	400 U	400 U					340 U	360 U							
Benzo(a)anthracene	700	1,000	400 U	400 U					340 U	360 U							
Benzo(a)pyrene	700	700	400 U	400 U					340 U	360 U							
Benzo(b)fluoranthene	700	1,000	400 U	400 U					340 U	360 U							
Benzo(g,h,i)perylene	1,000,000	2,500,000	400 U	400 U					340 U	360 U							
Benzo(k)fluoranthene	7,000	10,000	400 U	400 U					340 U	360 U							
Benzoic acid	1,000,000	10,000,000	2000 U	2000 U					1700 U	1800 U							
bis(2-Ethylhexyl)phthalate	100,000	300,000	400 U	400 U					340 U	360 U							
Butyl benzyl phthalate	100,000	1,000,000	400 U	400 U					340 U	360 U							
Carbazole	NA	NA	400 U	400 U					340 U	360 U							
Chrysene	7,000	10,000	400 U	400 U					340 U	360 U							
Dibenzo(a,h)anthracene	700	700	400 U	400 U					340 U	360 U							
Dibenzofuran	100,000	1,000,000	400 U	400 U					340 U	360 U							
Di-n-butyl phthalate	50,000	500,000	400 U	400 U					340 U	360 U							
Fluoranthene	1,000,000	1,000,000	400 U	400 U					340 U	360 U							
Fluorene	400,000	2,000,000	400 U	400 U					340 U	360 U							
Indeno(1,2,3-cd)pyrene	700	1,000	400 U	400 U					340 U	360 U							
Phenanthrene	100,000	100,000	400 U	400 U					340 U	360 U							
Pyrene	700,000	2,000,000	400 U	400 U					340 U	360 U							
Dioxin / Furan (pg/g)																	
Dioxin TEQ	4	6															
Polychlorinated Biphenyls (ug/Kg)																	
Arocler-1254			40 U	40 U	35 U	37 U			67	33 U	33 U	33 U	35 U		38 U		
Arocler-1260			40 U	40 U	35 U	37 U			33 U	33 U	33 U	33 U	35 U		38 U		
Total PCBs	2,000	2,000	-	-	-	-			67	-	-	-	-		-		
Inorganics (mg/Kg)																	
Antimony	10	40	5 U	5 U	5 U	5 U			5 U	5 U	5 U	5 U	5 U	5 U			
Arsenic	30	30	4.6	5.1	2.7	2.9			1 U	2.5	1 U	1.7	7.3	3.9			
Beryllium	0.7	0.8	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
Boron	100	1,000							10 U	10 U	10 U	10 U					
Cadmium	30	80	2.5 U	2.5 U	2.5 U	2.5 U			2.5 U	2.5 U	2.5 U	2.5 U	2.5	2.5 U			
Chromium	1,000	2,500	8.1	9.9	5.8	9.7			7.3	14	11	10	12	11			
Copper	1,000	10,000	9.4	5 U	12	11			13	9.8	13	17	13	14			
Hexavalent Chromium	200	600															
Lead	300	600	9.4	10	8.9	3.8			2 U	6.1	2 U	3.1	9.6	5.2			
Lithium	100	1,000							13	14	18	17					
Mercury	20	60	0.5 U	0.5 U	0.5 U	0.5 U			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U			
Nickel	300	700	10 U	10 U	10 U	12			10 U	10 U	10 U	13	17	12			
Selenium	400	2,500	10 U	10 U	10 U	10 U			10 U	10 U	10 U	10 U	10 U	10 U			
Silver	100	200	1 U	1 U	1 U	1 U			1 U	1 U	1 U	1 U	1 U	1 U			
Thallium	8	30	5 U	5 U	5 U	5 U			5 U	5 U	5 U	5 U	5 U	5 U			
Zinc	2,500	2,500	150 U	150 U	150 U	150 U			150 U	150 U	150 U	150 U	150 U	150 U			

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
2004 Dioxin/Furan data have not been validated

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-100	SB-100	SB-101	SB-101	SB-102	SB-102	SB-103	SB-103	SB-104	SB-104	SB-105	SB-105	SB-105	SB105-R	SB105-R	SB105-R	SB105-A	SB105-A
Sample Designation			SB-10000061	SB-1000102F	SB-10100061	SB-1010102F	SB-10200061	SB-1020102F	SB-10300061	SB-1030102F	SB-10400061	SB-1040102F	SB-10500061	FD203102103	SB-1050102F	SB105-R00061	FD005-00061	SB105-R0102F	SB105-A00061	SB105-A0102F
Date Sampled			10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2 DUP	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																		
Petroleum Hydrocarbons (mg/kg)																				
TPH-DRO	200	2,000	5.2	6	5	4.2	7.9	3.8	23	20	11	16	5.9 J	11 UJ	180 J					
TPH-GRO	200	2,000			3 U	2.5 U							2.5 U	2.5 U	2.5 U					
Volatile Organic Compounds (ug/Kg)																				
2-Butanone	300	40,000																		
Acetone	3,000	60,000																		
Nitrobenzene	500,000	5,000,000																		
Toluene	90,000	500,000																		
Semi-Volatile Organic Compounds (ug/Kg)																				
Acenaphthene	20,000	2,500,000			400 U	430 U							360 U	360 U	400 U	350 U	350 U	350 U	350 U	350 U
Acenaphthylene	100,000	1,000,000			400 U	430 U							360 U	360 U	490	350 U	350 U	230 J	350 U	350 U
Anthracene	1,000,000	2,500,000			400 U	430 U							360 U	360 U	1100	350 U	350 U	730	350 U	83 J
Benzo(a)anthracene	700	1,000			400 U	430 U							360 U	360 U	2900	350 U	350 U	1900	350 U	210 J
Benzo(a)pyrene	700	700			400 U	430 U							360 U	360 U	1600	350 U	350 U	880	350 U	200 J
Benzo(b)fluoranthene	700	1,000			400 U	430 U							360 U	360 U	3600	350 U	350 U	1800	350 U	180 J
Benzo(g,h,i)perylene	1,000,000	2,500,000			400 U	430 U							360 U	360 U	840	350 U	350 U	460	350 U	120 J
Benzo(k)fluoranthene	7,000	10,000			400 U	430 U							360 U	360 U	2300	350 U	350 U	1700	350 U	180 J
Benzoic acid	1,000,000	10,000,000			1900 U	2100 U							1800 U	1800 U	1900 U	1700 U	1700 U	1700 U	1700 U	1700 U
bis(2-Ethylhexyl)phthalate	100,000	300,000			400 U	430 U							360 U	360 U	400 U	350 U	350 U	350 U	350 U	350 U
Butyl benzyl phthalate	100,000	1,000,000			400 U	430 U							360 U	360 U	400 U	350 U	350 U	350 U	350 U	350 U
Carbazole	NA	NA			400 U	430 U							360 U	360 U	260 J	350 U	350 U	87 J	350 U	350 U
Chrysene	7,000	10,000			400 U	430 U							360 U	360 U	4300	350 U	350 U	3200	350 U	240 J
Dibenzo(a,h)anthracene	700	700			400 U	430 U							360 U	360 U	390 J	350 U	350 U	260 J	350 U	73 J
Dibenzofuran	100,000	1,000,000			400 U	430 U							360 U	360 U	400 U	350 U	350 U	350 U	350 U	350 U
Di-n-butyl phthalate	50,000	500,000			400 U	430 U							360 U	360 U	400 U	350 U	350 U	350 U	350 U	350 U
Fluoranthene	1,000,000	1,000,000			400 U	430 U							360 U	99 J	6500	110 J	91 J	7900	350 U	530
Fluorene	400,000	2,000,000			400 U	430 U							360 U	360 U	400 U	350 U	350 U	350 U	350 U	350 U
Indeno(1,2,3-cd)pyrene	700	1,000			400 U	430 U							360 U	360 U	970	350 U	350 U	570	350 U	130 J
Phenanthrene	100,000	100,000			400 U	430 U							360 U	360 U	290 J	350 U	350 U	130 J	350 U	240 J
Pyrene	700,000	2,000,000			400 U	430 U							360 U	81 J	8600	70 J	350 U	5300	350 U	300 J
Dioxin / Furan (pg/g)																				
Dioxin TEQ	4	6																		
Polychlorinated Biphenyls (ug/Kg)																				
Aroclor-1254			130		36 J	14 J	350		34 J		59		36 U	18 J	40 U					
Aroclor-1260			100		40 U	40 U	270		56 U		40 U		36 U	36 U	40 U					
Total PCBs	2,000	2,000	230		36	14	620		34		59			18						
Inorganics (mg/Kg)																				
Antimony	10	40											R	R	R					
Arsenic	30	30											1.5 J	1.7 J	1.5 J					
Beryllium	0.7	0.8											0.81 U	0.78 U	0.83 U					
Boron	100	1,000																		
Cadmium	30	80											0.77 U	0.74 U	0.79 U					
Chromium	1,000	2,500											12	11	15					
Copper	1,000	10,000											18	14	16					
Hexavalent Chromium	200	600																		
Lead	300	600											2.2 J	1.3 J	1.8 J					
Lithium	100	1,000																		
Mercury	20	60											0.6 U	0.56 U	0.57 U					
Nickel	300	700											13	12	14					
Selenium	400	2,500											2.4 U	2.3 U	2.5 U					
Silver	100	200											0.25 U	0.24 U	0.25 U					
Thallium	8	30											0.57 U	0.55 U	0.58 U					
Zinc	2,500	2,500											72	58	59					

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB105-B	SB105-B	SB105-C	SB105-C	SB105-D	SB105-D	SB105-E	SB105-E	SB105-F	SB105-F	SB105-G	SB105-G	SB105-H	SB105-H	SB105-I	SB105-I	SB105-J	SB105-J
Sample Designation			SB105-B00061	SB105-B0102F	SB105-C00061	SB105-C0102F	SB105-D00061	SB105-D0102F	SB105-E00061	SB105-E0102F	SB105-F00061	SB105-F0102F	SB105-G00061	SB105-G0102F	SB105-H00061	SB105-H0102F	SB105-I00061	SB105-I0102F	SB105-J00061	SB105-J0102F
Date Sampled			7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																		
Petroleum Hydrocarbons (mg/kg)																				
TPH-DRO	200	2,000																		
TPH-GRO	200	2,000																		
Volatile Organic Compounds (ug/Kg)																				
2-Butanone	300	40,000																	1.4 J	
Acetone	3,000	60,000																	49 B	
Nitrobenzene	500,000	5,000,000																		
Toluene	90,000	500,000																	1.9 JB	
Semi-Volatile Organic Compounds (ug/Kg)																				
Acenaphthene	20,000	2,500,000	350 U	350 U	350 U	350 U	360 U	350 U	340 U	370 U	350 U	350 U	360 U	350 U	360 U	350 U	360 U	390 U	350 U	340 U
Acenaphthylene	100,000	1,000,000	350 U	120 J	350 U	350 U	360 U	350 U	340 U	1600	350 U	350 U	360 U	360	360 U	110 J	360 U	3200	350 U	340 U
Anthracene	1,000,000	2,500,000	350 U	570	350 U	350 U	360 U	74 J	87 J	2500	350 U	350 U	360 U	3400	150 J	140 J	360 U	21000	350 U	340 U
Benzo(a)anthracene	700	1,000	350 U	1800	350 U	160 J	360 U	190 J	340 U	5900	350 U	350 U	360 U	9300	120 J	390	360 U	23000	350 U	340 U
Benzo(a)pyrene	700	700	350 U	760	350 U	140 J	360 U	170 J	340 U	12000	350 U	350 U	360 U	2800	360 U	400	360 U	8800	350 U	340 U
Benzo(b)fluoranthene	700	1,000	350 U	1800	350 U	250 J	360 U	310 J	340 U	14000	350 U	350 U	360 U	4000	110 J	530	360 U	15000	350 U	340 U
Benzo(g,h,i)perylene	1,000,000	2,500,000	350 U	400	350 U	100 J	360 U	110 J	340 U	5200	350 U	350 U	360 U	1100	360 U	210 J	360 U	4100	350 U	340 U
Benzo(k)fluoranthene	7,000	10,000	350 U	1500	350 U	220 J	360 U	200 J	340 U	14000	350 U	350 U	360 U	4300	100 J	570	360 U	14000	350 U	340 U
Benzoic acid	1,000,000	10,000,000	1700 U	1700 U	1700 U	1700 U	1700 U	1700 U	1700 U	1800 U	1700 U	1700 U	1700 U	1700 U	1700 U	1700 U	1700 U	1900 U	1700 U	1700 U
bis(2-Ethylhexyl)phthalate	100,000	300,000	350 U	350 U	350 U	350 U	360 U	350 U	340 U	370 U	350 U	350 U	360 U	350 U	360 U	350 U	360 U	390 U	350 U	340 U
Butyl benzyl phthalate	100,000	1,000,000	350 U	350 U	350 U	350 U	360 U	350 U	340 U	370 U	350 U	350 U	360 U	350 U	360 U	350 U	360 U	390 U	350 U	340 U
Carbazole	NA	NA	350 U	100 J	350 U	350 U	360 U	350 U	340 U	1200	350 U	350 U	360 U	350 U	360 U	350 U	360 U	1100	350 U	340 U
Chrysene	7,000	10,000	350 U	2600	350 U	250 J	360 U	290 J	340 U	13000	350 U	350 U	360 U	11000	140 J	510	360 U	30000	350 U	340 U
Dibenzo(a,h)anthracene	700	700	350 U	210 J	350 U	350 U	360 U	350 U	340 U	3800	350 U	350 U	360 U	370	360 U	350 U	360 U	2100	350 U	340 U
Dibenzofuran	100,000	1,000,000	350 U	350 U	350 U	350 U	360 U	350 U	340 U	370 U	350 U	350 U	360 U	350 U	360 U	350 U	360 U	85 J	350 U	340 U
Di-n-butyl phthalate	50,000	500,000	350 U	350 U	350 U	350 U	360 U	350 U	340 U	370 U	350 U	350 U	360 U	350 U	360 U	350 U	360 U	390 U	350 U	340 U
Fluoranthene	1,000,000	1,000,000	350 U	3800	72 J	290 J	360 U	310 J	150 J	5800	350 U	350 U	360 U	33000	360	490	94 J	94000	350 U	340 U
Fluorene	400,000	2,000,000	350 U	350 U	350 U	350 U	360 U	350 U	340 U	200 J	350 U	350 U	360 U	110 J	360 U	350 U	360 U	120 J	350 U	340 U
Indeno(1,2,3-cd)pyrene	700	1,000	350 U	550	350 U	120 J	360 U	110 J	340 U	7300	350 U	350 U	360 U	1600	360 U	290 J	360 U	5200	350 U	340 U
Phenanthrene	100,000	100,000	350 U	190 J	350 U	350 U	360 U	98 J	130 J	420	350 U	350 U	360 U	400	80 J	110 J	360 U	5000	350 U	340 U
Pyrene	700,000	2,000,000	350 U	2400	350 U	230 J	360 U	250 J	84 J	7900	350 U	350 U	360 U	18000	240 J	380	360 U	56000	350 U	340 U
Dioxin / Furan (pg/g)																				
Dioxin TEQ	4	6																		
Polychlorinated Biphenyls (ug/Kg)																				
Aroclor-1254																				
Aroclor-1260																				
Total PCBs	2,000	2,000																		
Inorganics (mg/Kg)																				
Antimony	10	40																		
Arsenic	30	30																		
Beryllium	0.7	0.8																		
Boron	100	1,000																		
Cadmium	30	80																		
Chromium	1,000	2,500																		
Copper	1,000	10,000																		
Hexavalent Chromium	200	600																		
Lead	300	600																		
Lithium	100	1,000																		
Mercury	20	60																		
Nickel	300	700																		
Selenium	400	2,500																		
Silver	100	200																		
Thallium	8	30																		
Zinc	2,500	2,500																		

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB105-K	SB105-K00061	SB105-K	SB105-L	SB105	SB105-L	SB-106	SB-106	SB-107	SB-107	SB-108	SB-108	SB-109	SB-109	SB-110	SB-110	SB-111	SB-111
Sample Designation			SB105-K00061	FD013-00061	SB105-K0102F	SB105-L00061	FD006-00061	SB105-L0102F	SB-10600061	SB-1060102F	SB-10700061	SB-1070102F	SB-10800061	SB-1080203F	SB-10900061	SB-1090102F	SB-11000061	SB-1100102F	SB-11100061	SB-1110102F
Date Sampled			7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	7/12/2004	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/20/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2		DUP			DUP													
Petroleum Hydrocarbons (mg/kg)																				
TPH-DRO	200	2,000							12 U	12 U	46 J	2.2 U	3.4	2.2 U	4.6	2.2 U	12	2.8	24	2 U
TPH-GRO	200	2,000													2.5 U	2.5 U				
Volatile Organic Compounds (ug/Kg)																				
2-Butanone	300	40,000	10 U	10 U																
Acetone	3,000	60,000	22 B	14 B																
Nitrobenzene	500,000	5,000,000																		
Toluene	90,000	500,000	5 U	1.5 JB																
Semi-Volatile Organic Compounds (ug/Kg)																				
Acenaphthene	20,000	2,500,000	350 U		13000	350 U	350 U	350 U							360 U	360 U				
Acenaphthylene	100,000	1,000,000	350 U		5100	350 U	350 U	580							360 U	360 U				
Anthracene	1,000,000	2,500,000	350 U		25000	350 U	350 U	1300							360 U	360 U				
Benzo(a)anthracene	700	1,000	350 U		29000	350 U	350 U	7600							360 U	360 U				
Benzo(a)pyrene	700	700	350 U		16000	350 U	350 U	4700							360 U	360 U				
Benzo(b)fluoranthene	700	1,000	350 U		16000	350 U	350 U	12000							360 U	360 U				
Benzo(g,h,i)perylene	1,000,000	2,500,000	350 U		4900	350 U	350 U	2600							360 U	360 U				
Benzo(k)fluoranthene	7,000	10,000	350 U		19000	350 U	350 U	8600							360 U	360 U				
Benzoic acid	1,000,000	10,000,000	1700 U		1700 U	1700 U	1700 U	1700 U							1800 U	1800 U				
bis(2-Ethylhexyl)phthalate	100,000	300,000	350 U		350 U	350 U	350 U	350 U							360 U	360 U				
Butyl benzyl phthalate	100,000	1,000,000	350 U		350 U	350 U	350 U	350 U							360 U	360 U				
Carbazole	NA	NA	350 U		5100	350 U	350 U	350 U							360 U	360 U				
Chrysene	7,000	10,000	350 U		26000	350 U	350 U	13000							360 U	360 U				
Dibenzo(a,h)anthracene	700	700	350 U		1500	350 U	350 U	2100							360 U	360 U				
Dibenzofuran	100,000	1,000,000	350 U		11000	350 U	350 U	350 U							360 U	360 U				
Di-n-butyl phthalate	50,000	500,000	350 U		350 U	350 U	350 U	350 U							360 U	360 U				
Fluoranthene	1,000,000	1,000,000	350 U		89000	170 J	350 U	17000							360 U	360 U				
Fluorene	400,000	2,000,000	350 U		16000	350 U	350 U	83 J							360 U	360 U				
Indeno(1,2,3-cd)pyrene	700	1,000	350 U		8900	350 U	350 U	3600							360 U	360 U				
Phenanthrene	100,000	100,000	350 U		75000	350 U	350 U	280 J							360 U	360 U				
Pyrene	700,000	2,000,000	350 U		50000	110 J	350 U	7300							360 U	360 U				
Dioxin / Furan (pg/g)																				
Dioxin TEQ	4	6																		
Polychlorinated Biphenyls (ug/Kg)																				
Aroclor-1254									150		84		36 U		36 U	36 U	94		50	
Aroclor-1260									40 U		36 U		36 U		36 U	36 U	36 U		36 U	
Total PCBs	2,000	2,000							150		84						94		50	
Inorganics (mg/Kg)																				
Antimony	10	40							R	R	R	R	R	R	R	R	R	R	R	R
Arsenic	30	30							1.9 J	2 J	1.9 J	1.4 J	0.68 J	0.94 J	1.2 J	1.3 J	1.1 J	1.3 J	0.96 J	0.98 J
Beryllium	0.7	0.8							0.86 U	0.84 U	0.78 U	0.77 U	0.8 U	0.82 U	0.79 U	0.79 U	0.81 U	0.8 U	0.8 U	2
Boron	100	1,000																		
Cadmium	30	80							0.82 U	0.8 U	0.74 U	0.73 U	0.76 U	0.78 U	0.75 U	0.75 U	0.77 U	0.76 U	0.76 U	0.72 U
Chromium	1,000	2,500							12	15	13	13	9.7	16	6	11	8.5	12	8.9	25
Copper	1,000	10,000							19	19	16	16	11	15	12	26	23	16	17	350
Hexavalent Chromium	200	600																		
Lead	300	600							2.8 J	1.7 J	3.3 J	1.5 J	1.2 J	1.2 J	1.2 J	1 J	1.8 J	1.3 J	5 J	230 J
Lithium	100	1,000																		
Mercury	20	60							0.62 U	0.55 U	0.54 U	0.54 U	0.47 U	0.6 U	0.56 U	0.58 U	0.63 U	0.55 U	0.56 U	0.4 U
Nickel	300	700							12	14	15	16	10	14	7.8	12	9.7	12	12	230
Selenium	400	2,500							2.5 U	2.5 U	2.3 U	2.3 U	2.4 U	2.4 U	2.3 U	2.3 U	2.4 U	2.4 U	2.4 U	2.3 U
Silver	100	200							0.26 U	0.25 U	0.24 U	0.23 U	0.24 U	0.25 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.23 U
Thallium	8	30							0.6 U	0.59 U	0.55 U	0.54 U	0.56 U	0.57 U	0.55 U	0.55 U	0.57 U	0.56 U	0.56 U	0.53 U
Zinc	2,500	2,500							65	59	120	51	60	62	64	56	64	54	68	1200

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB111-R	SB111	SB111-R	SB111-A	SB111-A	SB111-B	SB111-B	SB111-C	SB111-C	SB111-D	SB111-D	SB-112	SB-112	SB-113	SB-113	SB-113	SB-114	SB-114
Sample Designation			SB111-R00061	FD007-00061	SB111-R0203F	SB111-A00061	SB111-A0102F	SB111-B00061	SB111-B0203F	SB111-C00061	SB111-C0203F	SB111-D00061	SB111-D0102F	SB-1120061	SB-1120102F	SB-1130061	FD-201102003	SB-1130102F	SB-1140061	SB-1140203F
Date Sampled			7/7/2004	7/7/2004	7/7/2004	7/7/2004	7/7/2004	7/7/2004	7/7/2004	7/7/2004	7/7/2004	7/7/2004	7/7/2004	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/20/2003	10/16/2003	10/16/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2		DUP													DUP			
Petroleum Hydrocarbons (mg/kg)																				
TPH-DRO	200	2,000												2.3	2.2 U	8.8	11	9.4	2.2	3
TPH-GRO	200	2,000																	2.5 U	2.5 U
Volatile Organic Compounds (ug/Kg)																				
2-Butanone	300	40,000																		
Acetone	3,000	60,000																		
Nitrobenzene	500,000	5,000,000																		
Toluene	90,000	500,000																		
Semi-Volatile Organic Compounds (ug/Kg)																				
Acenaphthene	20,000	2,500,000																	360 UJ	360 UJ
Acenaphthylene	100,000	1,000,000																	360 U	360 U
Anthracene	1,000,000	2,500,000																	360 U	360 U
Benzo(a)anthracene	700	1,000																	360 U	360 U
Benzo(a)pyrene	700	700																	360 U	360 U
Benzo(b)fluoranthene	700	1,000																	360 U	360 U
Benzo(g,h,i)perylene	1,000,000	2,500,000																	360 U	360 U
Benzo(k)fluoranthene	7,000	10,000																	360 U	360 U
Benzoic acid	1,000,000	10,000,000																	1800 UJ	1800 UJ
bis(2-Ethylhexyl)phthalate	100,000	300,000																	360 U	360 U
Butyl benzyl phthalate	100,000	1,000,000																	360 U	360 U
Carbazole	NA	NA																	360 U	360 U
Chrysene	7,000	10,000																	360 U	360 U
Dibenzo(a,h)anthracene	700	700																	360 U	360 U
Dibenzofuran	100,000	1,000,000																	360 U	360 U
Di-n-butyl phthalate	50,000	500,000																	360 U	360 U
Fluoranthene	1,000,000	1,000,000																	360 U	83 J
Fluorene	400,000	2,000,000																	360 UJ	360 UJ
Indeno(1,2,3-cd)pyrene	700	1,000																	360 U	360 U
Phenanthrene	100,000	100,000																	360 UJ	360 UJ
Pyrene	700,000	2,000,000																	360 UJ	76 J
Dioxin / Furan (pg/g)																				
Dioxin TEQ	4	6																		
Polychlorinated Biphenyls (ug/Kg)																				
Aroclor-1254														36 U		44	35 J		33 U	36 U
Aroclor-1260														36 U		40 U	40 U		33 U	36 U
Total PCBs	2,000	2,000														44	35			
Inorganics (mg/Kg)																				
Antimony	10	40												R	R	R	R	R	0.53 UJ	0.55 UJ
Arsenic	30	30												2.1 J	1.5 J	1.8 J	2.1 J	1.9 J	1.2	1.4
Beryllium	0.7	0.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.77 U	0.79 U	0.88 U	0.87 U	0.8 U	0.5 U	0.79 U
Boron	100	1,000																		
Cadmium	30	80												0.73 U	0.75 U	0.83 U	0.83 U	0.76 U	0.73 U	0.75 U
Chromium	1,000	2,500												11	11	12	10	9.4	12	22
Copper	1,000	10,000												12	15	19	11	16	13	16
Hexavalent Chromium	200	600																		
Lead	300	600												0.97 J	1 J	2.4 J	2.9 J	1.9 J	0.88 J	0.73 J
Lithium	100	1,000																		
Mercury	20	60												0.58 U	0.6 U	0.64 U	0.59 U	0.63 U	0.52 U	0.56 U
Nickel	300	700												9.6	9.9	12	11	11	11	16
Selenium	400	2,500												2.3 U	2.3 U	2.6 U	2.6 U	2.4 U	2.3 U	2.3 U
Silver	100	200												0.23 U	0.24 U	0.26 U	0.26 U	0.24 U	0.23 U	0.24 U
Thallium	8	30												0.54 U	0.55 U	0.61 U	0.61 U	0.56 U	0.53 U	0.55 U
Zinc	2,500	2,500												39	33	56	48	45	39	38

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-115	SB-115	SB-116	SB-116	SB-117	SB-117	SB-118	SB-118	SB-122	SB-122	SB-122	SB-123	SB-123	SB-123	SB-124	SB-124	SB-124	SB-125
Sample Designation			SB-11500061	SB-1150102F	SB-11600061	SB-1160203F	SB-11700061	SB-1170102F	SB-11800061	SB-1180102F	SB-12200061	SB-1220203F	SB-1221415F	SB-12300061	SB-1230203F	SB-1230304F	SB-12400061	SB-1240203F	SB-1240910F	SB-12500061
Date Sampled			10/16/2003	10/16/2003	10/15/2003	10/15/2003	10/15/2003	10/15/2003	10/15/2003	10/15/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																		
Petroleum Hydrocarbons (mg/kg)																				
TPH-DRO	200	2,000	2.2 U	4	3.7	28 J	17 J	20 J	22	46 J	2.6	2.3	2.2 U	2.7	6.1	5.7	20	7.1	2.2 U	3.1
TPH-GRO	200	2,000	2.5 U	2.5 U		3 U		2.5 U		2.5 U			2.5 U			2.5 U			2.5 U	
Volatile Organic Compounds (ug/Kg)																				
2-Butanone	300	40,000																		
Acetone	3,000	60,000																		
Nitrobenzene	500,000	5,000,000																		
Toluene	90,000	500,000																		
Semi-Volatile Organic Compounds (ug/Kg)																				
Acenaphthene	20,000	2,500,000	360 UJ	360 UJ		400 UJ		430 UJ		430 UJ			360 U		370 U				350 U	
Acenaphthylene	100,000	1,000,000	360 U	360 U		400 U		430 U		190 J			360 U		370 U				350 U	
Anthracene	1,000,000	2,500,000	360 U	360 U		400 U		120 J		130 J			360 U		370 U				350 U	
Benzo(a)anthracene	700	1,000	360 U	360 U		88 J		260 J		420 J			360 U		370 U				350 U	
Benzo(a)pyrene	700	700	360 U	360 U		96 J		230 J		490			360 U		370 U				350 U	
Benzo(b)fluoranthene	700	1,000	360 U	360 U		400 U		210 J		370 J			360 U		370 U				350 U	
Benzo(g,h,i)perylene	1,000,000	2,500,000	360 U	360 U		400 U		140 J		340 J			360 U		370 U				350 U	
Benzo(k)fluoranthene	7,000	10,000	360 U	360 U		400 U		170 J		340 J			360 U		370 U				350 U	
Benzoic acid	1,000,000	10,000,000	1800 UJ	1800 UJ		1900 UJ		2100 UJ		2100 UJ			1700 U		1800 U				1700 U	
bis(2-Ethylhexyl)phthalate	100,000	300,000	360 U	360 U		400 U		430 U		430 U			360 U		370 U				350 U	
Butyl benzyl phthalate	100,000	1,000,000	360 U	360 U		400 UJ		430 UJ		430 UJ			360 U		370 U				350 U	
Carbazole	NA	NA	360 U	360 U		400 U		430 U		430 U			360 U		370 U				350 U	
Chrysene	7,000	10,000	360 U	360 U		110 J		250 J		550			360 U		370 U				350 U	
Dibenzo(a,h)anthracene	700	700	360 U	360 U		400 U		430 U		430 U			360 U		370 U				350 U	
Dibenzofuran	100,000	1,000,000	360 U	360 U		400 U		430 U		430 U			360 U		370 U				350 U	
Di-n-butyl phthalate	50,000	500,000	360 U	360 U		400 U		430 U		430 U			360 U		370 U				350 U	
Fluoranthene	1,000,000	1,000,000	360 U	360 U		180 J		590		630			360 U		370 U				350 U	
Fluorene	400,000	2,000,000	360 UJ	360 UJ		400 UJ		430 UJ		430 UJ			360 U		370 U				350 U	
Indeno(1,2,3-cd)pyrene	700	1,000	360 U	360 U		400 U		430 U		430 U			360 U		370 U				350 U	
Phenanthrene	100,000	100,000	360 UJ	360 UJ		400 UJ		530 J		280 J			360 U		370 U				350 U	
Pyrene	700,000	2,000,000	360 UJ	360 UJ		140 J		500 J		930 J			360 U		370 U				350 U	
Dioxin / Furan (pg/g)																				
Dioxin TEQ	4	6																		
Polychlorinated Biphenyls (ug/Kg)																				
Aroclor-1254			36 U	36 U	36 U	40 U	43 U	43 U	36 U	43 U			36 U		36 U				36 U	
Aroclor-1260			36 U	36 U	36 U	40 U	43 U	43 U	36 U	43 U			36 U		36 U				36 U	
Total PCBs	2,000	2,000																		
Inorganics (mg/Kg)																				
Antimony	10	40	0.54 UJ	0.55 UJ	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Arsenic	30	30	2.4	1	3.7	2.5	2.8	3.1	4.9	2.3	1.6 J	0.89 J	2.2 J	1.8 J	1.7 J	1.4 J	2.7 J	1.1 J	2 J	3.3 J
Beryllium	0.7	0.8	0.77 U	0.79 U	0.81 U	0.88 U	0.92 U	0.97 U	0.81 U	0.93 U	0.9 UJ	0.8 UJ	0.77 UJ	0.79 UJ	0.8 UJ	0.82 UJ	0.79 UJ	0.81 UJ	0.77 UJ	0.79 UJ
Boron	100	1,000																		
Cadmium	30	80	0.73 U	0.75 U	0.77 U	0.84 U	0.87 U	0.92 U	0.77 U	0.88 U	0.86 UJ	0.76 UJ	0.74 UJ	0.75 UJ	0.76 UJ	0.78 UJ	0.75 UJ	0.77 UJ	0.73 UJ	0.75 UJ
Chromium	1,000	2,500	12	16	12	17	16	15	17	11	12 J	22 J	17 J	14 J	14 J	14 J	12 J	18 J	5 J	16 J
Copper	1,000	10,000	20	12	11 J	330 J	14 J	13 J	9.3 J	9.8 J	11 J	6.9 J	53 J	12 J	14 J	13 J	14 J	30 J	4.6 J	14 J
Hexavalent Chromium	200	600																		
Lead	300	600	1.3 J	1.2 J	57 J	360 J	8.9 J	4.2 J	17 J	81 J	3.1 J	1 J	0.62 J	0.84 J	1.5 J	1.5 J	R	0.89 J	0.32 UJ	R
Lithium	100	1,000																		
Mercury	20	60	0.54 U	0.53 U	0.61 U	0.68 U	0.65 U	0.72 U	0.6 U	0.62 U	0.72 UJ	0.4 UJ	0.6 UJ	0.55 UJ	0.57 UJ	0.63 UJ	0.59 UJ	0.73 J	0.58 UJ	0.55 UJ
Nickel	300	700	11	13	11 J	13 J	14 J	11 J	14 J	10 J	9.8 J	22 J	21 J	12 J	12 J	13 J	12 J	17 J	5.7 J	14 J
Selenium	400	2,500	2.3 U	2.3 U	2.4 U	2.6 U	2.7 U	2.9 U	2.4 U	2.7 U	2.7 UJ	13 J	9.8 J	7.7 J	8.5 J	9 J	2.3 UJ	9 J	16 J	5.5 J
Silver	100	200	0.23 U	0.24 U	0.24 U	0.26 U	0.28 U	0.29 U	0.24 U	0.28 U	0.27 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.24 UJ	0.25 UJ	0.24 UJ	0.81 J	0.23 UJ	0.24 UJ
Thallium	8	30	0.54 U	0.55 U	0.57 U	0.57 U	0.64 U	0.68 U	0.57 U	0.65 U	0.63 UJ	0.82 J	0.54 UJ	0.55 UJ	0.56 UJ	0.57 UJ	0.55 UJ	0.57 UJ	0.6 J	0.55 UJ
Zinc	2,500	2,500	36	46	58 J	460 J	55 J	41 J	40 J	40 J	56 J	63 J	74 J	51 J	55 J	56 J	49 J	97 J	92 J	43 J

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-125	SB-125	SB-126	SB-126	SB-127	SB-127	SB-128	SB-128	SB-129	SB-129	SB-130	SB-130
Sample Designation			SB-1250203F	SB-1250910F	SB-1260061	SB-1260203F	SB-1270061	SB-1270102F	SB-1280061	SB-1280203F	SB-1290061	SB-1290102F	SB-1300061	SB-1300203F
Date Sampled			10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/14/2003	10/14/2003	10/14/2003	10/14/2003	10/14/2003	10/14/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2												
Petroleum Hydrocarbons (mg/kg)														
TPH-DRO	200	2,000	2.2 U	2 U	3	2.4 U	2.6 U	22	16 J	20 J	5.4	2.2 U	5.5	11
TPH-GRO	200	2,000		2.5 U		2.5 U		2.5 U					2.5 U	
Volatile Organic Compounds (ug/Kg)														
2-Butanone	300	40,000												
Acetone	3,000	60,000												
Nitrobenzene	500,000	5,000,000												
Toluene	90,000	500,000												
Semi-Volatile Organic Compounds (ug/Kg)														
Acenaphthene	20,000	2,500,000		330 U		400 U		400 U					400 UJ	
Acenaphthylene	100,000	1,000,000		330 U		400 U		400 U					400 U	
Anthracene	1,000,000	2,500,000		330 U		400 U		400 U					400 U	
Benzo(a)anthracene	700	1,000		330 U		400 U		400 U					400 UJ	
Benzo(a)pyrene	700	700		330 U		400 U		400 U					400 U	
Benzo(b)fluoranthene	700	1,000		330 U		400 U		400 U					400 U	
Benzo(g,h,i)perylene	1,000,000	2,500,000		330 U		400 U		400 U					400 U	
Benzo(k)fluoranthene	7,000	10,000		330 U		400 U		400 U					400 U	
Benzoic acid	1,000,000	10,000,000		1600 U		1900 U		1900 U					1900 UJ	
bis(2-Ethylhexyl)phthalate	100,000	300,000		330 U		400 U		400 U					400 U	
Butyl benzyl phthalate	100,000	1,000,000		330 U		400 U		400 U					400 UJ	
Carbazole	NA	NA		330 U		400 U		400 U					400 U	
Chrysene	7,000	10,000		330 U		400 U		400 U					400 U	
Dibenzo(a,h)anthracene	700	700		330 U		400 U		400 U					400 U	
Dibenzofuran	100,000	1,000,000		330 U		400 U		400 U					400 U	
Di-n-butyl phthalate	50,000	500,000		330 U		400 U		400 U					400 U	
Fluoranthene	1,000,000	1,000,000		330 U		400 U		400 U					400 U	
Fluorene	400,000	2,000,000		330 U		400 U		400 U					400 UJ	
Indeno(1,2,3-cd)pyrene	700	1,000		330 U		400 U		400 U					400 U	
Phenanthrene	100,000	100,000		330 U		400 U		400 U					400 UJ	
Pyrene	700,000	2,000,000		330 U		400 U		400 U					400 UJ	
Dioxin / Furan (pg/g)														
Dioxin TEQ	4	6												
Polychlorinated Biphenyls (ug/Kg)														
Aroclor-1254				33 U		29 J		130	36 U		33		46	
Aroclor-1260				33 U		40 U		36 U	36 U		33 U		36 U	
Total PCBs	2,000	2,000				29		130			33		46	
Inorganics (mg/Kg)														
Antimony	10	40	R	R	R	R	R	R	R	R	R	R	R	R
Arsenic	30	30	1.2 J	1.6 J	2.3 J	1.6 J	3 J	1.7 J	3.8	1.6	0.98	0.97	0.87	1.1
Beryllium	0.7	0.8	0.81 UJ	0.75 UJ	0.82 UJ	0.88 UJ	0.96 UJ	0.8 UJ	0.77 U	0.76 U	0.76 U	0.8 U	0.82 U	0.84 U
Boron	100	1,000												
Cadmium	30	80	0.77 UJ	0.71 UJ	0.78 UJ	0.84 UJ	0.91 UJ	0.76 UJ	0.73 U	0.73 U	0.72 U	76 U	0.78 U	0.8 U
Chromium	1,000	2,500	22 J	7 J	12 J	15 J	15 J	20 J	18	28	11	8.9	13	17
Copper	1,000	10,000	23 J	4.8 J	12 J	9.7 J	17 J	17 J	19	15	10	6.9	9.6	9.9
Hexavalent Chromium	200	600												
Lead	300	600	0.72 J	0.52 J	2.2 J	1.1 J	2 J	1.3 J	10	7.9	6	5	8.3	8.8
Lithium	100	1,000												
Mercury	20	60	0.02 UJ	0.53 UJ	0.59 UJ	0.68 UJ	0.7 UJ	0.5 UJ	0.62 U	0.58 U	0.54 U	0.67 U	0.69 U	0.73 U
Nickel	300	700	18 J	6.8 J	11 J	11 J	14 J	18 J	16	20	8	10	8.9	12
Selenium	400	2,500	8.9 J	2.2 UJ	7.1 J	8.4 J	8.9 J	8.6 J	2.3 U	2.3 U	2.3 U	2.4 U	2.4 U	2.5 U
Silver	100	200	0.24 UJ	0.22 UJ	0.25 UJ	0.26 UJ	0.29 UJ	0.24 UJ	0.23 U	0.23 U	0.23 U	0.24 U	0.25 U	0.25 U
Thallium	8	30	0.57 UJ	0.52 UJ	0.58 UJ	0.61 UJ	0.67 UJ	0.56 UJ	0.54 U	0.53 U	0.53 U	0.56 U	0.57 U	0.59 U
Zinc	2,500	2,500	59 J	20 J	54 J	41 J	69 J	65 J	45	51	50	44	53	54

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-131	SB-131	SB-132	SB-132	SB-133	SB-133	SB-134	SB-134	SB-135	SB-135	SB135-R	SB135	SB135-R	SB135-A	SB135-A	SB135-B	SB135-B	SB135-C	SB135-C
Sample Designation			SB-13100061	SB-1310203F	SB-13200061	SB-1320203F	SB-13300061	SB-1330102F	SB-13400061	SB-1340203F	SB-13500061	SB-1350203F	SB135-R00061	FD009-00061	SB135-R0203F	SB135-A00061	SB135-A0203F	SB135-B00061	SB135-B0102F	SB135-C00061	SB135-C0203F
Date Sampled			10/14/2003	10/14/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2												DUP							
Petroleum Hydrocarbons (mg/kg)																					
TPH-DRO	200	2,000	2 U	2 U																	
TPH-GRO	200	2,000	2.5 U																		
Volatile Organic Compounds (ug/Kg)																					
2-Butanone	300	40,000																			
Acetone	3,000	60,000																			
Nitrobenzene	500,000	5,000,000																			
Toluene	90,000	500,000																			
Semi-Volatile Organic Compounds (ug/Kg)																					
Acenaphthene	20,000	2,500,000	330 UJ																		
Acenaphthylene	100,000	1,000,000	330 U																		
Anthracene	1,000,000	2,500,000	330 U																		
Benzo(a)anthracene	700	1,000	330 UJ																		
Benzo(a)pyrene	700	700	330 U																		
Benzo(b)fluoranthene	700	1,000	330 U																		
Benzo(g,h,i)perylene	1,000,000	2,500,000	330 U																		
Benzo(k)fluoranthene	7,000	10,000	330 U																		
Benzoic acid	1,000,000	10,000,000	1600 UJ																		
bis(2-Ethylhexyl)phthalate	100,000	300,000	330 U																		
Butyl benzyl phthalate	100,000	1,000,000	330 UJ																		
Carbazole	NA	NA	330 U																		
Chrysene	7,000	10,000	330 U																		
Dibenzo(a,h)anthracene	700	700	330 U																		
Dibenzofuran	100,000	1,000,000	330 U																		
Di-n-butyl phthalate	50,000	500,000	330 U																		
Fluoranthene	1,000,000	1,000,000	330 U																		
Fluorene	400,000	2,000,000	330 UJ																		
Indeno(1,2,3-cd)pyrene	700	1,000	330 U																		
Phenanthrene	100,000	100,000	330 UJ																		
Pyrene	700,000	2,000,000	330 UJ																		
Dioxin / Furan (pg/g)																					
Dioxin TEQ	4	6																			
Polychlorinated Biphenyls (ug/Kg)																					
Aroclor-1254			33 U																		
Aroclor-1260			33 U																		
Total PCBs	2,000	2,000																			
Inorganics (mg/Kg)																					
Antimony	10	40	R	R	R	R	R	R	R	R	24 J	R									
Arsenic	30	30	0.71	0.76	1.6 J	1.3 J	2.1 J	1 J	1.8	2.9	2.4	1.8									
Beryllium	0.7	0.8	0.75 U	0.74 U	0.76 U	0.74 U	0.87 U	0.79 U	0.88 U	0.87 U	0.86 U	0.85 U									
Boron	100	1,000																			
Cadmium	30	80	0.71 U	0.7 U	0.73 U	0.7 U	0.83 U	0.75 U	0.84 U	0.83 U	0.82 U	0.81 U									
Chromium	1,000	2,500	18	12	7.4	10	12	14	13	13	17	13									
Copper	1,000	10,000	15	15	11	14	13	17	12	12	16	13									
Hexavalent Chromium	200	600																			
Lead	300	600	5	4.9	0.79 J	1.1 J	1.7 J	0.97 J	120	22	2000	160	1000	2300	280	1200	220	810	320	2200	95
Lithium	100	1,000																			
Mercury	20	60	0.54 U	0.53 U	0.51 U	0.4 U	0.56 U	0.53 U	0.67 U	0.64 U	0.61 U	0.4 U									
Nickel	300	700	13	10	8.8	9.8	15	16	11	10	10	10									
Selenium	400	2,500	2.2 U	2.2 U	2.3 U	2.2 U	2.6 U	2.3 U	2.6 U	2.6 U	2.6 U	2.5 U									
Silver	100	200	0.23 U	0.22 U	0.23 U	0.22 U	0.26 U	0.24 U	0.26 U	0.26 U	0.26 U	0.26 U									
Thallium	8	30	0.37 U	0.52 U	0.53 U	0.52 U	0.61 U	0.55 U	0.68 U	1.4 U	0.68 U	0.71 U									
Zinc	2,500	2,500	38	34	29	40	58	49	78	76	77	86									

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB135-D	SB135-D	SB135-E	SB135-E	SB135-F	SB135-F	SB135-G	SB135-G	SB135-H	SB135-H	SB135-I	SB135-I	SB135-J	SB135-J	SB135-K	SB135-K	SB135-L	SB135	SB135-L
Sample Designation			SB135-D00061	SB135-D0203F	SB135-E00061	SB135-E0102F	SB135-F00061	SB135-F0102F	SB135-G00061	SB135-G0203F	SB135-H00061	SB135-H0203F	SB135-I00061	SB135-I0203F	SB135-J00061	SB135-J0203F	SB135-K00061	SB135-K0203F	SB135-L00061	FD010-00061	SB135-L0203F
Date Sampled			7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004	7/16/2004
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2																		DUP	
Petroleum Hydrocarbons (mg/kg)																					
TPH-DRO	200	2,000																			
TPH-GRO	200	2,000																			
Volatile Organic Compounds (ug/Kg)																					
2-Butanone	300	40,000																			
Acetone	3,000	60,000																			
Nitrobenzene	500,000	5,000,000																			
Toluene	90,000	500,000																			
Semi-Volatile Organic Compounds (ug/Kg)																					
Acenaphthene	20,000	2,500,000																			
Acenaphthylene	100,000	1,000,000																			
Anthracene	1,000,000	2,500,000																			
Benzo(a)anthracene	700	1,000																			
Benzo(a)pyrene	700	700																			
Benzo(b)fluoranthene	700	1,000																			
Benzo(g,h,i)perylene	1,000,000	2,500,000																			
Benzo(k)fluoranthene	7,000	10,000																			
Benzoic acid	1,000,000	10,000,000																			
bis(2-Ethylhexyl)phthalate	100,000	300,000																			
Butyl benzyl phthalate	100,000	1,000,000																			
Carbazole	NA	NA																			
Chrysene	7,000	10,000																			
Dibenzo(a,h)anthracene	700	700																			
Dibenzofuran	100,000	1,000,000																			
Di-n-butyl phthalate	50,000	500,000																			
Fluoranthene	1,000,000	1,000,000																			
Fluorene	400,000	2,000,000																			
Indeno(1,2,3-cd)pyrene	700	1,000																			
Phenanthrene	100,000	100,000																			
Pyrene	700,000	2,000,000																			
Dioxin / Furan (pg/g)																					
Dioxin TEQ	4	6																			
Polychlorinated Biphenyls (ug/Kg)																					
Aroclor-1254																					
Aroclor-1260																					
Total PCBs	2,000	2,000																			
Inorganics (mg/Kg)																					
Antimony	10	40																			
Arsenic	30	30																			
Beryllium	0.7	0.8																			
Boron	100	1,000																			
Cadmium	30	80																			
Chromium	1,000	2,500																			
Copper	1,000	10,000																			
Hexavalent Chromium	200	600																			
Lead	300	600	2900	400	1600	67	340	200	2600	150	1600	62	350	44	2900	57	150	18	250	260	67
Lithium	100	1,000																			
Mercury	20	60																			
Nickel	300	700																			
Selenium	400	2,500																			
Silver	100	200																			
Thallium	8	30																			
Zinc	2,500	2,500																			

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-136	SB-136	SB-137	SB-137	SB-139	SB-139	SB-140	SB-140	SB-141	SB-141	SB-142	SB-142	SB-143	SB-143	SB-144
Sample Designation			SB-13600061	SB-1360102F	SB-13700061	SB-1370102F	SB-13900061	SB-1390203F	SB-14000061	SB-1400203F	SB-14100061	SB-1410203F	SB-14200061	SB-1420102F	SB-14300061	SB-1430102F	SB-14400061
Date Sampled			10/23/2003	10/23/2003	10/16/2003	10/16/2003	10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/16/2003	10/16/2003	10/16/2003	10/16/2003	10/16/2003	10/16/2003	10/23/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2															
Petroleum Hydrocarbons (mg/kg)																	
TPH-DRO	200	2,000	6	2.2 U	6.5	6.4	22 J	2.2 U	15	5.9	110	37	19 J	4.7	11	19 J	320 J
TPH-GRO	200	2,000					2.5 U	2.5 U			2.5 U	2.5 U			2.5 U	2.5 U	
Volatile Organic Compounds (ug/Kg)																	
2-Butanone	300	40,000															
Acetone	3,000	60,000															
Nitrobenzene	500,000	5,000,000															
Toluene	90,000	500,000															
Semi-Volatile Organic Compounds (ug/Kg)																	
Acenaphthene	20,000	2,500,000					400 U	370 U			690 UJ	360 UJ			360 UJ	360 UJ	
Acenaphthylene	100,000	1,000,000					400 U	370 U			690 U	360 U			360 U	360 U	
Anthracene	1,000,000	2,500,000					400 U	370 U			690 U	360 U			360 U	360 U	
Benzo(a)anthracene	700	1,000					400 U	370 U			690 U	360 U			360 U	76 J	
Benzo(a)pyrene	700	700					400 U	370 U			690 U	360 U			360 U	360 U	
Benzo(b)fluoranthene	700	1,000					400 U	370 U			690 U	360 U			360 U	360 U	
Benzo(g,h,i)perylene	1,000,000	2,500,000					400 U	370 U			690 U	360 U			360 U	360 U	
Benzo(k)fluoranthene	7,000	10,000					400 U	370 U			690 U	360 U			360 U	360 U	
Benzoic acid	1,000,000	10,000,000					1900 U	1800 U			3400 UJ	1800 UJ			1800 UJ	1800 UJ	
bis(2-Ethylhexyl)phthalate	100,000	300,000					400 U	370 U			690 U	360 U			360 U	360 U	
Butyl benzyl phthalate	100,000	1,000,000					400 U	370 U			690 U	360 U			500	360 U	
Carbazole	NA	NA					400 U	370 U			690 U	360 U			360 U	360 U	
Chrysene	7,000	10,000					400 U	370 U			690 U	360 U			360 U	85 J	
Dibenzo(a,h)anthracene	700	700					400 U	370 U			690 U	360 U			360 U	360 U	
Dibenzofuran	100,000	1,000,000					400 U	370 U			690 U	360 U			360 U	360 U	
Di-n-butyl phthalate	50,000	500,000					400 U	370 U			690 U	360 U			360 U	360 U	
Fluoranthene	1,000,000	1,000,000					400 U	370 U			690 U	360 U			360 U	140 J	
Fluorene	400,000	2,000,000					400 U	370 U			690 UJ	360 UJ			360 UJ	360 UJ	
Indeno(1,2,3-cd)pyrene	700	1,000					400 U	370 U			690 U	360 U			360 U	360 U	
Phenanthrene	100,000	100,000					400 U	370 U			690 UJ	360 UJ			360 UJ	360 UJ	
Pyrene	700,000	2,000,000					400 U	370 U			690 UJ	360 UJ			360 UJ	120 J	
Dioxin / Furan (pg/g)																	
Dioxin TEQ	4	6															
Polychlorinated Biphenyls (ug/Kg)																	
Aroclor-1254							40 U	36 U	36 U			28 J			36 U	120	
Aroclor-1260							40 U	36 U	36 U			36 U			36 U	36 U	
Total PCBs	2,000	2,000										28				120	
Inorganics (mg/Kg)																	
Antimony	10	40	R	R	R	R	R	R	R	R	0.53 UJ	0.57 UJ	0.56 UJ	0.56 UJ	0.53 UJ	0.55 UJ	R
Arsenic	30	30	1.8	1.5	3.1	1.8	3.5	1.8	4.4	2	4.1	3.2	3.2	2.2	2.9	2.1	5.2
Beryllium	0.7	0.8	0.81 U	0.82 U	0.82 U	0.82 U	0.86 U	0.79 U	0.79 U	0.84 U	0.76 U	0.81 U	0.5 U	0.8 U	0.76 U	0.79 U	0.5 U
Boron	100	1,000															
Cadmium	30	80	0.77 U	0.78 U	0.78 U	0.78 U	0.82 U	0.75 U	0.76 U	0.8 U	0.73 U	0.77 U	1 U	0.76 U	0.72 U	0.75 U	0.7 U
Chromium	1,000	2,500	12	15	12 J	14 J	8.3	24	9.7	13	7.3	19	15	28	7.8	18	12
Copper	1,000	10,000	12	14	19 J	27 J	15	20	12	15	8.3	14	21	18	8.1	18	15
Hexavalent Chromium	200	600															
Lead	300	600	1.5	0.9	2.2 J	3.1 J	0.81	1.3	0.59	2.5	2.4 J	8 J	9.4 J	2 J	7.2 J	4 J	1.5
Lithium	100	1,000															
Mercury	20	60	0.6 U	0.4 U	0.65 U	0.61 U	1.3 U	0.61 U	0.55 U	1.2 U	0.6 U	0.57 U	0.62 U	0.62 U	0.52 U	0.58 U	0.61 U
Nickel	300	700	12	14	15	20	9.3	20	9.9	11	6.1	18	13	21	6.7	23	13
Selenium	400	2,500	8.9	10	2.4 U	2.4 U	2.6 U	13	2.4 U	8.6	2.3 U	2.4 U	2.4 U	2.4 U	2.3 U	2.4 U	2.2 U
Silver	100	200	0.24 U	0.25 U	0.25 U	0.25 U	0.26 U	0.24 U	0.24 U	0.25 U	0.23 U	0.24 U	0.24 U	0.24 U	0.23 U	0.24 U	0.22 U
Thallium	8	30	0.57 U	0.57 U	0.57 U	0.57 U	0.6 U	0.55 U	0.56 U	0.59 U	0.53 U	0.57 U	0.56 U	0.56 U	0.53 U	0.55 U	0.52 U
Zinc	2,500	2,500	51	52	57	68	42	64	30	56	22	45	69	71	46	60	39

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-144	SB-145	SB-145	SB-145	SB-146	SB-146	SB-147*	SB-147*	SB-148*	SB-148*	SB-149*	SB-149*	SB-150*	SB-150*	SB-151	SB-151	SB-152	SB-152	SB-153	SB-153
Sample Designation			SB-1440102F	SB-14500061	SB-1450102F	FD206102303	SB-14600061	SB-1460102F	SB-14700061	SB-1470203F	SB-14800061	SB-1480203F	SB-14900061	SB-1490203F	SB-15000061	SB-1500203F	SB-15100061	SB-1510102F	SB-15200061	SB-1520102F	SB-15300061	SB-1530203F
Date Sampled			10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/23/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/21/2003	10/15/2003	10/15/2003	10/15/2003	10/15/2003	10/15/2003	10/15/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2	RCS-2
Comment	RCS-1	RCS-2				DUP																
Petroleum Hydrocarbons (mg/kg)																						
TPH-DRO	200	2,000	190 J	2.2	2.2 J	3.6	3.2	2.2 U									3.7	8.4	11	7.1	20 J	2 U
TPH-GRO	200	2,000		2.5 U	2.5 U	2.5 U													2.5 U	2.5 U		
Volatile Organic Compounds (ug/Kg)																						
2-Butanone	300	40,000																				
Acetone	3,000	60,000																				
Nitrobenzene	500,000	5,000,000																				
Toluene	90,000	500,000																				
Semi-Volatile Organic Compounds (ug/Kg)																						
Acenaphthene	20,000	2,500,000		360 U	340 U	350 U													370 U	360 UJ		
Acenaphthylene	100,000	1,000,000		360 U	340 U	350 U													370 U	360 U		
Anthracene	1,000,000	2,500,000		360 U	340 U	350 U													370 U	360 U		
Benzo(a)anthracene	700	1,000		360 U	340 U	350 U													130 J	360 UJ		
Benzo(a)pyrene	700	700		360 U	340 U	350 U													85 J	360 U		
Benzo(b)fluoranthene	700	1,000		360 U	340 U	350 U													80 J	360 U		
Benzo(g,h,i)perylene	1,000,000	2,500,000		360 U	340 U	350 U													370 U	360 U		
Benzo(k)fluoranthene	7,000	10,000		360 U	340 U	350 U													81 J	360 U		
Benzoic acid	1,000,000	10,000,000		1700 U	1700 U	1700 U													1800 U	1800 UJ		
bis(2-Ethylhexyl)phthalate	100,000	300,000		360 U	340 U	350 U													370 U	360 U		
Butyl benzyl phthalate	100,000	1,000,000		360 U	340 U	350 U													370 U	360 UJ		
Carbazole	NA	NA		360 U	340 U	350 U													370 U	360 U		
Chrysene	7,000	10,000		360 U	340 U	350 U													110 J	360 U		
Dibenzo(a,h)anthracene	700	700		360 U	340 U	350 U													370 U	360 U		
Dibenzofuran	100,000	1,000,000		360 U	340 U	350 U													370 U	360 U		
Di-n-butyl phthalate	50,000	500,000		360 U	340 U	350 U													370 U	360 U		
Fluoranthene	1,000,000	1,000,000		360 U	340 U	350 U													260 J	360 U		
Fluorene	400,000	2,000,000		360 U	340 U	350 U													370 U	360 UJ		
Indeno(1,2,3-cd)pyrene	700	1,000		360 U	340 U	350 U													370 U	360 U		
Phenanthrene	100,000	100,000		360 U	340 U	350 U													170 J	360 UJ		
Pyrene	700,000	2,000,000		360 U	340 U	350 U													200 J	360 UJ		
Dioxin / Furan (pg/g)																						
Dioxin TEQ	4	6																				
Polychlorinated Biphenyls (ug/Kg)																						
Aroclor-1254				36 U	33 U	33 U													55	36 U	46	33 U
Aroclor-1260				36 U	33 U	33 U													36 U	36 U	40 U	33 U
Total PCBs	2,000	2,000																	55		46	
Inorganics (mg/Kg)																						
Antimony	10	40	0.77 J	R	R	0.56 J	R	R									R	R	R	R	R	R
Arsenic	30	30	2	2.5	1.2	1.4	4	2.5									3.9	2.7	3.5	1.5	2.5	0.88
Beryllium	0.7	0.8	0.76 U	0.78 U	0.76 U	0.76 U	0.76 U	0.79 U									0.82 U	0.79 U	0.79 U	0.8 U	0.83 U	0.74 U
Boron	100	1,000																				
Cadmium	30	80	0.72 U	0.74 U	0.72 U	0.72 U	0.72 U	0.75 U									0.78 U	0.75 U	0.76 U	0.76 U	0.79 U	0.7 U
Chromium	1,000	2,500	11	14	9.1	6.3	17	15									12	12	11	10	13	9.8
Copper	1,000	10,000	12	19	11	9.5	22	22									22 J	33 J	12 J	10 J	10 J	18 J
Hexavalent Chromium	200	600																				
Lead	300	600	1.8	0.98	0.96	0.83	0.43	1.3									2.6 J	2.1 J	230 J	3.2 J	4.2 J	0.51 J
Lithium	100	1,000																				
Mercury	20	60	0.53 U	0.52 U	0.49 U	0.51 U	0.52 U	0.62 U									0.62 U	0.61 U	0.55 U	0.57 U	0.58 U	0.43 U
Nickel	300	700	11	15	11	8.7	14	16									37 J	24 J	12 J	11 J	13 J	11 J
Selenium	400	2,500	2.2 U	2.3 U	2.2 U	2.2 U	7.6	12									2.4 U	2.3 U	2.4 U	2.4 U	2.5 U	2.2 U
Silver	100	200	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.24 U									0.25 U	0.24 U	0.24 U	0.24 U	0.25 U	0.22 U
Thallium	8	30	0.53 U	0.54 U	0.53 U	0.53 U	0.53 U	0.55 U									0.57 U	0.55 U	0.56 U	0.56 U	0.58 U	0.51 U
Zinc	2,500	2,500	42	38	30	27	34	54									60 J	71 J	72 J	55 J	38 J	37 J

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Non-Industrial Area (100-159)
Yankee Nuclear Power Station
Rowe, MA

Station	MCP		SB-154	SB-154	SB-155	SB-155	SB-156	SB-156	SB-156	SB-157	SB-157	SB-157	SB-157	SB-158	SB-158	SB-158	SB-158	SB-159	SB-159
Sample Designation			SB-15400061	SB-1540102F	SB-15500061	SB-1550203F	SB-15600061	SS1560506F	SB-1560607F	SB-15700061	SB-1570203F	SS1570405F	SB-1570506F	SB-15800061	SB-1580203F	FD207	SB-1580506F	SB-15900061	SB-1590203F
Date Sampled			10/15/2003	10/15/2003	10/15/2003	10/15/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003
Applicable MCP Soil Standard			RCS-2	RCS-2	RCS-2	RCS-2	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1	RCS-1
Comment	RCS-1	RCS-2														DUP			
Petroleum Hydrocarbons (mg/kg)																			
TPH-DRO	200	2,000	8.2	15 J	8	7.7 J	3.5		6	13 J	320 J	3.2 U	79 J	2.6	180	280 J	140	3.6	2.4 U
TPH-CRO	200	2,000	2.5 U	2.5 U				4.8 U											
Volatile Organic Compounds (ug/Kg)																			
2-Butanone	300	40,000						130 J				41 J							
Acetone	3,000	60,000						730 J				390 J							
Nitrobenzene	500,000	5,000,000						8 UJ				5 UJ							
Toluene	90,000	500,000						14 J				2.4 J							
Semi-Volatile Organic Compounds (ug/Kg)																			
Acenaphthene	20,000	2,500,000	400 UJ	360 UJ			360 U	530 U		360 U		360 U		350 U				1500 U	
Acenaphthylene	100,000	1,000,000	400 U	360 UJ			360 U	120 J		160 J		360 U		350 U				1500 U	
Anthracene	1,000,000	2,500,000	400 U	360 UJ			360 U	530 U		79 J		360 U		350 U				1500 U	
Benzo(a)anthracene	700	1,000	400 UJ	360 UJ			360 U	310 J		330 J		94 J		350 U				350 J	
Benzo(a)pyrene	700	700	400 U	360 UJ			360 U	300 J		390		150 J		350 U				340 J	
Benzo(b)fluoranthene	700	1,000	400 U	360 UJ			360 U	250 J		370		360 U		350 U				310 J	
Benzo(g,h,i)perylene	1,000,000	2,500,000	400 U	360 UJ			360 U	210 J		310 J		94 J		350 U				1500 U	
Benzo(k)fluoranthene	7,000	10,000	400 U	360 UJ			360 U	230 J		320 J		360 U		350 U				1500 U	
Benzoic acid	1,000,000	10,000,000	1900 UJ	1800 UJ			1700 U	2600 U		1700 U		1800 U		1700 U				7200 U	
bis(2-Ethylhexyl)phthalate	100,000	300,000	400 U	360 UJ			360 U	530 U		360 U		360 U		350 U				1500 U	
Butyl benzyl phthalate	100,000	1,000,000	400 UJ	360 UJ			360 U	530 U		360 U		360 U		350 U				1500 U	
Carbazole	NA	NA	400 U	360 UJ			360 U	530 U		360 U		360 U		350 U				1500 U	
Chrysene	7,000	10,000	400 U	360 UJ			360 U	360 J		360		100 J		350 U				350 J	
Dibenzo(a,h)anthracene	700	700	400 U	360 UJ			360 U	530 U		360 U		360 U		350 U				1500 U	
Dibenzofuran	100,000	1,000,000	400 U	360 UJ			360 U	530 U		360 U		360 U		350 U				1500 U	
Di-n-butyl phthalate	50,000	500,000	400 U	360 UJ			79 J	530 U		84 J		360 U		74 J				1500 U	
Fluoranthene	1,000,000	1,000,000	400 U	79 J			360 U	770		770		74 J		350 U				650 J	
Fluorene	400,000	2,000,000	400 UJ	360 UJ			360 U	530 U		360 U		360 U		350 U				1500 U	
Indeno(1,2,3-cd)pyrene	700	1,000	400 U	360 UJ			360 U	170 J		260 J		360 U		350 U				1500 U	
Phenanthrene	100,000	100,000	400 UJ	360 UJ			360 U	600		230 J		360 U		350 U				1500 U	
Pyrene	700,000	2,000,000	400 UJ	360 UJ			360 U	740		680		200 J		350 U				630 J	
Dioxin / Furan (pg/g)																			
Dioxin TEQ	4	6																	
Polychlorinated Biphenyls (ug/Kg)																			
Aroclor-1254			44	36 U			36 U			36 U				36 U				36 U	
Aroclor-1260			36 U	36 U			36 U			36 U				36 U				36 U	
Total PCBs	2,000	2,000	44																
Inorganics (mg/Kg)																			
Antimony	10	40	R	R	R	R	R		R	R	R		R	R	R	R	R	R	R
Arsenic	30	30	2.1	1.7	3	2.3	1.3 J		0.16 UJ	2.2 J	1.2 J		0.89 J	0.17 UJ	0.93 J	1.5 J	1.4 J	1.9 J	2 J
Beryllium	0.7	0.8	0.83 U	0.81 U	0.79 U	0.81 U	0.79 UJ		0.77 UJ	0.78 UJ	0.78 UJ		0.76 UJ	0.77 UJ	0.83 UJ	0.81 UJ	0.76 UJ	0.81 UJ	0.86 UJ
Boron	100	1,000																	
Cadmium	30	80	0.79 U	0.77 U	0.75 U	0.77 U	0.75 UJ		0.74 UJ	0.74 UJ	0.74 UJ		0.72 UJ	0.73 UJ	0.79 UJ	0.77 UJ	0.73 UJ	0.77 UJ	0.82 UJ
Chromium	1,000	2,500	14	11	12	11	15 J		17 J	15 J	14 J		17 J	10 J	10 J	15 J	16 J	11 J	16 J
Copper	1,000	10,000	12 J	11 J	9.5 J	10 J	18 J		3.8 J	14 J	16 J		13 J	14 J	8.3 J	21 J	9.6 J	12 J	7.5 J
Hexavalent Chromium	200	600																	
Lead	300	600	46 J	40 J	26 J	17 J	1.8 J		R	2.5 J	1.6 J		0.6 J	R	0.5 J	1.4 J	1.4 J	2 J	0.83 J
Lithium	100	1,000																	
Mercury	20	60	0.62 U	0.65 U	0.67 U	0.64 U	0.4 UJ		0.54 UJ	0.52 UJ	0.53 UJ		0.54 UJ	0.59 UJ	0.55 UJ	0.59 UJ	0.6 UJ	0.58 UJ	0.56 UJ
Nickel	300	700	14 J	11 J	12 J	10 J	15 J		9.7 J	16 J	14 J		13 J	10 J	8.5 J	13 J	14 J	11 J	9.9 J
Selenium	400	2,500	2.5 U	2.4 U	2.3 U	2.4 U	11 J		7 J	8.2 J	6.9 J		6.9 J	5.9 J	2.4 UJ	9.2 J	9.2 J	6.3 J	8.3 J
Silver	100	200	0.25 U	0.24 U	0.24 U	0.24 U	0.24 UJ		0.23 UJ	0.23 UJ	0.23 UJ		0.23 UJ	0.23 UJ	0.25 UJ	0.24 UJ	0.23 UJ	0.24 UJ	0.26 UJ
Thallium	8	30	0.58 U	0.57 U	0.55 U	0.57 U	0.55 UJ		0.51 UJ	0.54 UJ	0.54 UJ		0.53 UJ	0.54 UJ	0.58 UJ	0.57 UJ	0.53 UJ	0.57 UJ	0.6 UJ
Zinc	2,500	2,500	39 J	33 J	34 J	38 J	55 J		29 J	39 J	41 J		35 J	33 J	27 J	40 J	44 J	100 J	42 J

Notes:
Summary of detected compounds only
NA = Not Analyzed
Blank cells were not analyzed
Shaded values exceed Reportable Concentrations
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* = Sampling locations SB-147 to SB-150 were only analyzed for herbicides

Table 22
OHM in Soil (Non-Radiological)
Southeast Construction Fill Area
Yankee Nuclear Power Station
Rowe, Massachusetts

Station	MCP	SCFA-1	SCFA-2	SCFA-3	SCFA-4	SCFA-5	SCFA-6	SCFA-7	SCFA-8	SCFA-8 *	SCFA-9	SCFA-10	SCFA-11	SCFA-12	SCFA-13	SCFA-14	SCFA-14
Sample ID		SCFA-1 5-9'	SCFA-2 20-25'	SCFA-3 10-30'	SCFA-4 15-30'	SCFA-5 25-30'	SCFA-6 10-25'	SCFA-7 5-12'	SCFA-8 10-25'	FD 012-082404	SCFA-9 15-25'	SCFA-10 5-15'	SCFA-11 10-25'	SCFA-12 10-30'	SCFA-13 10-25'	SCFA-14 10-15'	FD011-082004
VOC Interval (Feet bgs)		5-9	20-25	15-20	15-20	5-10	15-20	10-12	10-15	10-15	25-30	10-15	15-20	15-20	15-20	10-15	10-15
Date Sampled	RCS-2	8/24/2004	8/19/2004	8/19/2004	8/17/2004	8/19/2004	8/24/2004	8/24/2004	8/24/2004	8/24/2004	8/19/2004	8/19/2004	8/20/2004	8/17/2004	8/20/2004	8/20/2004	8/20/2004
Extractable Petroleum Hydrocarbons (EPH) (mg/Kg)																	
C11-C22 Aromatics	2,000	7.49 U	9.39 U	8.89 U	7.66 U	8.44 U	7.58 U	7.84 U	8.23 U	8.13 U	8.44 U	7.41 U	8.33 U	8.13 U	8.33 U	15.2	31.5
C19-C36 Aliphatics	5,000	7.49 U	9.39 U	8.89 U	7.66 U	8.44 U	7.58 U	7.84 U	8.23 U	8.13 U	8.44 U	7.41 U	8.33 U	8.13 U	8.33 U	13.5	22.9
C9-C18 Aliphatics	2,500	7.49 U	9.39 U	8.89 U	7.66 U	8.44 U	7.58 U	7.84 U	8.23 U	8.13 U	8.44 U	7.41 U	8.33 U	8.13 U	8.33 U	7.49 U	7.25 U
Volatile Organic Compounds (VOCs) (ug/Kg)																	
2-Butanone	40	7.1 J	10 U	10 U	3.5 J	10 U	8.6 J	6.4 J	100 U		14 U	10 U	12 U	2.1 J	11 U	10 U	11 U
4-Isopropyltoluene	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U		7 U	5 U	6 U	5 U	5.5 U	5 U	5.5 U
Acetone	60,000	7 J,B	10 U	10 U	32 B	10 U	10 U	10 U	100 U		14 U	10 U	5.5 J	10 U	11 U	5.4 J	90
Carbon disulfide	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U		7 U	6.4	6 U	2.8 J	5.5 U	5 U	5.5 U
Diethyl Ether	1,000	10 U	10 U	10 U	3.2 J	10 U	10 U	10 U	100 U		14 U	10 U	56	10 U	52	40	11 U
Ethylbenzene	500	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U		7 U	5 U	6 U	5 U	5.5 U	5 U	5.5 U
Methylene chloride	200	15 U	15 U	15 U	15 U	15 U	15 U	15 U	150 U		21 U	15 U	28 B	15 U	34 B	27 B	16 U
Toluene	500,000	16	5 U	5 U	2.7 J	5 U	18	8.7	50 U		7 U	2 J	6 U	3.5 J	5.5 U	5 U	2.6 J
Polychlorinated Biphenyls (PCBs) (µg/Kg)																	
Aroclor-1254	2,000	37 U	45 U	250	12000	41 U	38 U	2000	41 U	38 U	40 U	37 U	40 U	39 U	43 U	6.5 J	5.7 J
Aroclor-1260	2,000	37 U	45 U	42 U	380 U	41 U	380	74 U	41 U	38 U	40 U	37 U	40 U	39 U	43 U	36 U	36 U
Metals (mg/Kg)																	
Arsenic	30	2.3	2.1	4.6	5.2	4.3	2.8	2.6	2.6	4	3.4	2.9	4.5	4.2	4.3	5	3.9
Barium	2,500	95	110	83	410	76	92	110	82	92	78	92	88	86	85	88	110
Cadmium	80	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	2,500	12	12	19	31	13	14	18	16	16	16	16	16	14	14	15	15
Lead	600	4.3	4.6	47	23	5.1	6.1	15	6.2	5.1	4.4	4.6	6.1	5.9	5.1	6.4	6.4
Mercury	60	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Selenium	2,500	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Silver	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Notes:
U = below method detection limit
J = estimated concentration below the reporting limit
B = compound was found in the daily method blank
mg/Kg = milligrams per kilogram (equal to part per million (ppm))
µg/Kg = micrograms per kilogram (equal to part per billion (ppb))
Only detected VOCs and PCBs are presented
*FD012 was not analyzed for VOCs due to lab logging error
The depth interval with the highest field reading was submitted for VOC analysis.
Shaded values exceed Reportable Concentrations
NA = Not Available

Table 22
OHM in Soil (Non-Radiological)
Southeast Construction Fill Area
Yankee Nuclear Power Station
Rowe, Massachusetts

Station	MCP	SCFA-15	SCFA-16	SCFA-17	SCFA-18	SCFA-19	SCFA-20	SCFA-21	SCFA-22	SCFA-23	SCFA-24	SCFA-25	SCFA-26	SCFA-27	SCFA-28	SCFA-29	SCFA-30
Sample ID		SCFA-15 10-16.5'	SCFA-16 10-25'	SCFA-17 5-19'	SCFA-18 10-25'	SCFA-19 10-20'	SCFA-20 10-25'	SCFA-21 10-16.5'	SCFA-22 10-25'	SCFA-23 10-25'	SCFA-24 0-5'	SCFA-25 5-9'	SCFA-26 15-25'	SCFA-27 5-25'	SCFA-28 5-12'	SCFA-29 5-20'	SCFA-30 5-9'
VOC Interval (Feet bgs)	RCS-2	10-15	20-25	15-20	5-10	15-20	10-15	5-10	5-10	10-15	0-5	5-10	10-15	25-30	10-12	5-10	5-9
Date Sampled		8/20/2004	8/24/2004	8/23/2004	8/23/2004	8/23/2004	8/17/2004	8/20/2004	8/20/2004	8/20/2004	8/23/2004	8/23/2004	8/23/2004	8/17/2004	8/23/2004	8/23/2004	8/23/2004
Extractable Petroleum Hydrocarbons (EPH) (mg/Kg)																	
C11-C22 Aromatics	2,000	9.72	7.66 U	7.58 U	128	8.03 U	8.03 U	25.9	208	63.7	8.23 U	7.02 U	7.94 U	7.66 U	90.1	39.3	8.66 U
C19-C36 Aliphatics	5,000	15.6	7.66 U	7.58 U	31.3	8.03 U	8.03 U	82.3	369	100	8.23 U	7.02 U	7.94 U	7.66 U	130	31.8	8.66 U
C9-C18 Aliphatics	2,500	7.49 U	7.66 U	7.58 U	9.52 U	8.03 U	8.03 U	7.94 U	21.6	10.6	8.23 U	7.02 U	7.94 U	7.66 U	7.66 U	7.75 U	8.66 U
Volatile Organic Compounds (VOCs) (ug/Kg)																	
2-Butanone	40	10 U	11 J	17	8 J	7.1 J	14	11 U	14 U	10 U	12	10 U	11 U	5.6 J	15	11 U	11 U
4-Isopropyltoluene	NA	5 U	6 U	5 U	5 U	5 U	5.1 U	5.5 U	7 U	5 U	3.1 J	5 U	5.5 U	5.2 U	6.5 U	5.5 U	5.5 U
Acetone	60,000	10 U	66 B	120 B	35 B	48 B	120 B	6.3 J	14 U	10 U	71 B	4.8 JB	54	24 B	81 B	6.5 J,B	15 B
Carbon disulfide	1,000	5 U	6 U	5 U	5 U	5 U	2.9 J	5.5 U	7 U	5 U	2.7 J	5 U	5.5 U	3.6 J	6.5 U	5.5 U	5.5 U
Diethyl Ether	1,000	43	12 U	10 U	10 U	10 U	10 U	61	79	67	10 U	10 U	11 U	10 U	13 U	11 U	11 U
Ethylbenzene	500	5 U	6 U	5 U	5 U	5 U	5.1 U	5.5 U	7 U	5 U	4.4 J	5 U	5.5 U	5.2 U	6.5 U	5.5 U	5.5 U
Methylene chloride	200	38 B	18 U	15 U	15 U	15 U	15 U	47 B	65 B	97 B	15 U	15 U	16 U	16 U	20 U	16 U	16 U
Toluene	500,000	5 U	3.3 J	5.8	4.5 J	4.1 J	2 J	5.5 U	7 U	5 U	6.2	8	5.5 U	6.8	7.7	4.4 J	4.2 J
Polychlorinated Biphenyls (PCBs) (µg/Kg)																	
Aroclor-1254	2,000	14 J	38 U	37 U	46 U	51 U	37 U	26 J	120	140	40 U	35 U	39 U	190	140	40 U	45 U
Aroclor-1260	2,000	15 J	38 U	37 U	46 U	51 U	37 U	40 U	57	86	40 U	35 U	39 U	38 U	39 U	40 U	45 U
Metals (mg/Kg)																	
Arsenic	30	6.6	2.5	3.3	3.3	4.5	4.2	4	5.2	4	3.2	2.3	3.5	4.1	3	3.3	4.2
Barium	2,500	74	91	79	76	120	67	73	78	90	73	84	94	79	77	72	90
Cadmium	80	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	2,500	15	18	14	14	15	16	23	16	19	14	12	15	14	17	16	18
Lead	600	6.2	5.1	5.2	7.2	8.8	5.2	5.4	5.7	5.4	4.8	6.9	5.9	7.1	5.7	6.5	11
Mercury	60	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.53
Selenium	2,500	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Silver	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Notes:
U = below method detection limit
J = estimated concentration below the reporting limit
B = compound was found in the daily method blank
mg/Kg = milligrams per kilogram (equal to part per million (ppm))
µg/Kg = micrograms per kilogram (equal to part per billion (ppb))
Only detected VOCs and PCBs are presented
*FD012 was not analyzed for VOCs due to lab logging error
The depth interval with the highest field reading was submitted for VOC analysis.
Shaded values exceed Reportable Concentrations
NA = Not Available

Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation	MCP	MCP	B-1	B-1	B-1	CB-1	CB-1	CB-1	CB-2	CB-2	CB-2	CB-3	CB-3	CB-3	CB-3	CB-3	CB-3	CB-4	CB-4	CB-4	CB-4	CB-4	CB-5	CB-5	CB-5	CB-6	CB-6	CB-6
Date Sampled	RCGW-1	RCGW-2	7/16/2003	3/8/2004	5/25/2004	7/21/2003	03/05/04	5/23/2004	7/14/2003	03/02/04	5/24/2004	7/16/2003	12/1/2003	12/1/2003	03/08/04	03/08/04	5/26/2004	8/25/2004	7/14/2003	11/5/2003	11/5/2003	03/01/04	5/26/2004	7/29/2003	6/8/2004	8/17/2004	7/14/2003	03/10/04	5/27/2004
Applicable MCP Standard			GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-1	GW-1	GW-1 Alpha Lab	GW-1	GW-1 DUP	GW-1	GW-1	GW-2	GW-2 total	GW-2 filtered	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2
Comment																												
Total Petroleum Hydrocarbons (ug/L)																												
TPH-DRO (Diesel Range)	200	1,000	33			25 U			55 J			230 J	45		72 J	46 J			25 U					25 U			46		
TPH-GRO (Gasoline Range)	200	1,000	10 U			10 U			10 U			10 U							10 U					10 U			10 U		
VPH	NA	NA																										
C5-C8 Aliphatics	400	1,000												40 U	40 U	40 U												
C9-C12 Aliphatics	1,000	1,000												40 U	40 U	40 U												
C9-C10 Aromatics	200	4,000												40 U	40 U	40 U												
EPH	NA	NA																										
C9-C18 Aliphatics	1,000	1,000												100 U	100 U	100 U												
C19-C36 Aliphatics	5,000	20,000												100 U	100 U	100 U												
C11-C22 Aromatics	200	30,000												100 U	100 U	100 U												
Volatile Organic Compounds (ug/L)																												
1,1-Dichloroethane	70	9,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
1,1-Dichloroethene	1	1	2 U			2 UJ			2 U			2 UJ							2 UJ					2 U		2 U	2 U		
1,2,4-Trimethylbenzene	10,000	100,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
1,3,5-Trimethylbenzene	100	1,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
4-Isopropyltoluene	NA	NA	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
4-Methyl-2-pentanone	400	50,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
Acetone	3,000	50,000	10 U			10 U			10 U			10 UJ							10 UJ					10 UJ		3 JB	10 U		
Benzene	5	2,000	1 U			1 UJ			1 U			1 U							1 U					1 U		1 U	1 U		
Carbon disulfide	1,000	10,000	5 U			5 U			5 U			5 UJ							5 U					5 U		5 U	5 U		
Chloroform	5	400	1 U			1 U			1 U			1 U							1 U					1 U		1 U	1 U		
Chloromethane	1,000	10,000	5 U			5 U			5 U			5 U							5 U					5 UJ		5 U	5 U		
Dichlorodifluoromethane	10,000	100,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
Ethylbenzene	700	4,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
Ethyl-t-butyl ether																												
Iodomethane	1,000	10,000	5 U			5 U			5 U			5 UJ							5 UJ					5 U		5 U	5 U		
m+p-Xylenes	6,000	6,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
Methylene chloride	5	50,000	2 U			2 U			2 U			2 UJ							2 U					2 U		2 U	2 U		
Methyl-t-butyl ether	70	50,000	0.68 J			5 U			5 U			0.77 J							5 U					5 UJ		5 U	5 U		
Naphthalene	20	6,000	5 U			5 U			5 U			5 U							5 U					5 U			5 U		
n-Butylbenzene	NA	NA	5 U			5 U			5 U			5 U							5 U					5 UJ		5 U	5 U		
n-Propylbenzene	1,000	10,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
o-Chlorotoluene																												
o-Xylene	6,000	6,000	5 U			5 U			5 U			5 U							5 U					5 U		5 U	5 U		
p-Chlorotoluene																												
Toluene	1,000	6,000	5 U			5 UJ			5 U			5 U							5 U					5 U		5 U	5 U		
Semi-Volatile Organic Compounds (ug/L)																												
Acenaphthene	20	5,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2 UJ		20 U					0.2 UJ					0.2 UJ			0.2 UJ		
Acenaphthylene	300	3,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2 UJ		20 U					0.2 UJ					0.2 UJ			0.2 UJ		
Anthracene	2,000	3,000	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 UJ			0.2 UJ		
Benzo(a)anthracene	1	3,000	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 U			0.2 UJ		
Benzo(a)pyrene	0.2	3,000	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 U			0.2 UJ		
Benzo(b)fluoranthene	1	3,000	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 U			0.2 UJ		
Benzo(g,h,i)perylene	300	3,000	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 U			0.2 UJ		
bis(2-Ethylhexyl)phthalate	6	30	10 U			10 UJ			10 U			10 U							10 UJ					10 U			10 U		
Chrysene	2	3,000	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 U			0.2 UJ		
Dibenzo(a,h)anthracene	0.5	3,000	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 U			0.2 UJ		
Fluoranthene	200	200	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 U			0.2 UJ		
Fluorene	300	3,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2 UJ		20 U					0.2 UJ					0.2 UJ			0.2 UJ		
Indeno(1,2,3-cd)pyrene	0.5	3,000	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 U			0.2 UJ		
Naphthalene	20	6,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2 UJ		20 U					0.2 UJ					0.16 J			0.2 UJ		
Pentachlorophenol	1	80	1 UJ			1 UJ			1 UJ			1 UJ							1 UJ					1 U			1 UJ		
Phenanthrene	50	50	0.2 UJ			0.2 U			0.2 UJ			0.2 U		20 U					0.2 U					0.2 UJ			0.2 UJ		
Phenol	4,000	30,000	10 U			R			10 U			10 U							10 U					10 U			10 U		
Pyrene	200	3,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2 UJ		20 U					0.2 UJ					0.2 UJ			0.2 UJ		
Polychlorinated Biphenyls (ug/L)																												
Aroclor-1254	0.3	0.3	0.25 U			0.25 U			0.25 U			0.25 U							0.25 U					0.25 U			0.25 U		
Alcohols																												
iso-Propyl Alcohol	NA	NA																										
Inorganics (mg/L)																												
Arsenic	0.05	0.4	0.01 U			0.01 U			0.01 U			0.01 U							0.01 U					0.01 U		0.01 U	0.01 U		
Barium	2	30																						0.011		0.01 U			
Boron	1	10	0.27	0.16	0.26	0.49	0.44	0.4	0.13	0.1	0.22	0.1 U			0.05 U	0.05 U	0.16		0.1 U			0.05 U	0.1 U	0.1 U	0.1 U		0.1 U	0.05 U	0.12
Chromium	0.1	2	0.01 UJ			0.01 U			0.01 UJ			0.01 UJ							0.01 UJ					0.01 U	0.01 U	0.01 U	0.01 UJ		
Copper	10	100	0.01 U			0.01 U			0.01 U			0.012 J							0.01 UJ					0.01 U	0.01 U	0.01 U			
Iron	NA	NA																						0.23		0.084			
Lead	0.02	0.03	0.0066 U			0.0063			0.0052 U			0.005 U							0.005 U					0.005 U	0.005 U	0.0053 U			
Manganese	NA	NA																						0.38		0.073			
Mercury	0.001	0.001	0.0002 U			0.0003 J			0.0002 U			0.0002 U							0.0002 U					0.00021 U	0.0002 U	0.0002 U			
Nickel	0.08	0.08	0.01 U			0.01 U			0.003 U			0.021							0.01 UJ					0.01 U	0.01 U	0.01 U			
Selenium	0.05	0.08	0.05 U			R			0.05			0.05 U							0.05 U					0.05 U	0.05 U	0.05 U			
Silver	0.007	0.007	0.005 U			0.005 U			0.005 U			0.005 UJ							0.009	0.005 U	0.01 U	0.005 U		0.005 U	0.005 U	0.005 U			
Zinc	0.9	0.9	0.05 U			0.05 U			0.05 U			0.83							0.05 U					0.05 U	0.05 U	0.05 U			

Notes:
Summary of detected compounds only
NA= Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit

Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation	MCP	MCP	CB-7	CB-7	CB-7	CB-8	CB-8	CB-8	CB-9	CB-9	CB-9	CB-10	CB-10	CB-11A	CB-11A	CB-11A	CB-12	CB-12	CB-12	CFW-1	CFW-1	CFW-1	CFW-1	CFW-2	CFW-2	CFW-2	CFW-2
Date Sampled	RCGW-1	RCGW-2	7/23/2003	03/08/04	5/27/2004	7/23/2003	03/02/04	5/25/2004	7/24/2003	03/15/04	5/21/2004	7/29/2003	6/11/2004	7/24/2003	7/24/2003	5/22/2004	7/29/2003	03/02/04	5/27/2004	8/7/2003	03/18/04	6/8/2004	8/18/2004	7/28/2003	03/18/04	6/7/2004	8/18/2004
Applicable MCP Standard			GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2 DUP	GW-2	GW-2	GW-2	GW-2	GW-1	GW-1	GW-1	GW-1	GW-2	GW-2	GW-2	GW-2
Comment																											
Total Petroleum Hydrocarbons (ug/L)																											
TPH-DRO (Diesel Range)	200	1,000	35			69			280 J			58		43	43		25 U			25 U				53			
TPH-GRO (Gasoline Range)	200	1,000	10 U			10 U			10 U			10 U		10 U	10 U		10 U			10 U				10 U			
VPH	NA	NA																									
C5-C8 Aliphatics	400	1,000								40 U	40 U																
C9-C12 Aliphatics	1,000	1,000								40 U	40 U																
C9-C10 Aromatics	200	4,000								40 U	40 U																
EPH	NA	NA																									
C9-C18 Aliphatics	1,000	1,000								95.2 U	100 U																
C19-C36 Aliphatics	5,000	20,000								238	100 U																
C11-C22 Aromatics	200	30,000								95.2 U	100 U																
Volatile Organic Compounds (ug/L)																											
1,1-Dichloroethane	70	9,000	5 U			5 U			0.8 J			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
1,1-Dichloroethene	1	1	2 UJ			2 UJ			2 U			2 UJ		2 U	2 U		2 UJ			2 U			2 U	2 U			2 U
1,2,4-Trimethylbenzene	10,000	100,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
1,3,5-Trimethylbenzene	100	1,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
4-Isopropyltoluene	NA	NA	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
4-Methyl-2-pentanone	400	50,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
Acetone	3,000	50,000	10 UJ			10 U			3.4 J			10 UJ		10 U	10 U		10 UJ			R			5.2 JB	10 UJ			6.4 JB
Benzene	5	2,000	1 U			1 U			1 U			1 UJ		1 U	1 U		1 UJ			1 U			1 U	1 U			1 U
Carbon disulfide	1,000	10,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
Chloroform	5	400	1 U			1 U			1 U			1 UJ		1 U	1 U		1 UJ			1 U			1 U	1 U			1 U
Chloromethane	1,000	10,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			0.69 J	5 UJ			5 U
Dichlorodifluoromethane	10,000	100,000	0.67 J			5 UJ			5 UJ			5 UJ		5 UJ	5 UJ		0.84 J			5 U			5 U	5 U			5 U
Ethylbenzene	700	4,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
Ethyl-t-butyl ether																											
Iodomethane	1,000	10,000	5 U			R			R			5 UJ		R	R		5 UJ			5 U			5 U	5 U			5 U
m+p-Xylenes	6,000	6,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
Methylene chloride	5	50,000	2 U			2 U			2 U			2 U		2 U	2 U		2 U			2 U			2 U	2 U			2 U
Methyl-t-butyl ether	70	50,000	5 U			5 U			5 U			3.1 J		5 U	5 U		5 UJ			5 U			5 U	5 UJ			5 U
Naphthalene	20	6,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U				5 U			
n-Butylbenzene	NA	NA	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 UJ			5 U
n-Propylbenzene	1,000	10,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
o-Chlorotoluene																											
o-Xylene	6,000	6,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			5 U	5 U			5 U
p-Chlorotoluene																											
Toluene	1,000	6,000	5 U			5 U			5 U			5 UJ		5 U	5 U		5 UJ			5 U			0.43 J	5 U			0.47 J
Semi-Volatile Organic Compounds (ug/L)																											
Acenaphthene	20	3,000	0.2 UJ			0.2 UJ			0.2 UJ			0.16 J		0.2 UJ	0.2 UJ		0.2 UJ			0.2 UJ				0.2 UJ			
Acenaphthylene	300	3,000	0.2 UJ			0.2 U			0.2 UJ			0.17 J		0.2 UJ	0.2 UJ		0.38 J			0.2 UJ				0.2 UJ			
Anthracene	2,000	3,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2 UJ		0.2 UJ	0.2 UJ		0.2 UJ			0.2 UJ				0.2 UJ			
Benzo(a)anthracene	1	3,000	0.2 U			0.2 U			0.2 U			0.2 UJ		0.2 U	0.2 U		0.2 UJ			0.2 UJ				0.2 U			
Benzo(a)pyrene	0.2	3,000	0.2 U			0.2 U			0.2 U			0.2 UJ		0.2 U	0.2 U		0.2 UJ			0.2 UJ				0.2 U			
Benzo(b)fluoranthene	1	3,000	0.2 U			0.2 U			0.2 U			0.2 UJ		0.2 U	0.2 U		0.2 UJ			0.2 UJ				0.2 U			
Benzo(g,h,i)perylene	300	3,000	0.2 U			0.2 U			0.2 U			0.2 UJ		0.2 U	0.2 U		0.2 UJ			0.2 UJ				0.2 U			
bis(2-Ethylhexyl)phthalate	6	30	10 U			10 U			3 J			10 U		10 U	2.6 J		3.8 J			10 U				5.4 UJ			
Chrysene	2	3,000	0.2 U			0.2 U			0.2 U			0.2 UJ		0.2 U	0.2 U		0.2 UJ			0.2 UJ				0.2 U			
Dibenzo(a,h)anthracene	0.5	3,000	0.2 U			0.2 U			0.2 U			0.2 UJ		0.2 U	0.2 U		0.2 UJ			0.2 UJ				0.2 U			
Fluoranthene	200	200	0.2 U			0.2 U			0.2 U			0.2 UJ		0.2 U	0.2 U		0.2 UJ			0.2 UJ				0.2 U			
Fluorene	300	3,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2 UJ		0.2 UJ	0.2 UJ		0.2 UJ			1 J				0.2 UJ			
Indeno(1,2,3-cd)pyrene	0.5	3,000	0.2 U			0.2 U			0.2 U			0.2 UJ		0.2 U	0.2 U		0.2 UJ			0.2 UJ				0.2 U			
Naphthalene	20	6,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2		0.2 UJ	0.2 UJ		0.2 UJ			0.2 UJ				0.2 UJ			
Pentachlorophenol	1	80	1 U			1 U			1 UJ			1 UJ		1 UJ	1 UJ		1 UJ			1 UJ				1 UJ			
Phenanthrene	50	50	0.2 UJ			0.2 UJ			0.2 UJ			0.16 J		0.2 UJ	0.2 UJ		0.2 UJ			0.2 UJ				0.2 UJ			
Phenol	4,000	30,000	10 U			R			10 U			10 U		10 U	10 U		10 U			10 U				R			
Pyrene	200	3,000	0.2 UJ			0.2 UJ			0.2 UJ			0.2 UJ		0.2 UJ	0.2 UJ		0.2 UJ			0.2 UJ				0.2 UJ			
Polychlorinated Biphenyls (ug/L)																											
Aroclor-1254	0.3	0.3	0.25 U			0.25 U			0.25 U			0.25 U		0.25 U	0.25 U		0.25 U			0.25 U				5 U			
Alcohols																											
iso-Propyl Alcohol	NA	NA																									
Inorganics (mg/L)																											
Arsenic	0.05	0.4	0.01 U			0.01 U			0.01 U			0.01 U		0.01 U	0.01 U		0.01 U			0.01 U			0.01 U	0.01 U			0.01 U
Barium	2	30																		0.017			0.014	0.097			0.1
Boron	1	10	0.1 U	0.05 U	0.16	0.1 U	0.05 U	0.1 U	0.13	0.33	0.15	0.26	0.21	0.1 U	0.1 U	0.15	0.1 U	0.05 U	0.21	0.1 U	0.1 U	0.27		0.1 U	0.1 U	0.1 U	
Chromium	0.1	2	0.01 U			0.01 U			0.01 U			0.01 UJ		0.01 U	0.01 U		0.01 UJ			0.01 U			0.01 U	0.01 U			0.01 U
Copper	10	100	0.026 U			0.01 U			0.01 U			0.01 UJ		0.01 U	0.01 U		0.01 UJ			0.01 U			0.01 U	0.01 U			0.01 U
Iron	NA	NA																		1.8			1.2	74			70
Lead	0.02	0.03	0.005 U			0.005 U			0.005 U			0.005 U		0.005 U	0.005 U		0.005 U			0.005 U			0.005 U	R			0.005 U
Manganese	NA	NA																		0.047			0.11	10			9
Mercury	0.001	0.001	0.0002 U			0.0002 U			0.0002 U			0.0002 U		0.0002 U	0.0002 U		0.0002 U			0.00002 U			0.0002 U	0.00002 U			0.0002 U
Nickel	0.08	0.08	0.013 U			0.011 U			0.01 U			0.01 UJ		0.01 U	0.01 U		0.01 U			0.01 U			0.01 U	0.013			0.01 U
Selenium	0.05	0.08	0.05 U			0.05 U			0.05 U			0.05 UJ		0.05 U	0.05 U		0.05 UJ			0.05 U			0.05 U	0.05 U			0.05 U
Silver	0.007	0.007	0.005 UJ			0.005 UJ			0.005 U			0.005 UJ		0.005 U	0.005 U		0.005			0.005 UJ			0.005 U	0.005 U			0.005 U
Zinc	0.9	0.9	0.05 U			0.05 U			0.05 U			0.05 U		0.05 U	0.01 U		0.05 U			0.05 U			0.05 U	0.05 U			0.05 U

Notes:
Summary of detected compounds only
NA= Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/ reporting limit
UJ= Not detected, value is an estimate of detection/ reporting limit

Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation Date Sampled Applicable MCP Standard Comment	MCP RCGW-1	MCP RCGW-2	CFW-3 8/6/2003 GW-2	CFW-3 6/8/2004 GW-2	CFW-3 8/17/2004 GW-2	CFW-4 8/6/2003 GW-2	CFW-4 6/8/2004 GW-2	CFW-4 8/17/2004 GW-2	CFW-4 8/17/2004 GW-2 Dup	CFW-5 8/5/2003 GW-2	CFW-5 6/8/2004 GW-2	CFW-5 8/18/2004 GW-2	CFW-6 8/11/2003 GW-2	CFW-6 6/8/2004 GW-2	CFW-6 8/18/2004 GW-2	CFW-7 7/29/2003 GW-2	CFW-7 03/18/04 GW-2	CFW-7 6/7/2004 GW-2	CFW-7 8/17/2004 GW-2	CW-2 7/24/2003 GW-2	CW-2 11/20/2003 GW-2 total	CW-2 11/20/2003 GW-2 filtered	CW-2 03/03/04 GW-2	CW-2 5/26/2004 GW-2	CW-2 8/25/2004 GW-2
Total Petroleum Hydrocarbons (ug/L)																									
TPH-DRO (Diesel Range)	200	1,000	92 UJ			25 U				25 U			25 U			65				98				
TPH-GRO (Gasoline Range)	200	1,000	10 U			10 U				10 U			10 U			10 U				10 U				
VPH	NA	NA																							
C5-C8 Aliphatics	400	1,000																						40 U	
C9-C12 Aliphatics	1,000	1,000																						45	
C9-C10 Aromatics	200	4,000																						76.3	
EPH	NA	NA																							
C9-C18 Aliphatics	1,000	1,000																						100 U	
C19-C36 Aliphatics	5,000	20,000																						100 U	
C11-C22 Aromatics	200	30,000																						100 U	
Volatile Organic Compounds (ug/L)																									
1,1-Dichloroethane	70	9,000	5 UJ		5 U	5 UJ		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
1,1-Dichloroethene	1	1	2 U		2 U	2 U		2 U	2 U	2 UJ		2 U	2 U		2 U	2 U			2 U	2 U					
1,2,4-Trimethylbenzene	10,000	100,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
1,3,5-Trimethylbenzene	100	1,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
4-Isopropyltoluene	NA	NA	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
4-Methyl-2-pentanone	400	50,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
Acetone	3,000	50,000	9.1 J		9.3 JB	10 UJ		5.4 JB	10 U	10 UJ		10 U	10 U		10 U	10 UJ			10 U	10 U					
Benzene	5	2,000	1 U		1 U	1 U		1 U	1 U	1 UJ		1 U	1 U		1 U	1 U			1 U	1 U					
Carbon disulfide	1,000	10,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
Chloroform	5	400	1 U		1 U	1 U		1 U	1 U	1 UJ		1 U	1 U		1 U	1 U			1 U	1 U					
Chloromethane	1,000	10,000	5 UJ		5 U	5 UJ		0.52 J	5 U	5 UJ		0.69 J	5 U		5 U	5 U			5 U	5 U					
Dichlorodifluoromethane	10,000	100,000	5 UJ		5 U	5 UJ		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 UJ					
Ethylbenzene	700	4,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
Ethyl-t-butyl ether																									
Iodomethane	1,000	10,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	R					
m,p-Xylenes	6,000	6,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
Methylene chloride	5	50,000	2 UJ		2 U	2 UJ		2 U	2 U	2 UJ		2 U	2 U		2 U	2 U			0.57 JB	2 U					
Methyl-t-butyl ether	70	50,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
Naphthalene	20	6,000	5 U			5 UJ				5 UJ			5 U			5 U				5 U					
n-Butylbenzene	NA	NA	5 U		5 U	5 UJ		5 U	5 U	5 UJ		5 U	5 U		5 U	5 UJ			5 U	5 U					
n-Propylbenzene	1,000	10,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
o-Chlorotoluene																									
o-Xylene	6,000	6,000	5 U		5 U	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
p-Chlorotoluene																									
Toluene	1,000	6,000	5 U		0.32 J	5 U		5 U	5 U	5 UJ		5 U	5 U		5 U	5 U			5 U	5 U					
Semi-Volatile Organic Compounds (ug/L)																									
Acenaphthene	20	5,000	0.2 U			0.2 U				0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ					
Acenaphthylene	300	3,000	0.2 U			0.2 U				0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ					
Anthracene	2,000	3,000	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ					
Benzo(a)anthracene	1	3,000	0.2 UJ			0.2 U				0.2 UJ			0.2 UJ			0.2 U				0.2 U					
Benzo(a)pyrene	0.2	3,000	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 U				0.2 U					
Benzo(b)fluoranthene	1	3,000	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 U				0.2 U					
Benzo(g,h,i)perylene	200	3,000	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 U				0.2 U					
bis(2-Ethylhexyl)phthalate	6	30	10 UJ			10 U				10 U			10 U			12				10 U					
Chrysene	2	3,000	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 U				0.2 U					
Dibenzo(a,h)anthracene	0.3	3,000	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 U				0.2 U					
Fluoranthene	200	200	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 U				0.2 U					
Fluorene	300	3,000	0.2 UJ			0.68 UJ				0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ					
Indeno(1,2,3-cd)pyrene	0.5	3,000	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 U				0.2 U					
Naphthalene	20	6,000	0.34			0.19 J				0.2 UJ			0.22 J			0.22 J				0.2 UJ					
Pentachlorophenol	1	50	1 UJ			1 UJ				1 UJ			1 UJ			1 U				1 U					
Phenanthrene	50	50	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ					
Phenol	4,000	30,000	R			R				R			R			10 U				10 U					
Pyrene	200	3,000	0.2 UJ			0.2 UJ				0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ					
Polychlorinated Biphenyls (ug/L)																									
Aroclor-1254	0.3	0.3	0.25 U			0.25 U				0.25 U			0.25 U			0.25 U				0.25 U					
Alcohols																									
t-n-Propyl Alcohol	NA	NA																							
Inorganics (mg/L)																									
Arsenic	0.05	0.4	0.01 U		0.019	0.01 U		0.01 U	0.01 U	0.01 U		0.01 U	0.01 UJ		0.01 U	0.01 U			0.01 U	0.01 U					
Barium	2	30	0.094		0.13	0.062		0.059	0.042	0.043		0.061	0.069		0.077	0.095			0.074						
Boron	1	10	0.1 U	0.14		0.1 U	0.1 U			0.1 U	0.1 U		0.1 U	0.1 U		0.1 U	0.1 U	0.1 U		0.11			0.05 U	0.11	
Chromium	0.1	2	0.025		0.065	0.01 U		0.02	0.01 U	0.01 U		0.01 U	0.01 U		0.01 U	0.01 U			0.01 U	0.01 U					
Copper	10	100	0.015 U		0.01 U	0.036		0.011	0.01 U	0.015 U		0.01 U	0.01 UJ		0.01 U	0.01 U			0.01 U	0.01 U					
Iron	NA	NA	180 J		300	10		19	14	38		67	67		51	100			120						
Lead	0.02	0.03	0.005 U		0.006	0.005 U		0.005 U	0.005 U	R		0.005 U	0.005 U		0.005 U	0.005 U			0.005 U	0.005 U					
Manganese	NA	NA	8		11	5.7		6.7	5.1	3.5		4.4	8.8		6.9	9.6			11						
Mercury	0.001	0.001	0.0002 U		0.0002 U	0.0002 U		0.0002 U	0.0002 U	0.0002 U		0.0002 U	0.0002 U		0.0002 U	0.0002 U			0.0002 U	0.0002 U					
Nickel	0.08	0.08	0.027		0.032	0.01 U		0.016	0.01 U	0.01 U		0.01 U	0.01 U		0.01 U	0.01 U			0.01 U	0.01 U					
Selenium	0.05	0.08	0.05 U		0.05 U	0.05 U		0.05 U	0.05 U	0.05 U		0.05 U	0.05 U		0.05 U	0.05 U			0.05 U	0.05 U					
Silver	0.007	0.007	0.005 UJ		0.005 U	0.005 UJ		0.005 U	0.005 U	0.005 UJ		0.005 U	0.005 U		0.005 U	0.005 U			0.005 U	0.014 U	0.005 U	0.01 U	0.005 U		
Zinc	0.9	0.9	0.05 U		0.05 U	0.05 U		0.05 U	0.05 U	0.057 U		0.05 U	0.05 UJ		0.05 U	0.05 U			0.05 U	0.01 U					

Notes:
Summary of detected compounds only
NA = Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J = Estimated result
R = Rejected result, unusable for project decisions
U = Not detected, value is the sample detection/reporting limit
UJ = Not detected, value is an estimate of detection/reporting limit

Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation	MCP	MCP	CW-3	CW-3	CW-3	CW-4	CW-4	CW-4	CW-4	CW-4	CW-5	CW-5	CW-6	CW-6	CW-6	CW-6	CW-6	CW-7	CW-7	CW-7	CW-8	CW-8	CW-10	CW-10	CW-10	CW-11	CW-11
Date Sampled	RCGW-1	RCGW-2	7/23/2003	03/09/04	5/25/2004	7/24/2003	03/03/04	5/26/2004	8/25/2004	8/25/2004	7/21/2003	5/25/2004	7/15/2003	7/15/2003	03/19/04	6/2/2004	8/26/2004	7/15/2003	03/08/04	6/2/2004	7/15/2003	03/19/04	7/15/2003	03/04/04	5/27/2004	7/25/2003	5/22/2004
Applicable MCP Standard	GW-2	GW-2	GW-2	GW-2	GW-2	GW-1	GW-1	GW-1	GW-1	GW-1 Dup	GW-2	GW-2	GW-2	GW-2 DUP	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2
Comment																											
Total Petroleum Hydrocarbons (ug/L)																											
TPH-DRO (Diesel Range)	200	1,000	57			25 U					61		25 U	25 U				25 U			25 U		130			44	
TPH-GRO (Gasoline Range)	200	1,000	10 U			10 U					10 U		10 U	10 U				10 U			10 U		10 U			10 U	
VPH	NA	NA																									
C5-C8 Aliphatics	400	1,000																						40 U			
C9-C12 Aliphatics	1,000	1,000																						40 U			
C9-C10 Aromatics	200	4,000																						40 U			
EPH	NA	NA																									
C9-C18 Aliphatics	1,000	1,000																						100 U			
C19-C36 Aliphatics	5,000	20,000																						100 U			
C11-C22 Aromatics	200	30,000																						100 U			
Volatile Organic Compounds (ug/L)																											
1,1-Dichloroethane	70	9,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
1,1-Dichloroethene	1	1	2 UJ			2 UJ					2 U		2 U	2 U				2 U			2 U		2 UJ			2 U	
1,2,4-Trimethylbenzene	10,000	100,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
1,3,5-Trimethylbenzene	100	1,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
4-Isopropyltoluene	NA	NA	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
4-Methyl-2-pentanone	400	50,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
Acetone	3,000	50,000	10 U			10 U					10 UJ		10 U	10 U				10 U			10 U		10 U			10 UJ	
Benzene	5	2,000	1 U			1 U					1 U		1 U	1 U				1 U			1 U		1 U			1 U	
Carbon disulfide	1,000	10,000	5 U			5 U					5 U		5 U	5 U				6.9			5 U		5 U			5 U	
Chloroform	5	400	1 U			1 U					1 U		1 U	1 U				1 U			1 U		1 U			1 U	
Chloromethane	1,000	10,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 UJ			5 UJ	
Dichlorodifluoromethane	10,000	100,000	5 UJ			5 UJ					5 UJ		5 U	5 U				5 U			5 U		0.62 J			5 U	
Ethylbenzene	700	4,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
Ethyl-t-butyl ether																											
Iodomethane	1,000	10,000	R			R					5 U		5 U	5 U				5 U			5 U		5 UJ			5 U	
m+p-Xylenes	6,000	6,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
Methylene chloride	5	50,000	2 U			2 U					2 U		2 U	2 U				2 U			2 U		2 U			2 U	
Methyl-t-butyl ether	70	50,000	5 U			5 U					5 U		5 U	1.9 J				2 J			5 U		5 U			2.7 J	
Naphthalene	20	6,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
n-Butylbenzene	NA	NA	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 UJ	
n-Propylbenzene	1,000	10,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
o-Chlorotoluene																											
o-Xylene	6,000	6,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
p-Chlorotoluene																											
Toluene	1,000	6,000	5 U			5 U					5 U		5 U	5 U				5 U			5 U		5 U			5 U	
Semi-Volatile Organic Compounds (ug/L)																											
Acenaphthene	20	3,000	0.2 UJ			0.2 UJ			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 UJ			0.2 UJ	
Acenaphthylene	300	3,000	0.2 UJ			0.2 UJ			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 UJ			0.2 UJ	
Anthracene	2,000	3,000	0.2 UJ			0.2 UJ			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 UJ	
Benzo(a)anthracene	1	3,000	0.2 U			0.2 U			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 U	
Benzo(a)pyrene	0.2	3,000	0.2 U			0.2 U			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 U	
Benzo(b)fluoranthene	1	3,000	0.2 U			0.2 U			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 U	
Benzo(g,h,i)perylene	300	3,000	0.2 U			0.2 U			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 U	
bis(2-Ethylhexyl)phthalate	6	30	10 U			10 U			10 U	10 U	10 U		10 U	10 U				10 U			10 U		12			10 U	
Chrysene	2	3,000	0.2 U			0.2 U			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 U	
Dibenzo(a,h)anthracene	0.5	3,000	0.2 U			0.2 U			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 U	
Fluoranthene	200	200	0.2 U			0.2 U			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 U	
Fluorene	300	3,000	0.2 UJ			0.2 UJ			0.1 J	0.11 J	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 UJ			0.2 UJ	
Indeno(1,2,3-cd)pyrene	0.5	3,000	0.2 U			0.2 U			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 U	
Naphthalene	20	6,000	0.2 UJ			0.2 UJ			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 UJ			0.15 I	
Pentachlorophenol	1	80	1 U			R			1 U	1 U	1 U		1 UJ	1 UJ				1 UJ			1 UJ		1 UJ			1 UJ	
Phenanthrene	30	30	0.2 UJ			0.2 UJ			0.11 J	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 UJ	
Phenol	4,000	30,000	10 U			R			5.7 J	10 U	10 U		10 U	10 U				10 U			10 U		10 U			R	
Pyrene	200	3,000	0.2 UJ			0.2 UJ			0.2 U	0.2 U	0.2 U		0.2 UJ	0.2 UJ				0.2 UJ			0.2 UJ		0.2 U			0.2 UJ	
Polychlorinated Biphenyls (ug/L)																											
Aroclor-1254	0.3	0.3	0.25 U			0.25 U					0.25 U		0.25 U	0.25 U				0.25 U			0.25 U		0.25 U			0.25 U	
Alcohols																											
Iso-Propyl Alcohol	NA	NA																									
Inorganics (mg/L)																											
Arsenic	0.05	0.4	0.01 U			0.01 U					0.01 U		0.01 U	0.01 U				0.01 U			0.01 U		0.01 U			0.01 UJ	
Barium	2	30																									
Boron	1	10	0.1 U	0.05 U	0.21	0.1 U	0.14	0.22			0.1 U	0.1 U	0.1 U	0.12	0.1 U	0.1 U		0.12	0.067	0.1 U	0.19	0.12	0.1 U	0.4	0.34	0.17	0.23
Chromium	0.1	2	0.01 U			0.01 U					0.01 U		0.01 U	0.01 UJ				0.01 UJ			0.01 UJ		0.01 UJ			0.01 U	
Copper	10	100	0.039 U			0.018 U					0.026		0.01 U	0.01 U				0.01 U			0.01 U		0.01 UJ			0.01 U	
Iron	NA	NA																									
Lead	0.02	0.03	0.005 U			0.005 U					0.005 U		0.005 U	0.0052 U				0.0075 U			0.005 U		0.005 U			R	
Manganese	NA	NA																									
Mercury	0.001	0.001	0.0002 U			0.0002 U					0.0002 U		0.0002 U	0.0002 U				0.0002 U			0.0002 U		0.0002 U			0.0002 U	
Nickel	0.08	0.08	0.011 U			0.01 U					0.01 U		0.01 U	0.01 U				0.01 U			0.01 U		0.01 UJ			0.01 U	
Selenium	0.05	0.08	0.05 U			0.05 U					0.05 U		0.05 U	0.05 U				0.05 U			0.05 U		0.05 U			0.05 U	
Silver	0.007	0.007	0.005 UJ			0.005 UJ					0.005 U		0.005 U	0.005 U				0.005 U			0.005 U		0.005 UJ			0.005 U	
Zinc	0.9	0.9	0.01 U			0.01 U					0.01 U		0.05 U	0.05 U				0.05 U			0.05 U		0.05 U			0.05 U	

Notes:
Summary of detected compounds only
NA= Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit

Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation	MCP	MCP	MW-1	MW-1	MW-1	MW-2	MW-2	MW-2	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-6	MW-6	MW-100A	MW-100A	MW-100B	MW-100B	MW-101B	MW-101B
Date Sampled	RCGW-1	RCGW-2	7/23/2003	3/10/2004	5/24/2004	7/22/2003	03/05/04	5/22/2004	7/22/2003	12/01/03	12/1/2003	3/3/2004	3/17/2004	3/17/2004	05/22/04	5/23/2004	05/22/04	5/22/2004	8/21/2004	8/21/2004	8/21/2004	7/22/2003	3/4/2004	09/11/03	6/7/2004	9/11/2003	6/7/2004	9/12/2003	03/04/04
Applicable MCP Standard			GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2
Comment									total	total	filtered	total	total	filtered	total	total/DUP	filtered	filtered/DUP	total	total/DUP	filtered	filtered/DUP							
Total Petroleum Hydrocarbons (ug/L)																													
TPH-DRO (Diesel Range)	200	1,000	99			25 U			32													110		360 J		25 U		25 U	
TPH-GRO (Gasoline Range)	200	1,000	10 U			16			10 U													10 U		10 U		10 U		10 U	
VPH	NA	NA																											
C5-C8 Aliphatics	400	1,000						59							40 U	40 U							40 U		40 U		40 U		
C9-C12 Aliphatics	1,000	1,000						40 U							40 U	40 U							40 U		40 U		40 U		
C9-C10 Aromatics	200	4,000						40 U							40 U	40 U							40 U		40 U		40 U		
EPH	NA	NA																											
C9-C18 Aliphatics	1,000	1,000						100 U							100 U	100 U							100 U		100 U		100 U		
C19-C36 Aliphatics	5,000	20,000						100 U							100 U	100 U							454		100 U		100 U		
C11-C22 Aromatics	200	30,000						100 U							100 U	100 U							229		100 U		100 U		
Volatile Organic Compounds (ug/L)																													
1,1-Dichloroethane	70	9,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
1,1-Dichloroethene	1	1	2 UJ			2 UJ			2 UJ													2 U		2 UJ		2 UJ		2 UJ	
1,2,4-Trimethylbenzene	10,000	100,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
1,3,5-Trimethylbenzene	100	1,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
4-Isopropyltoluene	NA	NA	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
4-Methyl-2-pentanone	400	50,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
Acetone	3,000	50,000	10 UJ			10 U			10 UJ													10 U		10 UJ		10 UJ		10 UJ	
Benzene	5	2,000	1 U			1 UJ			1 U													1 U		1 UJ		1 UJ		1 UJ	
Carbon disulfide	1,000	10,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
Chloroform	5	400	1 U			1 U			1 U													1 U		2 J		1 UJ		1 UJ	
Chloromethane	1,000	10,000	5 U			5 U			5 U													5 U		1.6 J		0.59 J		5 UJ	
Dichlorodifluoromethane	10,000	100,000	5 UJ			5 U			5 UJ													5 U		5 UJ		5 UJ		5 UJ	
Ethylbenzene	700	4,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
Ethyl-t-butyl ether																													
Iodomethane	1,000	10,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
m+p-Xylenes	6,000	6,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
Methylene chloride	5	50,000	2 U			2 U			2 U													2		2 UJ		2 UJ		3.8 U	
Methyl-t-butyl ether	70	50,000	5 U			5 U			14													5 U		5 UJ		5 UJ		5 UJ	
Naphthalene	20	6,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
n-Butylbenzene	NA	NA	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
n-Propylbenzene	1,000	10,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
o-Chlorotoluene																													
o-Xylene	6,000	6,000	5 U			5 U			5 U													5 U		5 UJ		5 UJ		5 UJ	
p-Chlorotoluene																													
Toluene	1,000	6,000	5 U			5 UJ			5 U													5 U		5 UJ		5 UJ		5 UJ	
Semi-Volatile Organic Compounds (ug/L)																													
Acenaphthene	20	3,000	0.2 UJ			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Acenaphthylene	300	3,000	0.2 UJ			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Anthracene	2,000	3,000	0.2 UJ			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Benzo(a)anthracene	1	3,000	0.2 U			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Benzo(a)pyrene	0.2	3,000	0.2 U			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Benzo(b)fluoranthene	1	3,000	0.2 U			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Benzo(g,h,i)perylene	300	3,000	0.2 U			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
bis(2-Ethylhexyl)phthalate	6	30	10 U			10 U			10 U													10 U		10 UJ		10 U		10 U	
Chrysene	2	3,000	0.2 U			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Dibenzo(a,h)anthracene	0.3	3,000	0.2 U			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Fluoranthene	200	200	0.2 U			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Fluorene	300	3,000	0.2 UJ			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Indeno(1,2,3-cd)pyrene	0.5	3,000	0.2 U			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Naphthalene	20	6,000	0.2 UJ			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Pentachlorophenol	1	80	1 U			1 U			1 U													1 UJ		1 UJ		1 U		1 U	
Phenanthrene	50	50	0.2 UJ			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Phenol	4,000	30,000	10 U			10 U			10 U													10 U		10 UJ		R		10 U	
Pyrene	200	3,000	0.2 UJ			0.2 U			0.2 U													0.2 UJ		0.2 UJ		0.2 U		0.2 U	
Polychlorinated Biphenyls (ug/L)																													
Aroclor-1254	0.3	0.3	0.25 U			0.25 U			**4.6**	**2.2**	**1.5**	0.25 U	**3.1**	**1.5**	**3.7**	**2.6**	**1.8**	**1.4**	**3**	**3.4**	0.25 U	0.25 U	0.25 U		0.25 U		0.25 U		0.25 U	
Alcohols																													
iso-Propyl Alcohol																													
Inorganics (mg/L)																													
Arsenic	0.05	0.4	0.01 U			0.01 U			0.01 U													0.01 U		0.01 U		0.01 U		0.01 U	
Barium	2	30																											
Boron	1	10	0.1 U	0.05 U	0.1 U	0.2	0.12	0.26	0.14			0.11			0.13	0.13						0.1 U	0.05 U	0.12 U	0.1 U	0.1 U	0.1 U	0.05 U	0.19
Chromium	0.1	2	0.01 U			0.01 U			0.01 U													0.01 U		0.01 UJ		0.01 UJ		0.01 UJ	
Copper	10	100	0.023 U			0.01 U			0.01 U													0.01 U		0.01 U		0.01 UJ		0.01 UJ	
Iron	NA	NA																											
Lead	0.02	0.03	0.005 U			0.005 U			0.005 U													0.005 U		0.005 U		0.005 UJ		0.005 UJ	
Manganese	NA	NA																											
Mercury	0.001	0.001	0.0002 U			0.0002 U			0.0002 U													0.0002 U		0.0002 U		0.0002 U		0.0002 U	
Nickel	0.08	0.08	0.025 U			0.01 U			0.01 U													0.01 U		0.01 U		0.01 UJ		0.01 UJ	
Selenium	0.05	0.08	0.05 U			0.05 U			0.05 U													0.05 U		0.05 UJ		0.05 UJ		0.05 UJ	
Silver	0.007	0.007	0.005 UJ			0.005 U			0.005 U													0.005 UJ		0.005 UJ		0.005 UJ		0.005 UJ	
Zinc	0.9	0.9	0.16			0.05 U			0.05 U													0.05 U		0.05 U		0.05 U		0.05 U	

Notes:
Summary of detected compounds only
NA= Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J= Estimated result
R= Rejected result, unusable for project decisions
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Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation	MCP	MCP	MW-101B	MW-101B	MW-101C	MW-101C	MW-101C	MW-101C	MW-101C	MW-101C	MW-101C	MW-101C	MW-101C	MW-101C	MW-102A	MW-102A	MW-102A	MW-102B	MW-102B	MW-102C	MW-102C	MW-102C	MW-102C	MW-102C	MW-102C	MW-103A	MW-103A	MW-103A	MW-103B
Date Sampled	RCGW-1	RCGW-2	5/22/2004	5/22/2004	09/16/03	3/3/2004	5/22/2004	5/22/2004	05/22/04	08/22/04	08/22/04	08/22/04	11/14/04	11/14/04	9/10/2003	03/02/04	5/21/2004	9/10/2003	3/21/2004	9/10/2003	11/12/2003	11/12/2003	3/2/2004	05/21/04	11/14/04	9/8/2003	5/21/2004	03/01/04	9/9/2003
Applicable MCP Standard			GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2
Comment									Alpha Lab	Alpha DUP	Alpha Lab	Alpha CON	Alpha Lab	Alpha DUP							total	filtered							
Total Petroleum Hydrocarbons (ug/L)																													
TPH-DRO (Diesel Range)	200	1,000			180										430 J			25 U		720 J						25 U			200 J
TPH-GRO (Gasoline Range)	200	1,000			10 U										43			10 U		15						10 U			10 U
VPH	NA	NA																											
C5-C8 Aliphatics	400	1,000	40 U			**2390**	**3470**	**3360**		**2050**	**1880**		**1830**	**1780**		40 U								50 U					
C9-C12 Aliphatics	1,000	1,000	40 U			400 U	800 U	800 U		250 U	250 U		250 U	250 U		40 U						40 U		50 U				
C9-C10 Aromatics	200	4,000	40 U			400 U	800 U	800 U		250 U	250 U		250 U	250 U		40 U						40 U		50 U				
EPH	NA	NA																											
C9-C18 Aliphatics	1,000	1,000	408			100 U	100 U	100 U								100 U						100 U						
C19-C36 Aliphatics	5,000	20,000	555			205	100 U	100 U								100 U						100 U						
C11-C22 Aromatics	200	30,000	100 U			120	100 U	100 U								100 U						100 U						
Volatile Organic Compounds (ug/L)																													
1,1-Dichloroethane	70	9,000	5 U	0.75 U	5 UJ		5 U	5 U	30 U	5 U	5 U	15 U	75 U	75 U	4.7 J			5 U		0.87 J					0.75	5 UJ			5 UJ
1,1-Dichloroethene	1	1	2 U	0.5 U	2 UJ		2 U	2 U	20 U	2 U	2 U	10 U	50 U	50 U	2 UJ			2 U		2 UJ					0.5 U	2 UJ			2 UJ
1,2,4-Trimethylbenzene	10,000	100,000	5 U	2.5 U	5 UJ		5 U	5 U	100 U	5 U	5 U	50 U	250 U	250 U	5 UJ			5 U		5 UJ					2.5 U	5 UJ			5 UJ
1,3,5-Trimethylbenzene	100	1,000	5 U	2.5 U	5 UJ		5 U	5 U	100 U	5 U	5 U	50 U	250 U	250 U	5 UJ			5 U		5 UJ					2.5 U	5 UJ			5 UJ
4-Isopropyltoluene	NA	NA	5 U		5 UJ		5 U	5 U		5 U	5 U				5 UJ			5 U		5 UJ						5 UJ			5 UJ
4-Methyl-2-pentanone	400	50,000	5 U	5 U	5 UJ		5 U	0.82 J	200 U	5 U	5 U	100 U	500 U	500 U	5 UJ			5 U		5 UJ					5 U	5 UJ			5 UJ
Acetone	3,000	50,000	10 U	98	690 J		14000	11000	3900	5500	3800 E	2200	2900	3400	74 J			220		170 J					5 U	10 UJ			160 J
Benzene	5	2,000	1 U	0.5 U	1 UJ		1 U	1 U	20 U	1 U	1 U	10 U	50 U	50 U	1 UJ			1 U		1 UJ					0.5 U	1 UJ			1 UJ
Carbon disulfide	1,000	10,000	5 U	5 U	5 UJ		19	25	200 U	11	11	100 U	500 U	500 U	5 U			5 U		5 UJ					5 U	5 U			5 J
Chloroform	5	400	1 U	0.75 U	1.7 J		0.75 J	0.83 J	30 U	0.49 J	0.54 J	15 U	75 U	75 U	1 UJ			1 U		1 UJ					0.75 U	1 UJ			1 UJ
Chloromethane	1,000	10,000	5 U	2.5 U	5 UJ		5 U	5 U	100 U	5 U	5 U	50 U	250 U	250 U	5 UJ			5 UJ		5 UJ					2.5 U	0.53 J			5 UJ
Dichlorodifluoromethane	10,000	100,000	5 U	5 U	5 UJ		5 U	5 U	200 U	5 U	5 U	100 U	500 U	500 U	5 UJ			5 UJ		5 UJ					5 U	3 J			5 UJ
Ethylbenzene	700	4,000	5 U	0.5 U	5 UJ		5 U	5 U	20 U	5 U	5 U	10 U	50 U	50 U	5 UJ			5 U		5 UJ					0.5 U	5 UJ			5 UJ
Ethyl-t-butyl ether												40 U																	
Iodomethane	1,000	10,000	5 U		5 UJ		5 U	5 U		5 U	5 U		500 U	500 U	5 UJ			5 U		5 UJ					5 U	5 UJ			5 UJ
m+p-Xylenes	6,000	6,000	5 U	0.5 U	5 UJ		5 U	5 U	20 U	5 U	5 U	10 U	50 U	50 U	5 UJ			5 U		5 UJ					0.5 U	5 UJ			5 UJ
Methylene chloride	5	50,000	2 U	5 U	2 UJ		2 U	2 U	200 U	2 U	2 U	100 U	500 U	500 U	2 UJ			2 U		2 UJ					5 U	2 UJ			2 UJ
Methyl-t-butyl ether	70	50,000	5 U	1 U	5 UJ		5 U	5 U	40 U	5 U	5 U	20 U	100 U	100 U	5 UJ			5 UJ		5 UJ					1 U	5 UJ			5 UJ
Naphthalene	20	6,000		2.5 U	5 UJ				100 U			50 U			5 UJ			5 U		5 UJ						5 UJ			5 UJ
n-Butylbenzene	NA	NA	5 U	0.5 U	5 UJ		5 U	5 U	20 U	5 U	5 U	10 U	50 U	50 U	5 UJ			5 U		5 UJ					0.5 U	5 UJ			5 UJ
n-Propylbenzene	1,000	10,000	5 U	0.5 U	5 UJ		5 U	5 U	20 U	5 U	5 U	10 U	50 U	50 U	5 UJ			5 U		5 UJ					0.5 U	5 UJ			5 UJ
o-Chlorotoluene												50 U	250 U	250 U											2.5 U				
o-Xylene	6,000	6,000	5 U	0.5 U	5 UJ		5 U	5 U	20 U	5 U	5 U	10 U	50 U	50 U	5 UJ			5 U		5 UJ					0.5 U	5 UJ			5 UJ
p-Chlorotoluene												50 U	250 U	250 U											2.5 U				
Toluene	1,000	6,000	5 U	0.75 U	5 UJ		5 U	5 U	30 U	0.2 J	5 U	15 U	75 U	75 U	5 UJ			5 U		5 UJ					0.75 U	5 UJ			5 UJ
Semi-Volatile Organic Compounds (ug/L)																													
Acenaphthene	20	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.06 J					0.2 UJ			0.2 UJ
Acenaphthylene	300	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.2 UJ					0.2 UJ			0.2 UJ
Anthracene	2,000	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.15 J					0.2 UJ			0.2 UJ
Benzo(a)anthracene	1	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.15 J					0.2 UJ			0.2 UJ
Benzo(a)pyrene	0.2	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.13 J					0.2 UJ			0.2 UJ
Benzo(b)fluoranthene	1	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.16 J					0.2 UJ			0.2 UJ
Benzo(g,h,i)perylene	300	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.13 J					0.2 UJ			0.2 UJ
bis(2-Ethylhexyl)phthalate	6	30			10 U										4.9 J			10 U		3.6 J					10 U			12 J
Chrysene	2	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.15 J					0.2 UJ			0.2 UJ
Dibenzo(a,h)anthracene	0.5	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.11 J					0.2 UJ			0.2 UJ
Fluoranthene	200	200			0.2 UJ										0.2 UJ			0.2 UJ		0.18 J					0.2 UJ			0.2 UJ
Fluorene	300	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.06 J					0.2 UJ			0.05 UJ
Indeno(1,2,3-cd)pyrene	0.5	3,000			0.2 UJ										0.2 UJ			0.2 UJ		0.12 J					0.2 UJ			0.2 UJ
Naphthalene	20	6,000			0.2 UJ										0.11 J			0.2 UJ		0.06 J					0.2 UJ			0.08 J
Pentachlorophenol	1	80			1 UJ										1 UJ			1 UJ		1 UJ					1 UJ			1 UJ
Phenanthrene	50	50			0.2 UJ										0.2 UJ			0.2 UJ		0.18 J					0.2 UJ			0.2 UJ
Phenol	4,000	30,000			10 U										10 U			10 U		10 U					10 U			10 UJ
Pyrene	200	3,000			0.13 J										0.2 UJ			0.2 UJ		0.3 J					0.2 UJ			0.2 UJ
Polychlorinated Biphenyls (ug/L)																													
Aroclor-1254	0.3	0.3			0.25 U										0.25 U			0.25 U		0.25 U					0.25 U			0.25 U
Alcohols																													
Iso-Propyl Alcohol													140	140							2 U								
Inorganics (mg/L)																													
Arsenic	0.05	0.4			0.01 U										0.01 U			0.01 U		0.034					0.01 U			0.01 U
Barium	2	30																											
Boron	1	10	0.1 U		0.05 U	0.05 U	0.1 U	0.1 U							0.22 U	0.05 U	0.1 U	0.17	0.1 U	0.13 U			0.05 U	0.1 U	0.11	0.1 U	0.05 U	0.1 U
Chromium	0.1	2			0.01 UJ										0.01 UJ			0.01 U		0.012					0.01 UJ			0.013
Copper	10	100			0.01 UJ										0.01 U			0.01 U		0.01 U					0.01 UJ			0.01 U
Iron	NA	NA																											
Lead	0.02	0.03			0.005 UJ										0.005 U			0.005 U		**0.037**	0.003 U	0.003 U	0.005 U		0.005 U			**0.1**
Manganese	NA	NA																											
Mercury	0.001	0.001			0.0002 U										0.0002 U			0.0002 U		0.0002 U					0.0002 U			0.0002 U
Nickel	0.08	0.08			0.01 UJ										0.01 U			0.01 U		0.01					0.01 UJ			0.01 U
Selenium	0.05	0.08			0.05 UJ										0.05 UJ			0.05 UJ		0.05 UJ					0.05 UJ			0.05 UJ
Silver	0.007	0.007			0.005 UJ										0.005 UJ			0.005 U		0.005 UJ					0.005 UJ			0.005 U
Zinc	0.9	0.9			0.05 U										0.05 U			0.05 U		0.05 U					0.05 U			0.05 U

Notes:
Summary of detected compounds only
NA= Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit

Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation	MCP	MCP	MW-103B	MW-103B	MW-103B	MW-103B	MW-103B	MW-103B	MW-103B	MW-103C	MW-103C	MW-103C	MW-104B	MW-104B	MW-104B	MW-104B	MW-104B	MW-104B	MW-104B	MW-104C	MW-104C	MW-105B	MW-105B	MW-105B
Date Sampled	RCGW-1	RCGW-2	9/9/2003	03/09/04	3/9/2004	6/1/2004	6/1/2004	6/1/2004	6/1/2004	9/11/2003	3/10/2004	6/1/2004	3/11/2004	3/11/2004	03/11/04	3/11/2004	6/3/2004	6/3/2004	3/16/2004	06/02/04	9/9/2003	3/8/2004	06/03/04
Applicable MCP Standard			GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2
Comment			DUP	total	filtered	total	filtered	total	filtered				total	filtered	DUP/total	DUP/filtered								
Total Petroleum Hydrocarbons (ug/L)																								
TPH-DRO (Diesel Range)	200	1,000	310 J							230											25 U			
TPH-GRO (Gasoline Range)	200	1,000	10 U							10 U											10 U			
VPH	NA	NA																						
C5-C8 Aliphatics	400	1,000		106		40 U					40 U		97.3 J		368 J			40 U	40 U					
C9-C12 Aliphatics	1,000	1,000		40 U		40 U					40 U		40 U		40 U			40 U	40 U					
C9-C10 Aromatics	200	4,000		40 U		40 U					40 U		40 U		40 U			40 U	40 U					
EPH	NA	NA																						
C9-C18 Aliphatics	1,000	1,000		100 U		100 U					100 U		95.2 U		95.2 U			100 U	100 U					
C19-C36 Aliphatics	5,000	20,000		100 U		100 U					100 U		95.2 U		95.2 U			100 U	100 U					
C11-C22 Aromatics	200	30,000		100 U		100 U					100 U		95.2 U		95.2 U			100 U	100 U					
Volatile Organic Compounds (ug/L)																								
1,1-Dichloroethane	70	9,000	5 UJ							5 UJ			5 U		5 U				5 U		4.8 J			
1,1-Dichloroethene	1	1	2 UJ							2 UJ			2 U		2 U				2 U		2 U			
1,2,4-Trimethylbenzene	10,000	100,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
1,3,5-Trimethylbenzene	100	1,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
4-Isopropyltoluene	NA	NA	5 UJ							5 UJ			5 U		5 U				0.72 J		5 U			
4-Methyl-2-pentanone	400	50,000	5 UJ							5 UJ			5 U		5 U				5 U		5 UJ			
Acetone	3,000	50,000	340 J							6200 J			1500		1700				10 U		160			
Benzene	5	2,000	1 UJ							1 UJ			1 U		1 U				1 U		1 U			
Carbon disulfide	1,000	10,000	5 UJ							5 U			0.87 J		7.6				5 U		5 U			
Chloroform	5	400	1.3							1 UJ			1 UJ		0.64 J				1 U		1 U			
Chloromethane	1,000	10,000	5 UJ							0.53 J			5 U		5 U				5 U		5 UJ			
Dichlorodifluoromethane	10,000	100,000	5 UJ							5 UJ			5 UJ		5 UJ				5 UJ		5 UJ			
Ethylbenzene	700	4,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
Ethyl-t-butyl ether																								
Iodomethane	1,000	10,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
m+p-Xylenes	6,000	6,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
Methylene chloride	5	50,000	2 UJ							2 UJ			2 U		2 U				2 U		2 U			
Methyl-t-butyl ether	70	50,000	5 UJ							5 UJ			5 U		5 U				5 U		1.9 J			
Naphthalene	20	6,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
n-Butylbenzene	NA	NA	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
n-Propylbenzene	1,000	10,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
o-Chlorotoluene																								
o-Xylene	6,000	6,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
p-Chlorotoluene																								
Toluene	1,000	6,000	5 UJ							5 UJ			5 U		5 U				5 U		5 U			
Semi-Volatile Organic Compounds (ug/L)																								
Acenaphthene	20	3,000	0.06 J							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Acenaphthylene	300	3,000	0.05 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Anthracene	2,000	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Benzo(a)anthracene	1	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Benzo(a)pyrene	0.2	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Benzo(b)fluoranthene	1	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Benzo(g,h,i)perylene	300	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
bis(2-Ethylhexyl)phthalate	6	30	8.4 J							13 J			3.2 J		10 UJ				10 U		7.9 J			
Chrysene	2	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Dibenzo(a,h)anthracene	0.3	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Fluoranthene	200	200	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.22	0.2 UJ			
Fluorene	300	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Indeno(1,2,3-cd)pyrene	0.5	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Naphthalene	20	6,000	0.17 J							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.09 J			
Pentachlorophenol	1	80	1 UJ							1 UJ			50 U		50 U		1 U	1 U	50 U	1 U	1 U			
Phenanthrene	50	50	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.11 J	0.2 UJ			
Phenol	4,000	30,000	10 UJ							10 UJ			10 U		10 U				10 U		10 U			
Pyrene	200	3,000	0.2 UJ							0.2 UJ			10 U		10 U		0.2 U	0.2 U	10 U	0.2 U	0.2 UJ			
Polychlorinated Biphenyls (ug/L)																								
Aroclor-1254	0.3	0.3	0.25 U							0.25 U			0.25 U	0.25 U	0.25 U	0.25 U			0.25 U		0.25 U			
Alcohols																								
iso-Propyl Alcohol																								
Inorganics (mg/L)																								
Arsenic	0.05	0.4	0.028							0.068			0.01 U		0.01 U				0.01 U		0.01 U			
Barium	2	30																						
Boron	1	10	0.16 U	0.05 U		0.1 U		0.1 U		0.15 U	0.05 U	0.1 U	0.1 U		0.1 U			0.1 U	0.1 U	0.1 U	0.18	0.05 U	0.1 U
Chromium	0.1	2	0.013							0.04			0.088 J		0.076 J				0.013		0.01 U			
Copper	10	100	0.01 U							0.01 U			0.01 U		0.01 U				0.011 J		0.01 U			
Iron	NA	NA																						
Lead	0.02	0.03	0.11	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.02			0.005 U		0.005 U				0.005 U		0.005 U			
Manganese	NA	NA																						
Mercury	0.001	0.001	0.0002 U							0.0002 U			0.0002 U		0.0002 U				0.0002 U		0.0002 U			
Nickel	0.08	0.08	0.01 U							0.031			0.053		0.046				0.01 U		0.01 U			
Selenium	0.05	0.08	0.05 UJ							0.05 UJ			0.05 U		0.05 U				0.05 U		0.05 UJ			
Silver	0.007	0.007	0.005 U							0.005 UJ			0.005 U		0.005 U				0.005 U		0.005 U			
Zinc	0.9	0.9	0.05 U							0.13			0.05 U		0.05 U				0.05 U		0.05 U			

Notes:
Summary of detected compounds only
NA= Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J= Estimated result
R= Rejected result, unusable for project decisions
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Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation	MCP	MCP	MW-105C	MW-105C	MW-105C	MW-103C	MW-105C	MW-105C	MW-106A	MW-106B	MW-106B	MW-106C	MW-106D	MW-107B	MW-107B	MW-107B	MW-107B	MW-107B	MW-107C	MW-107C	MW-107C	MW-107D	MW-107D	MW-107D
Date Sampled	RCGW-1	RCGW-2	9/9/2003	11/26/2003	11/26/03	3/3/2004	6/3/2004	8/27/2004	11/3/2004	11/16/2004	11/16/2004	11/17/2004	11/3/2004	3/13/2004	5/22/2004	5/22/2004	8/29/2004	8/29/2004	03/13/04	5/22/2004	11/19/2004	3/13/2004	05/22/04	5/22/2004
Applicable MCP Standard			GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	DUP	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2
Comment					Alpha Lab/DUP									total	total	filtered	total	filtered				total	total	total/DUP
Total Petroleum Hydrocarbons (ug/L)																								
TPH-DRO (Diesel Range)	200	1,000	25 U																					
TPH-GRO (Gasoline Range)	200	1,000	10 U																					
VPH	NA	NA																						
C5-C8 Aliphatics	400	1,000							50 U	50 U	50 U	50 U	50 U	40 U							50 U	40 U		
C9-C12 Aliphatics	1,000	1,000							50 U	50 U	50 U	50 U	50 U	45.8							50 U	40 U		
C9-C10 Aromatics	200	4,000							50 U	50 U	50 U	50 U	50 U	40 U							50 U	40 U		
EPH	NA	NA																						
C9-C18 Aliphatics	1,000	1,000							100 U	95.2 U	95.2 U	95.2 U	100 U	95.2 U								95.2 U		
C19-C36 Aliphatics	5,000	20,000							100 U	95.2 U	95.2 U	95.2 U	100 U	95.2 U								95.2 U		
C11-C22 Aromatics	200	30,000							100 U	95.2 U	95.2 U	95.2 U	100 U	95.2 U								95.2 U		
Volatile Organic Compounds (ug/L)																								
1,1-Dichloroethane	70	9,000	3.4 J	3.7 J	3.8 U	3.8 J	2.6 J	4.9 J						5 U					5 U		1.7	0.81 J		
1,1-Dichloroethene	1	1	**1.3** J	**1.5** J	**1.1**	**1.3** J	0.86 J	**1.7** J						2 U					2 U		0.5 U	2 U		
1,2,4-Trimethylbenzene	10,000	100,000	5 U	5 U		5 U	5 U	5 U						4.1 J					8.8		2.5 U	1.8 J		
1,3,5-Trimethylbenzene	100	1,000	5 U	5 U		5 U	5 U	5 U						1.5 J					2.9 J		2.5 U	0.71 J		
4-Isopropyltoluene	NA	NA	5 U	5 U		5 U	5 U	5 U						5 U					1.1 J			5 U		
4-Methyl-2-pentanone	400	50,000	5 J	5 U	25 U	5 U	5 U	5 U						5 U					5 U		5 U	5 U		
Acetone	3,000	50,000	900	630	190	56	5600	5.5 J						18 UJ					11 J		5 U	28 UJ		
Benzene	5	2,000	1 U	1 U		1 U	1 U	1 U						1.5					1 U		0.5 U	1 U		
Carbon disulfide	1,000	10,000	5 U	5 U	25 U	5 U	5 U	5 U						5 U					5 U		5 U	5 U		
Chloroform	5	400	0.86 J	1 U	3.8 U	1 U	1 U	1 U						1 U					1 U		0.75 U	1 U		
Chloromethane	1,000	10,000	1.9 J	5 U	12 U	2.3 J	0.36 J	5 U						5 U					0.65 J		2.5 U	5 U		
Dichlorodifluoromethane	10,000	100,000	5 UJ	5 U	25 U	5 UJ	5 U	5 U						5 UJ					5 UJ		5 U	5 UJ		
Ethylbenzene	700	4,000	5 U	5 U		5 U	5 U	5 U						1.6 J					2.4 J		0.5 U	0.5 J		
Ethyl-t-butyl ether																								
Iodomethane	1,000	10,000	5 U	5 U		1.2 J	5 U	5 U						5 UJ					5 U		5 U	5 UJ		
m+p-Xylenes	6,000	6,000	5 U	5 U		5 U	5 U	5 U						6.7					10		0.5 U	2.6 J		
Methylene chloride	5	50,000	2 U	2 U	25 U	2 U	2 U	2 U						2 U					2 U		5 U	2 U		
Methyl-t-butyl ether	70	50,000	3.6 J	2.8 J	5 U	1.5 J	2 J	2.1 J						1.5 J					5 U		1 U	5 U		
Naphthalene	20	6,000	5 U	5 U		5 U								1.6 J					2.2 J			5 U		
n-Butylbenzene	NA	NA	5 U	5 U		5 U	5 U	5 U						5 U					0.71 J		0.5 U	5 U		
n-Propylbenzene	1,000	10,000	5 U	5 U		5 U	5 U	5 U						0.58 J					1.4 J		0.5 U	5 U		
o-Chlorotoluene																					2.5 U			
o-Xylene	6,000	6,000	5 U	5 U		5 U	5 U	5 U						3.5 J					5		0.5 U	1.4 J		
p-Chlorotoluene																					2.5 U			
Toluene	1,000	6,000	5 U	5 U		5 U	5 U	5 U						8.7					5.3		0.75 U	1.3 J		
Semi-Volatile Organic Compounds (ug/L)																								
Acenaphthene	20	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Acenaphthylene	300	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Anthracene	2,000	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Benzo(a)anthracene	1	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Benzo(a)pyrene	0.2	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Benzo(b)fluoranthene	1	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Benzo(g,h,i)perylene	300	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
bis(2-Ethylhexyl)phthalate	6	30	10 UJ											10 U	10 U				10 U			10 U		
Chrysene	2	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Dibenzo(a,h)anthracene	0.3	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Fluoranthene	200	200	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Fluorene	300	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Indeno(1,2,3-cd)pyrene	0.5	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Naphthalene	20	6,000	0.2 UJ											10 U		0.27 U			10 U			10 U	0.2 U	
Pentachlorophenol	1	80	1 UJ											50 U		1 U			2.3 J			50 UJ	1 U	
Phenanthrene	50	50	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Phenol	4,000	30,000	10 U											2.2 J	10 U				10 UJ			10 UJ		
Pyrene	200	3,000	0.2 UJ											10 U		0.2 U			10 U			10 U	0.2 U	
Polychlorinated Biphenyls (ug/L)																								
Aroclor-1254	0.3	0.3	0.25 U											**5.5** J	**3.9**	**0.38**	**0.42**	0.25 U	0.25 U			**2**	0.25 U	0.25 U
Alcohols																								
Iso-Propyl Alcohol																					2 U	2 U		
Inorganics (mg/L)																								
Arsenic	0.05	0.4	0.01 U											0.01 U					0.01 U			0.01 U		
Barium	2	30																						
Boron	1	10	0.12 U			0.05 U	0.1 U							0.26	0.1 U				0.4	0.38		0.13	0.2	
Chromium	0.1	2	0.01 U											0.026 J					0.01 UJ			0.01 UJ		
Copper	10	100	0.01 U											0.016					0.01 U			0.01 U		
Iron	NA	NA																						
Lead	0.02	0.03	0.005 U											0.016 J					0.005 U			0.005 U		
Manganese	NA	NA																						
Mercury	0.001	0.001	0.0002 U											0.0002 UJ					0.0002 UJ			0.0002 UJ		
Nickel	0.08	0.08	0.01 U											0.016					0.01 U			0.01 U		
Selenium	0.05	0.08	0.05 UJ											0.05 U					0.05 U			0.05 U		
Silver	0.007	0.007	0.005 U											0.005 U					0.005 U			0.005 U		
Zinc	0.9	0.9	0.05 U											0.12					0.05 U			0.05 U		

Notes:
Summary of detected compounds only
NA = Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J = Estimated result
R = Rejected result, unusable for project decisions
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Table 23
Summary of Validated Groundwater Analytical Data
2003 and 2004 Sampling (Non-Radiological)
Yankee Nuclear Power Station
Rowe, MA

Station/Sample Designation	MCP	MCP	MW-107D	MW-107D	MW-107D	MW-108A	MW-108A	MW-108B	MW-108C	MW-109B	MW-109C	MW-109C	MW-109D	MW-109D	DW001	DW001	DW001	DW002	DW002	DW002	OSR-1	OSR-1	OSR-1	OSR-1	SP001	SP001	Sherman Spring
Date Sampled	RCGW-1	RCGW-2	8/28/2004	8/28/2004	11/19/2004	9/8/2004	9/8/2004	9/8/2004	9/8/2004	9/7/2004	9/7/2004	11/2/2004	9/7/2004	11/3/2004	7/17/2003	03/17/04	6/1/2004	07/17/03	3/17/2004	6/1/2004	8/7/2003	3/17/04	6/7/04	8/19/04	7/7/03	3/17/04	6/1/04
Applicable MCP Standard	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-1	GW-1	GW-1	GW-1	GW-1	GW-1	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2	GW-2
Comment			total	filtered																							
Total Petroleum Hydrocarbons (ug/L)																											
TPH-DRO (Diesel Range)	200	1,000													25 U			25 U			120 J				25 U		
TPH-GRO (Gasoline Range)	200	1,000													10 U			10 U			10 U				10 U		
VPH	NA	NA																									
C5-C8 Aliphatics	400	1,000		50 U		50 U		50 U	50 U	50 U	50 U	50 U	50 U	50 U		40 U						40 U					
C9-C12 Aliphatics	1,000	1,000		50 U		50 U		50 U	50 U	50 U	50 U	50 U	50 U	50 U		40 U						40 U					
C9-C10 Aromatics	200	4,000		50 U		50 U		50 U	50 U	50 U	50 U	50 U	50 U	50 U		40 U						40 U					
EPH	NA	NA																									
C9-C18 Aliphatics	1,000	1,000				100 U		100 U	100 U	100 U	100 U		100 U			100 U						100 U					
C19-C36 Aliphatics	5,000	20,000				100 U		100 U	100 U	100 U	100 U		100 U			100 U						100 U					
C11-C22 Aromatics	200	30,000				100 U		100 U	100 U	100 U	100 U		100 U			100 U						100 U					
Volatile Organic Compounds (ug/L)																											
1,1-Dichloroethane	70	9,000			1.3	0.49 J		5 U	5 U	5 U	5 U	0.75 U	5 U	0.75 U	5 U			5 U			5 UJ			5 U	5 U		
1,1-Dichloroethene	1	1			0.5 U	2 U		5 U	2 U	2 U	2 U	0.5 U	2 U	0.5 U	2 U			2 U			2 UJ			2 U	2 U		
1,2,4-Trimethylbenzene	10,000	100,000			2.5 U	5 U		5 U	5 U	5 U	5 U	2.5 U	5 U	2.5 U	5 U			5 U			5 UJ			5 U	5 U		
1,3,5-Trimethylbenzene	100	1,000			2.5 U	5 U		5 U	5 U	5 U	5 U	2.5 U	5 U	2.5 U	5 U			5 U			5 UJ			5 U	5 U		
4-Isopropyltoluene	NA	NA				5 U		5 U	5 U	0.33 J	5 U		5 U		5 U			5 U			5 UJ			5 U	5 U		
4-Methyl-2-pentanone	400	50,000			5 U	5 U		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U			5 U			5 UJ			5 U	5 U		
Acetone	3,000	50,000			5 U	10 U		10 U	5.6 J	10 U	10 U	5 U	10 U	5 U	10 U			10 U			10 UJ			R-1 J	10 U		
Benzene	5	2,000			0.5 U	1 U		1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U			1 U			1 UJ			1 U	1 U		
Carbon disulfide	1,000	10,000			5 U	0.51 J		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U			5 U			5 UJ			5 U	5 U		
Chloroform	5	400			0.75 U	1 U		1 U	1 U	1 U	1 U	0.75 U	1 U	0.75 U	1 U			1 U			1 UJ			1 U	1 U		
Chloromethane	1,000	10,000			2.5 U	5 U		5 U	5 U	5 U	5 U	2.5 U	5 U	2.5 U	5 U			5 U			5 UJ			5 U	5 U		
Dichlorodifluoromethane	10,000	100,000			5 U	5 U		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U			5 U			5 UJ			5 U	5 U		
Ethylbenzene	700	4,000			0.5 U	5 U		5 U	5 U	5 U	5 U	0.5 U	5 U	0.5 U	5 U			5 U			5 UJ			5 U	5 U		
Ethyl-t-butyl ether																											
Iodomethane	1,000	10,000			5 U	5 U		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U			5 U			5 UJ			5 U	5 U		
m+p-Xylenes	6,000	6,000			0.5 U	5 U		5 U	5 U	5 U	5 U	0.5 U	5 U	0.5 U	5 U			5 U			5 UJ			5 U	5 U		
Methylene chloride	5	50,000			5 U	2 U		2 U	2 U	2 U	2 U	5 U	2 U	5 U	2 U			2 U			2 UJ			2 U	2 U		
Methyl-t-butyl ether	70	50,000			1 U	5 U		5 U	5 U	5 U	5 U	1 U	5 U	1 U	5 U			5 U			5 UJ			5 U	5 U		
Naphthalene	20	6,000													5 U			5 U			5 UJ				5 U		
n-Butylbenzene	NA	NA			0.5 U	5 U		5 U	5 U	5 U	5 U	0.5 U	5 U	0.5 U	5 U			5 U			5 UJ			5 U	5 U		
n-Propylbenzene	1,000	10,000			0.5 U	5 U		5 U	5 U	5 U	5 U	0.5 U	5 U	0.5 U	5 U			5 U			5 UJ			5 U	5 U		
o-Chlorotoluene					2.5 U							2.5 U		2.5 U													
o-Xylene	6,000	6,000			0.5 U	5 U		5 U	5 U	5 U	5 U	0.5 U	5 U	0.5 U	5 U			5 U			5 UJ			5 U	5 U		
p-Chlorotoluene					2.5 U							2.5 U		2.5 U													
Toluene	1,000	6,000			0.75 U	0.31 J		3.7 J	0.32 J	2.8 J	5 U	0.75 U	5 U	0.75 U	5 U			5 U			5 UJ			5 U	5 U		
Semi-Volatile Organic Compounds (ug/L)																											
Acenaphthene	20	5,000				0.11 J		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Acenaphthylene	300	3,000				0.1 J		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Anthracene	2,000	3,000				0.13 J		0.2 U	0.2 U	0.1 J	0.2 U		0.12 J		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Benzo(a)anthracene	1	3,000				0.2 U		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Benzo(a)pyrene	0.2	3,000				0.2 U		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Benzo(b)fluoranthene	1	3,000				0.2 U		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Benzo(g,h,i)perylene	300	3,000				0.2 U		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
bis(2-Ethylhexyl)phthalate	6	30				10 U	10 U	36 B	10 U	10 U	10 U		10 U		10 U			2.8 J			10 U				10 U		
Chrysene	2	3,000				0.2 U		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Dibenzo(a,h)anthracene	0.5	3,000				0.2 U		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Fluoranthene	200	200				0.13 J		0.1 J	0.14 J	0.12 J	0.11 J		0.11 J		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Fluorene	300	3,000				0.2 U		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Indeno(1,2,3-cd)pyrene	0.5	3,000				0.2 U		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Naphthalene	20	6,000				0.2		0.2 U	0.2 U	0.2 U	0.2 U		0.2 U		0.2 UJ			0.2 UJ			0.18 J				0.2 UJ		
Pentachlorophenol	1	80				1 U		4.2	0.2 U	14	6.2		2.1		1 UJ			1 UJ			1 UJ				1 UJ		
Phenanthrene	50	50				0.12 J		0.2 U	0.1 J	0.1 J	0.2 U		0.1 J		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Phenol	4,000	30,000				10 U	10 U	10 U	10 U	10 U	10 U		10 U		10 U			10 U			R				10 U		
Pyrene	200	3,000				0.13 J		0.2 U	0.13 J	0.13 J	0.11 J		0.11 J		0.2 UJ			0.2 UJ			0.2 UJ				0.2 UJ		
Polychlorinated Biphenyls (ug/L)																											
Aroclor-1254	0.3	0.3	0.45	0.25 U		0.25 U		0.25 U	0.25 U	0.25 U	0.25 U		0.25 U		0.25 U		0.25 U	0.25 U			0.25 U				0.25 U		
Alcohols																											
Iso-Propyl Alcohol												2 U		2 U													
Inorganics (mg/L)																											
Arsenic	0.05	0.4				0.01 U		0.01 U	0.01 U	0.01 U	0.01 U		0.01 U		0.01 U			0.01 U			0.01 U			0.01 U	0.01 U		
Barium	2	30																			0.086			0.1			
Boron	1	10				0.1 U		0.1 U	0.1 U	0.1 U	0.1 U		0.1 U		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	0.1 U	0.1 U
Chromium	0.1	2				0.1 U		0.01 U	0.01 U	0.01 U	0.01 U		0.01 U		0.01 UJ			0.01 UJ			0.01 U			0.01 U	0.01 UJ		
Copper	10	100				0.1 U		0.01 U	0.01 U	0.01 U	0.01 U		0.01 U		0.01 UJ			0.01 UJ			0.01 U			0.01 U	0.01 UJ		
Iron	NA	NA																			110			78			
Lead	0.02	0.03				0.005 U		0.005 U	0.005 U	0.005 U	0.005 U		0.005 U		0.011 U			0.005 U			0.005 U			0.005 U	0.0066 U		
Manganese	NA	NA																			7.4			5.3			
Mercury	0.001	0.001				0.0002 U		0.0002 U	0.0002 U	0.0002 U	0.0002 U		0.0002 U		0.0002 U			0.0002 U			0.0002 U			0.0002 U	0.0002 U		
Nickel	0.08	0.08				0.1 U		0.01 U	0.01 U	0.01 U	0.01 U		0.01 U		0.01 U			0.01 U			0.011			0.01 U	0.01 U		
Selenium	0.05	0.08				0.05 U		0.05 U	0.05 U	0.05 U	0.05 U		0.05 U		0.05 U			0.05 U			0.05 U			0.05 U	0.05 U		
Silver	0.007	0.007				0.005 U		0.005 U	0.005 U	0.005 U	0.005 U		0.005 U		0.005 U			0.005 U			0.005 UJ			0.005 U	0.005 U		
Zinc	0.9	0.9				0.05 U		0.05 U	0.05 U	0.05 U	0.05 U		0.05 U		0.01 U			0.05 U			0.05 U			0.05 U	0.05 U		

Notes:
Summary of detected compounds only
NA= Not Available
Blank cells were not analyzed
Bold and shaded cells detected above applicable screening value
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit

Table 24
Statistical Data Summary for Sediments - Sherman Reservoir (Radiological)
Yankee Nuclear Power Station
Rowe, MA

Nuclide	# of Sample Results	# of Detects	Mean (pCi/g)	Std. Dev	Minimum (pCi/g)	Maximum (pCi/g)	Median (pCi/g)
Ag-108m	6	1	0.029	N/A	0.029	0.029	0.029
Am-241	6	0	N/A	N/A	N/A	N/A	N/A
Co-60	19	10	0.173	0.213	0.042	0.764	0.092
Cs-134	17	1	0.044	N/A	0.044	0.044	0.044
Cs-137	48	48	0.928	0.673	0.052	3.030	0.884
Eu-152	1	0	N/A	N/A	N/A	N/A	N/A
Sb-125	2	0	N/A	N/A	N/A	N/A	N/A
Sr-90	10	10	0.188	0.079	0.070	0.330	0.190

* Table provides for results of radionuclides determined to be potentially of concern at YNPS. Analyses were performed for the following radionuclides: Ac-228, Ac/Th-228, Ag-108m, Ag-110m, Am-241, Ba-140, Be-7, Bi-212, Bi-214, Ce-141, Ce-144, Co-57, Co-58, Co-60, Cr-51, Cs-134, Cs-137, Eu-152, Fe-59, I-131, I-133, K-40, Mn-54, Mo-99, Nb-95, Np-239, Pb-212, Pb-214, Ra-226, Ru-103, Ru-106, Sb-124, Sb-125, Se-75, Sr-90, Te/I-132, Tl-208, Zn-65, and Zr-95.
Analysis for Nb-94 was not conducted.

Table 25
OHM in Sediment (Non-Radiological)
Sherman Reservoir (002-041)
Yankee Nuclear Power Station
Rowe, MA

Station Sample Designation Date Sampled Comment	Site Background Maximum	Background 3X	Background 5X	SD-002 SD-002-00-04-I 8/14/2003	SD-004 SD-004-00-04-I 8/14/2003	SD-008 SD-008-00-04-I 8/12/2003	SD-009 SD-009-00-04-I 8/12/2003	SD-010 SD-010-00-04-I 8/12/2003	SD-011 SD-011-00-04-I 8/12/2003	SD-011 SD-011-05-09-I 8/12/2003	SD-012 SD-012-00-04-I 8/12/2003	SD-013 SD-013-00-04-I 8/12/2003	SD-014 SD-014-00-04-I 8/12/2003	SD-014 SD-014-06-12-I 8/12/2003	SD-015 SD-015-00-04-I 8/12/2003	SD-016 SD-016-00-04-I 8/13/2003	SD-017 SD-017-00-04-I 8/13/2003	SD-017 SD-017-04-08-I 8/13/2003	SD-018 SD-018-00-04-I 8/13/2003
Total Petroleum Hydrocarbons (mg/Kg)																			
TPH-DRO	80	240	400	2.6 U		40 U	36 J	32 U	24 UJ	5.2	26 UJ	86 J	48 J	2.5	28 UJ	12 J	67 J	8.4	17 UJ
Volatile Organic Compounds (ug/Kg)																			
1,1-Dichloroethene	24			5 UJ					5 UJ	5 UJ			5 UJ	5 U			40 J	7.3	
1,2,4-Trimethylbenzene	ND			5 UJ					5 UJ	4.2 J			5 UJ	5 U			5 U	5 U	
2-Butanone	67			10 UJ					5.4 J	6.6 J			10 UJ	10 U			28	10 U	
4-Isopropyltoluene	ND			5 UJ					5 UJ	5 UJ			5 UJ	5 U			5 U	5 U	
4-Methyl-2-pentanone	ND			5 UJ					5 UJ	5 UJ			5 UJ	5 U			2.8 J	5 U	
Acetone	280			10 UJ					35 J	73 J			240 UJ	10 UJ			190 J	3 J	
Carbon disulfide	ND			5 UJ					5 UJ	5 UJ			5 UJ	5 U			8.8	5 U	
Chloromethane	ND			5 UJ					5 UJ	5 UJ			5 UJ	5 U			5 U	5 U	
Methylene chloride	ND			15 UJ					15 UJ	15 UJ			15 UJ	15 UJ			15 UJ	15 UJ	
Naphthalene	ND			5 UJ					5 UJ	5 UJ			5 UJ	5 U			5 UJ	5 U	
Toluene	31			11 J					15 UJ	5 UJ			24 UJ	13 U			22	5.2 U	
TOTAL VOCs	402	1,206	2,010	11					40.4	138.8			-	-			346.6	10.3	
Semi-Volatile Organic Compounds (ug/Kg)																			
2-Methylnaphthalene	ND			460 U					430 U	400 U			730 U	360 U			590 U	430 U	
2-Methylphenol	150			460 U					430 U	400 U			730 U	360 U			590 U	430 U	
3+4-Methylphenol	230			460 U					430 U	400 U			730 U	360 U			590 U	430 U	
Acenaphthene	ND			460 U					430 U	160 J			730 U	360 U			590 U	430 U	
Anthracene	ND			460 U					430 U	240 J			730 U	360 U			590 U	430 U	
Benzo(a)anthracene	200			460 U					430 U	320 J			730 U	360 U			590 U	430 U	
Benzo(a)pyrene	230			460 U					430 U	270 J			730 U	360 U			590 U	430 U	
Benzo(b)fluoranthene	220			460 U					430 U	400 U			730 U	360 U			590 U	430 U	
Benzo(g,h,i)perylene	ND			460 U					430 U	120 J			730 U	360 U			590 U	430 U	
Benzo(k)fluoranthene	220			460 U					430 U	400 U			730 U	360 U			590 U	430 U	
bis(2-Ethylhexyl)phthalate	ND			460 U					140 J	140 J			730 UJ	360 UJ			590 UJ	430 UJ	
Carbazole	ND			460 U					430 U	400 U			730 U	360 U			590 U	430 U	
Chrysene	230			460 U					430 U	290 J			730 U	360 U			590 U	430 U	
Dibenzo(a,h)anthracene	ND			460 U					430 U	400 U			730 U	360 U			590 U	430 U	
Dibenzofuran	ND			460 U					430 U	120 J			730 U	360 U			590 U	430 U	
Di-n-octyl phthalate	ND			460 U					320 J	400 U			730 UJ	360 UJ			590 UJ	430 UJ	
Fluoranthene	430			460 U					120 J	700			220 J	360 U			130 J	430 U	
Fluorene	ND			460 U					430 U	180 J			730 U	360 U			590 U	430 U	
Indeno(1,2,3-cd)pyrene	ND			460 U					430 U	110 J			730 U	360 U			590 U	430 U	
Naphthalene	ND			460 U					430 U	400 U			730 U	360 U			590 U	430 U	
Phenanthrene	140			460 U					430 U	740			730 U	360 U			590 U	430 U	
Pyrene	380			460 U					430 U	520			180 J	360 U			120 J	430 U	
TOTAL SVOCs	2,430	7,290	12,150	-					580	3910			400	-			250	-	
Polychlorinated Biphenyls (ug/Kg)																			
Aroclor-1254	ND	ND	ND	43 U	46 U	63 U	450	53 U	170	47	460	76 U	76 U	36 U	46 U	43 U	59 U	40 U	98
Aroclor-1260	ND	ND	ND	43 U	46 U	63 U	59 U	53 U	40 U	40 U	43 U	76 U	76 U	36 U	46 U	43 U	59 U	40 U	53 U
Total PCBs *	578	1,734	2,890	-	-	-	450	-	170	47	460	-	-	-	-	-	-	-	98
Inorganics (mg/Kg)																			
Antimony	ND	ND	ND	R	R	0.67 U	0.6 U	0.56 U	0.42 U	0.41 U	0.43 U	R	R	R	R	R	1.7 J	R	
Arsenic	3	8	14	0.22 U	0.22 U	3.2	3.3	1.1 J	1 J	0.74 J	1.4 J	R	R	R	R	0.21 UJ	1.2 J	0.2 UJ	0.88 J
Boron	NA	NA	NA	11 U	14 U	28 U													
Cadmium	ND	ND	ND	0.92 U	0.93 U	6.7	3.1	2.1 U	1.7 U	1.6 U	1.5 U	2.3 UJ	2.8 UJ	1.4 UJ	1.9 U	0.88 U	1.2 U	0.86 U	1.1 U
Chromium	21	63	105	5.7	6.5	32	14	11	6.4	7.8	2.6	12	25	5.5	6.7	8.5	18	8.1	17
Chromium (Hexavalent)	ND	ND	ND	2.8 UJ	2.8 UJ	4 UJ	3.4 UJ	3.4 UJ	2.6 UJ	2.4 UJ	2.65 UJ	4.6 UJ	4.4 UJ	2.3 UJ	2.7 UJ	2.6 UJ	3.5 UJ	2.4 UJ	3.2 UJ
Copper	45	135	225	29	52	**570**	**300**	16 J	13 J	61	10 J	37 J	67 J	20 J	13	11	27	11	25
Lead	5	16	26	2.7 J	2.5 J	6.5 J	15 J	6.4 J	**34** J	**18** J	**17** J	0.7 UJ	1.1 J	0.34 UJ	0.44 UJ	0.78 J	2.8 J	0.6 J	2.9 J
Lithium	NA	NA	NA	12	14	23													
Mercury	ND	ND	ND	0.48 U	0.45 U	2.1	0.51 U	0.38 U	0.35 U	0.38 U	0.39 U	0.67 U	0.73 U	0.53 U	0.4 U	0.43 U	0.54 U	0.47 U	0.68 U
Nickel	28	84	140	8.8	12	55	42	12	9.7	34	6.6	9.8	18	5.1	7.9	11	19	10	19
Selenium	5	15	25	2.9 J	2.9 J	4.6	6.8 U	6.4 U	5.4 U	4.9 U	4.7 U	7.3 U	8.8 U	4.3 U	5.9 UJ	2.8 UJ	3.9 UJ	2.7 UJ	3.5 U
Silver	0.4	1	2	0.29 UJ	0.3 J	0.31 UJ	0.69 UJ	0.65 UJ	0.55 UJ	0.5 UJ	0.48 UJ	0.74 UJ	0.89 UJ	0.44 UJ	0.6 U	0.28 UJ	0.39 UJ	0.27 UJ	0.36 UJ
Thallium	ND	ND	ND	0.68 U	0.69 U	1.7	0.6 U	0.56 U	0.42 U	0.41 U	0.43 U	1.2 U	1.1 U	0.57 U	0.73 U	0.65 U	0.91 U	0.63 U	0.84 U
Zinc	270	810	1,350	72	99	790	370	77	94	250	45	68	150	37 U	72 J	43	100	33	96

Notes:
Summary of detected compounds only
NA= Not Analyzed in Background
ND= Not Detected in Background
- = All constituents below detection limits
Blank Cells Were Not Analyzed
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
Value exceeds 3X Site Background maximum
Value exceeds 5X Site Background maximum
* PCBs not detected in background samples. Average of detections limits used to calculate Site background concentration.

Table 25
OHM in Sediment (Non-Radiological)
Sherman Reservoir (002-041)
Yankee Nuclear Power Station
Rowe, MA

Station	Site	Background	Background	SD-020	SD-021	SD-021	SD-021	SD-023	SD-024	SD-024	SD-025	SD-026	SD-027	SD-027	SD-028	SD-029	SD-029
Sample Designation	Background	3X	5X	SD-020-00-04-I	SD-021-04-08-I	FD002-081303	SD-021-08-14-I	SD-023-00-04-I	SD-024-00-04-I	SD-024-12-18-I	SD-025-00-04-I	SD-026-00-04-I	SD-027-00-04-I	SD-027-08-14-I	SD-028-00-04-I	SD-029-00-04-I	SD-029-08-14-I
Date Sampled	Maximum			8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/13/2003	8/14/2003	8/14/2003
Comment						DUP											
Total Petroleum Hydrocarbons (mg/Kg)																	
TPH-DRO	80	240	400	64 J	68	42 J	81 J	57 J	170 J	88 J	71 J	2.4 U	24	4.4 U	5.9	30	2.4 U
Volatile Organic Compounds (ug/Kg)																	
1,1-Dichloroethene	24				24	28 J	5 U		11	31			3.5 J	8.2		8.6 UJ	5.7
1,2,4-Trimethylbenzene	ND				8 UJ	5 UJ	5 UJ		9 UJ	9 UJ			5 U	5 U		5 U	5 U
2-Butanone	67				29 J	13 J	140		59	120			2.6 J	10 U		5.6 J	2.8 J
4-Isopropyltoluene	ND				8 UJ	5 UJ	5 UJ		9 UJ	9 UJ			5 U	5 U		5 U	5 U
4-Methyl-2-pentanone	ND				8 UJ	3.2 J	5 U		9 U	9 U			5 U	5 U		5 UJ	5 U
Acetone	280				120 J	120 J	270 J		190 J	220 J			20 J	21 J		17	15 UJ
Carbon disulfide	ND				8 UJ	5.8 J	5 U		9 U	5.2 J			5 U	5 U		5 UJ	5 U
Chloromethane	ND				8 UJ	5 UJ	5 U		9 U	9 U			5 U	5 U		5 U	5 U
Methylene chloride	ND				24 UJ	15 UJ	15 UJ		27 UJ	27 UJ			15 UJ	15 UJ		15 U	15 UJ
Naphthalene	ND				8 UJ	5 UJ	5 UJ		R	R			5 UJ	5 U		5 U	5 U
Toluene	31				34 J	25 J	5 U		47 J	52 J			5.9 U	11 U		14	2.6 U
TOTAL VOCs	402	1,206	2,010		207	186	415		307	527.2			26.1	29.2		36.6	8.5
Semi-Volatile Organic Compounds (ug/Kg)																	
2-Methylnaphthalene	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
2-Methylphenol	150				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
3+4-Methylphenol	230				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Acenaphthene	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Anthracene	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Benzo(a)anthracene	200				790 U	530 U	530 U		920 U	830 U			460 U	360 U		130 J	400 U
Benzo(a)pyrene	230				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Benzo(b)fluoranthene	220				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Benzo(g,h,i)perylene	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Benzo(k)fluoranthene	220				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
bis(2-Ethylhexyl)phthalate	ND				790 UJ	530 UJ	530 UJ		920 UJ	830 UJ			460 UJ	360 UJ		460 UJ	400 UJ
Carbazole	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Chrysene	230				790 U	530 U	530 U		920 U	830 U			460 U	360 U		120 J	400 U
Dibenzo(a,h)anthracene	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Dibenzofuran	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Di-n-octyl phthalate	ND				790 UJ	530 UJ	530 UJ		920 UJ	830 UJ			460 UJ	360 UJ		460 UJ	400 UJ
Fluoranthene	430				250 J	530 U	530 U		920 U	200 J			460 U	360 U		330 J	400 U
Fluorene	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Indeno(1,2,3-cd)pyrene	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Naphthalene	ND				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Phenanthrene	140				790 U	530 U	530 U		920 U	830 U			460 U	360 U		460 U	400 U
Pyrene	380				190 J	530 U	530 U		920 U	830 U			460 U	360 U		250 J	400 U
TOTAL SVOCs	2,430	7,290	12,150		440	-	-		-	200			-	-		830	-
Polychlorinated Biphenyls (ug/Kg)																	
Aroclor-1254	ND	ND	ND	69 U	290 J	53 U	53 U	63 U	92 U	190 J	430	40 U	46 U	36 U	36 U	46 U	40 U
Aroclor-1260	ND	ND	ND	69 U	79 U	53 U	53 U	63 U	92 U	82 U	76 U	40 U	46 U	36 U	36 U	46 U	40 U
Total PCBs *	578	1,734	2,890	-	290	-	-	-	-	190	430	-	-	-	-	-	-
Inorganics (mg/Kg)																	
Antimony	ND	ND	ND	R	R	R	R	R	R	R	R	R	R	R	R	0.72 UJ	0.003 UJ
Arsenic	3	8	14	0.34 UJ	1.5 J	1 J	0.9 J	0.3 UJ	0.45 UJ	1.4 J	0.37 UJ	0.19 UJ	0.73 J	1.6	0.18 UJ	1.5 J	0.19 UJ
Boron	NA	NA	NA														
Cadmium	ND	ND	ND	1.5 U	1.7 U	1.1 U	1.1 U	1.3 U	1.9 U	1.7 U	1.6 U	0.79 U	0.99 U	0.76 U	0.76 U	0.98 U	0.83 U
Chromium	21	63	105	19	22	13	12	13	21	22	12	6.6	12	6.8	8.2	9.8	7.8
Chromium (Hexavalent)	ND	ND	ND	4.2 UJ	4.6 UJ	3.2 UJ	3.4 UJ	3.7 UJ	5.6 UJ	5.1 UJ	4.7 UJ	2.3 UJ	2.9 UJ	2.1 UJ	2.3 UJ	3 UJ	2.4 UJ
Copper	45	135	225	33	65	9.7	7.8	18	44	27	20	8.4	9.6	6.8	6.6	13	9.2
Lead	5	16	26	0.77 J	R	2.4 J	0.51 J	0.79 J	1.5 J	1.1 J	2.2 J	0.73 J	0.7 J	0.7 J	0.95 J	R	R
Lithium	NA	NA	NA														
Mercury	ND	ND	ND	0.98 U	0.92 U	0.67 U	0.58 U	0.8 U	0.36 U	0.18 U	0.79 U	0.49 U	0.29 U	0.12 U	0.38 U	0.47 U	0.36 U
Nickel	28	84	140	21	26	11	9.9	14	24	24	14	7.5	14	8.7	8.2	13	8.2
Selenium	5	15	25	4.5 UJ	5.2 UJ	3.4 UJ	3.5 UJ	4 UJ	6 UJ	5.4 J	4.9 U	2.5 U	3.1 UJ	2.4 UJ	2.4 U	3.1 UJ	2.6 UJ
Silver	0.4	1	2	0.46 UJ	0.52 UJ	0.35 UJ	0.35 UJ	0.41 UJ	0.61 UJ	0.55 UJ	0.5 UJ	0.25 UJ	0.31 UJ	0.24 UJ	0.24 UJ	0.31 UJ	0.26 UJ
Thallium	ND	ND	ND	1.1 U	1.2 U	0.81 U	0.82 U	0.94 U	1.4 U	1.3 U	1.2 U	0.58 U	0.73 U	0.56 U	0.56 U	0.72 U	0.01 U
Zinc	270	810	1,350	140	220	61	56	92	160	140	100	36	62	36	39	48	30

Notes:
Summary of detected compounds only
NA= Not Analyzed in Background
ND= Not Detected in Background
- = All constituents below detection limits
Blank Cells Were Not Analyzed
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
Value exceeds 3X Site Background maximum
Value exceeds 5X Site Background maximum
* PCBs not detected in background samples. Average of detections limits used to calculate Site background concentration.

Table 25
OHM in Sediment (Non-Radiological)
Sherman Reservoir (002-041)
Yankee Nuclear Power Station
Rowe, MA

Station Sample Designation Date Sampled Comment	Site Background Maximum	Background 3X	Background 5X	SD-030 SD-030-00-04-I 8/14/2003	SD-031 SD-031-00-04-I 8/14/2003	SD-032 SD-032-00-04-I 8/14/2003	SD-033 SD-033-00-04-I 8/14/2003	SD-034 SD-034-00-04-I 8/13/2003	SD-035 SD-035-00-04-I 8/13/2003	SD-036 SD-036-00-04-I 8/13/2003	SD-037 SD-037-00-04-I 8/13/2003	SD-038 SD-038-00-04-I 8/14/2003	SD-039 SD-039-00-04-I 8/14/2003	SD-040 SD-040-00-04-I 8/14/2003	SD-041 SD-041-00-04-I 8/14/2003
Total Petroleum Hydrocarbons (mg/Kg)															
TPH-DRO	80	240	400	32	64 J	28	52 J	30 J	48 J	42	88 J	100 J	34	79 J	**250** J
Volatile Organic Compounds (ug/Kg)															
1,1-Dichloroethene	24														
1,2,4-Trimethylbenzene	ND														
2-Butanone	67														
4-Isopropyltoluene	ND														
4-Methyl-2-pentanone	ND														
Acetone	280														
Carbon disulfide	ND														
Chloromethane	ND														
Methylene chloride	ND														
Naphthalene	ND														
Toluene	31														
TOTAL VOCs	402	1,206	2,010												
Semi-Volatile Organic Compounds (ug/Kg)															
2-Methylnaphthalene	ND														
2-Methylphenol	150														
3+4-Methylphenol	230														
Acenaphthene	ND														
Anthracene	ND														
Benzo(a)anthracene	200														
Benzo(a)pyrene	230														
Benzo(b)fluoranthene	220														
Benzo(g,h,i)perylene	ND														
Benzo(k)fluoranthene	220														
bis(2-Ethylhexyl)phthalate	ND														
Carbazole	ND														
Chrysene	230														
Dibenzo(a,h)anthracene	ND														
Dibenzofuran	ND														
Di-n-octyl phthalate	ND														
Fluoranthene	430														
Fluorene	ND														
Indeno(1,2,3-cd)pyrene	ND														
Naphthalene	ND														
Phenanthrene	140														
Pyrene	380														
TOTAL SVOCs	2,430	7,290	12,150												
Polychlorinated Biphenyls (ug/Kg)															
Aroclor-1254	ND	ND	ND	46 U	120 J	79 U	R	59 U	76 U	980 J	100 U	120 J	63 U	R	97 J
Aroclor-1260	ND	ND	ND	46 U	R	79 U	R	59 U	76 U	99 U	100 U	R	63 U	R	R
Total PCBs *	578	1,734	2,890	-	120	-	R	-	-	980	-	120	-	R	97
Inorganics (mg/Kg)															
Antimony	ND	ND	ND	0.72 UJ	R	1.2 UJ	R	R	R	R	R	R	0.95 UJ	3.9 J	R
Arsenic	3	8	14	0.88 J	3.2 J	0.39 UJ	2.6 J	0.94 J	1.3 J	2.1 J	2.6	4.8 J	1.9	3.8 J	4.5 J
Boron	NA	NA	NA												
Cadmium	ND	ND	ND	0.97 U	R	3 U	R	1.3 U	1.5 U	2.1 U	2.1 U	R	1.3 U	R	R
Chromium	21	63	105	9.8	27 J	20	8.6 J	18	16	23	24	34 J	13	28 J	30 J
Chromium (Hexavalent)	ND	ND	ND	2.9 UJ	R	5 UJ	R	3.6 UJ	4.4 UJ	6.1 UJ	6.1 UJ	R	3.6 UJ	R	R
Copper	45	135	225	11	120 J	40	20 J	26	28	42	48	100 J	20	57 J	89 J
Lead	5	16	26	0.76 J	3.8 J	1.4 J	3.6 J	3.2 J	5.5 J	7 J	9.5 J	14 J	2.9 J	5.2 J	8.3 J
Lithium	NA	NA	NA												
Mercury	ND	ND	ND	0.54 U	R	0.68 U	R	0.61 U	0.78 U	1.1 U	1.1 U	R	0.13 U	R	R
Nickel	28	84	140	11	31 J	22	9.2 J	21	19	27	28	41 J	13	31 J	35 J
Selenium	5	15	25	3 UJ	R	9.4 UJ	R	4 U	4.8 U	6.4 U	6.6 U	R	4 UJ	R	R
Silver	0.4	1	2	0.31 UJ	R	0.95 UJ	R	0.4 UJ	0.48 UJ	0.65 UJ	0.67 UJ	R	0.41 UJ	R	R
Thallium	ND	ND	ND	0.72 U	R	1.2 U	R	0.93 U	1.1 U	1.5 U	1.6 U	R	0.95 U	R	R
Zinc	270	810	1,350	50	180 J	180	60 J	100	110	160	190	300 J	80	220 J	260 J

Notes:
Summary of detected compounds only
NA= Not Analyzed in Background
ND= Not Detected in Background
- = All constituents below detection limits
Blank Cells Were Not Analyzed
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
Value exceeds 3X Site Background maximum
Value exceeds 5X Site Background maximum
* PCBs not detected in background samples. Average of detections limits used to calculate Site background concentration.

Table 25
OHM in Sediment (Non-Radiological)
Wheeler Brook (100 Series)
Yankee Nuclear Power Station
Rowe, MA

Station Sample Designation Date Sampled	Site Background Maximum	Background 3X	Background 5X	SD-101 SD-101-00-04-I 8/13/2003	SD-102 SD-102-00-04-I 8/13/2003	SD-103 SD-103-00-04-I 8/13/2003	SD-104 SD-104-00-04-I 8/13/2003	SD-105 SD-105-00-04-I 8/13/2003	SD-106 SD-106-00-04-I 8/13/2003
Total Petroleum Hydrocarbons (mg/Kg)									
TPH-DRO	80	240	400	2.8 U	2.6 U	45 J	2.9	8.2	3.2
Volatile Organic Compounds (ug/Kg)									
1,1-Dichloroethene	24			5 U	5 U	R	5 UJ	5 U	3.3 J
1,2,4-Trimethylbenzene	ND			5 U	5 U	R	5 UJ	5 U	5 U
2-Butanone	67			10 U	10 U	R	2.4 J	14	10 U
4-Isopropyltoluene	ND			5 U	5 U	R	5 UJ	5 U	5 U
4-Methyl-2-pentanone	ND			5 U	5 U	R	5 UJ	5 U	5 U
Acetone	280			39 UJ	29 UJ	190 J	18 J	10 UJ	10 UJ
Carbon disulfide	ND			5 U	5 U	R	5 UJ	5 U	5 U
Chloromethane	ND			5 U	5 U	R	5 UJ	5 U	5 U
Methylene chloride	ND			15 UJ	15 UJ	R	15 UJ	15 UJ	15 UJ
Naphthalene	ND			5 U	5 U	R	5 UJ	5 U	5 U
Toluene	31			5 U	5 U	R	7.7 UJ	5 U	5 U
TOTAL VOCs	402	1,206	2,010	-	-	190	20.4	14	3.3
Semi-Volatile Organic Compounds (ug/Kg)									
2-Methylnaphthalene	ND			460 U	430 U	R	400 U	460 U	500 U
2-Methylphenol	150			460 U	430 U	R	400 U	460 U	500 U
3+4-Methylphenol	230			460 U	430 U	R	400 U	460 U	500 U
Acenaphthene	ND			460 U	430 U	R	400 U	460 U	500 U
Anthracene	ND			460 U	430 U	R	400 U	460 U	500 U
Benzo(a)anthracene	200			460 U	430 U	R	400 U	460 U	500 U
Benzo(a)pyrene	230			460 U	430 U	R	400 U	460 U	500 U
Benzo(b)fluoranthene	220			460 U	430 U	R	400 U	460 U	500 U
Benzo(g,h,i)perylene	ND			460 U	430 U	R	400 U	460 U	500 U
Benzo(k)fluoranthene	220			460 U	430 U	R	400 U	460 U	500 U
bis(2-Ethylhexyl)phthalate	ND			460 UJ	430 UJ	R	400 UJ	460 UJ	500 UJ
Carbazole	ND			460 U	430 U	R	400 U	460 U	500 U
Chrysene	230			460 U	430 U	R	400 U	460 U	500 U
Dibenzo(a,h)anthracene	ND			460 U	430 U	R	400 U	460 U	500 U
Dibenzofuran	ND			460 U	430 U	R	400 U	460 U	500 U
Di-n-octyl phthalate	ND			460 UJ	430 UJ	R	400 UJ	460 UJ	500 UJ
Fluoranthene	430			460 U	430 U	R	400 U	460 U	500 U
Fluorene	ND			460 U	430 U	R	400 U	460 U	500 U
Indeno(1,2,3-cd)pyrene	ND			460 U	430 U	R	400 U	460 U	500 U
Naphthalene	ND			460 U	430 U	R	400 U	460 U	500 U
Phenanthrene	140			460 U	430 U	R	400 U	460 U	500 U
Pyrene	380			460 U	430 U	R	400 U	460 U	500 U
TOTAL SVOCs	2430	7,290	12,150	-	-	R	-	-	-
Polychlorinated Biphenyls (ug/Kg)									
Aroclor-1254	ND			46 U	43 U	R	40 U	46 U	46 U
Aroclor-1260	ND			46 U	43 U	R	40 U	46 U	46 U
Total PCBs	578	1734	2890	-	-	R	-	-	-
Inorganics (mg/kg)									
Antimony	ND	ND	ND	R	R	R	R	R	R
Arsenic	2.8	8	14	0.64 UJ	0.21 U	R	0.2 U	R	R
Cadmium	ND	ND	ND	1.9 U	1.7 U	R	1.5 U	1.9 U	1.9 U
Chromium	21	63	105	7.7	7.2	9.8 J	5	9.4	6.1
Chromium (Hexavalent)	ND	ND	ND	2.79 UJ	2.6 UJ	R	2.5 UJ	2.87 UJ	2.98 UJ
Copper	45	135	225	3 U	4.2 U	R	2.4 U	3.5 U	5.9 U
Lead	5.2	16	26	1.8 UJ	0.44	R	1.1 J	0.42 UJ	0.44 UJ
Mercury	ND	ND	ND	0.39 U	0.29 U	R	0.49 U	0.41 U	0.42 U
Nickel	28	84	140	6.7	7.6	12 J	4.1 U	6	5.6
Selenium	4.9	15	25	5.8 UJ	5.3 UJ	R	4.6 UJ	6 UJ	6 UJ
Silver	0.4	1	2	0.59 U	0.54 U	R	0.47 U	0.61 U	0.61 U
Thallium	ND	ND	ND	0.47 U	0.67 U	R	0.61 U	0.71 U	0.73 U
Zinc	270	810	1,350	49 U	45 UJ	R	39 UJ	51 UJ	51 UJ

Notes:
Summary of detected compounds only
- = All constituents below detection limits
ND= Not Detected in Background
Blank Cells Were Not Analyzed
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
* PCBs not detected in background samples. Average of detections limits used to calculate Site background concentration.

Table 25
OHM in Sediment (Non-Radiological)
Deerfield River (200 Series)
Yankee Nuclear Power Station
Rowe, MA

Station Sample Designation Date Sampled	Site Background Maximum	Background 3X	Background 5X	SD-201 SD-201-00-04-I 9/24/2003	SD-202 SD-202-00-04-I 9/24/2003	SD-202 DUP-04 9/24/2003	SD-203 SD-203-00-04-I 9/24/2003	SD-204 SD-204-00-04-I 9/24/2003	SD-205 SD-205-00-04-I 9/24/2003	SD-205 SD-205R2 7/22/2004	SD-205 FD008-072204 7/22/2004	SD-206 SD-206-00-04-I 9/24/2003	SD-207 SD-207-00-04I 7/9/2004	SD-208 SD-208-00-04I 7/9/2004	SD-209 SD-209-00-04I 7/9/2004	SD-210 SD-210-00-04I 7/9/2004	SD-211 SD-211-00-04I 7/22/2004	SD-212 SD-212-00-04I 7/22/2004	SD-213 SD-213-00-04I 7/22/2004	SD-214 SD-214-00-04I 7/22/2004	SD-215 SD-215R-00-04I 7/9/2004	SD-215 FD006-00-04I 7/9/2004
Total Petroleum Hydrocarbons (mg/kg)																						
TPH-DRO (Diesel Range)	80	240	400	2.4 U	2.2 J	2.2 U	6 J	62 J	14 J			49 J										
Volatile Organic Compounds (ug/kg)																						
1,1-Dichloroethene	24			15 U	15 UJ	27 UJ	16 UJ	35 UJ	29 UJ			69 UJ										
1,2,4-Trimethylbenzene	ND			5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ			6 UJ										
2-Butanone	67			10 UJ	10 UJ	10 UJ	10 UJ	12 UJ	12 J			12 UJ										
4-Isopropyltoluene	ND			5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	2 J			6 UJ										
4-Methyl-2-pentanone	ND			5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ			6 UJ										
Acetone	280			10 UJ	10 UJ	28 UJ	10 UJ	10 UJ	76 J			88 UJ										
Bromodichloromethane	NA			5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ			6 UJ										
Bromoform	NA			5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ			6 UJ										
Bromomethane	NA			15 UJ	15 UJ	15 UJ	15 UJ	15 UJ	15 UJ			18 UJ										
Carbon disulfide	ND			5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ			6 UJ										
Chloromethane	ND			1.2 J	5 UJ	5 UJ	1.2 UJ	5 UJ	5 UJ			6 UJ										
Methylene chloride	ND			15 UJ	15 UJ	15 UJ	15 UJ	53 UJ	15 UJ			18 UJ										
Naphthalene	ND			5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ			6 UJ										
Toluene	31			5 UJ	5 UJ	1.9 UJ	5 UJ	12 UJ	5 UJ			3.4 UJ										
TOTAL VOCs	402	1,206	2,010	1.2	-	-	-	-	90			-										
Semi-Volatile Organic Compounds (ug/kg)																						
2-Methylnaphthalene	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
2-Methylphenol	150			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
3+4-Methylphenol	230			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Acenaphthene	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Anthracene	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Benzo(a)anthracene	200			400 U	360 U	360 U	430 U	330 J	400 U			560 U										
Benzo(a)pyrene	230			400 U	360 U	360 U	430 U	320 J	83 J			120 J										
Benzo(b)fluoranthene	220			400 U	360 U	360 U	430 U	310 J	79 J			130 J										
Benzo(g,h,i)perylene	ND			400 U	360 U	360 U	430 U	210 J	400 U			560 U										
Benzo(k)fluoranthene	220			400 U	360 U	360 U	430 U	330 J	78 J			560 U										
bis(2-Ethylhexyl)phthalate	ND			400 U	360 U	360 U	430 U	120 J	400 U			560 U										
Carbazole	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Chrysene	230			400 U	360 U	360 U	430 U	380 J	90 J			120 J										
Dibenzo(a,h)anthracene	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Dibenzofuran	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Di-n-octyl phthalate	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Fluoranthene	430			400 U	360 U	360 U	430 U	670	150 J			200 J										
Fluorene	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Indeno(1,2,3-cd)pyrene	ND			400 U	360 U	360 U	430 U	200 J	400 U			560 U										
Naphthalene	ND			400 U	360 U	360 U	430 U	430 U	400 U			560 U										
Phenanthrene	140			400 U	360 U	360 U	430 U	340 J	80 J			560 U										
Pyrene	380			400 U	360 U	360 U	430 U	540	120 J			170 J										
TOTAL SVOCs	2430	7,290	12,150	-	-	-	-	3,750	680			740										
Polychlorinated Biphenyls (ug/kg)																						
Aroclor-1254	ND			40 U	36 U	33 U	43 U	520	820	36 U	36 U	220	170	82	40 U	86	36 U	38 U	39	300	28 J	15 J
Aroclor-1260	ND			40 U	36 U	33 U	43 U	190	200	36 U	36 U	180	39 U	41 U	40 U	41 U	36 U	38 U	37 U	39 U	41 U	33 U
Total PCBs	578	1,734	2,890	-	-	-	-	710	1,020	-	-	400	170	82	-	86	-	-	39	300	28	15
Inorganics (mg/kg)																						
Antimony	ND	ND	ND	0.6 U	0.53 U	0.53 U	0.64 U	0.66 U	0.59 U			0.88 U										
Arsenic	3	8	14	0.19 U	0.17 U	0.52	1	2.5	1.4			1.6										
Cadmium	ND	ND	ND	0.82 U	0.69 U	0.72 U	0.87 U	0.86 U	0.74 U			1.2 U										
Chromium	21	63	105	9.2	7.4	6.6	7.6	17	12			11										
Chromium (Hexavalent)	ND	ND	ND	2.5 U	2.1 U	2.2 U	2.5 U	2.7 U	2.4 U			3.6 U										
Copper	45	135	225	11	9.7	7.6	11	**150**	28			43										
Lead	5	16	26	2.6	1	1.9	2.6	13	8.4			10										
Mercury	ND	ND	ND	1.1 U	0.79 U	0.72 U	0.86 U	0.86 U	0.94 U			1.2 U										
Nickel	28	84	140	13	9.3	8.8	9.4	17	11			13										
Selenium	5	15	25	2.6 U	2.1 U	2.2 U	2.7 U	3.5	2.8			3.7 U										
Silver	0.4	1.2	2	0.26 U	0.22 U	0.23 U	0.27 U	0.27 U	0.24 U			0.38 U										
Thallium	ND	ND	ND	0.6 U	0.53 U	0.53 U	0.64 U	0.66 U	0.59 U			0.88 U										
Zinc	270	810	1,350	37	29	38	39	210	56			90										

Notes:
Summary of detected compounds only
- = All constituents below detection limits
ND= Not Detected in Background
Blank Cells Were Not Analyzed
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
Value exceeds 3X Site Background maximum
Value exceeds 5X Site Background maximum
* PCBs not detected in background samples. Average of detections limits used to calculate Site background concentration.

Table 25
OHM in Sediment (Non-Radiological)
West Storm Drain Ditch (300 Series)
Yankee Nuclear Power Station
Rowe, MA

Station Sample Designation Date Sampled	Site Background Maximum	Background 3X	Background 5X	SD-302 SD-302-00-04-I 8/12/2003	SD-302 SD-302R-00-04I 6/21/2004	SD-303 SD-303-00-04-I 8/12/2003	SD-303 SD-303R-00-04I 6/21/2004	SD-303 FD002-00-04I 6/21/2004	SD-304 SD-304-00-04-I 8/12/2003	SD-304 FD-003-081203 8/12/2003	SD-305 SD-305-00-04-I 8/12/2003	SD-306 SD-306-00-04I 6/21/2004	SD-307 SD-307-00-04I 6/21/2004	SD-308 SD-308-00-04I 6/21/2004	SD-309 SD-309-00-04I 6/21/2004
Total Petroleum Hydrocarbons (mg/kg)															
TPH-DRO (Diesel Range)	80	240	400	24 UJ		30			24 UJ	24 U	24 UJ				
Volatile Organic Compounds (ug/kg)															
1,1-Dichloroethene	24			21		11 J			5 UJ	5 UJ	5 UJ				
1,2,4-Trimethylbenzene	ND			5 U		5 UJ			5 UJ	5 UJ	5 UJ				
2-Butanone	67			10 U		10 UJ			10 UJ	10 UJ	10 UJ				
4-Isopropyltoluene	ND			5 U		5 UJ			5 UJ	5 UJ	5 UJ				
4-Methyl-2-pentanone	ND			5 U		5 UJ			5 UJ	5 UJ	5 UJ				
Acetone	280			10 U		10 UJ			10 UJ	10 UJ	10 UJ				
Carbon disulfide	ND			5 U		5 UJ			5 UJ	5 UJ	5 UJ				
Chloromethane	ND			5 U		5 UJ			5 UJ	5 UJ	5 UJ				
Methylene chloride	ND			15 U		15 UJ			15 UJ	15 UJ	1.1 J				
Naphthalene	ND			5.7		5 UJ			5 UJ	5 UJ	5 UJ				
Toluene	31			5 U		5 UJ			5 UJ	5 UJ	5 UJ				
TOTAL VOCs	402	1,206	2,010	26.7		11			-	-	1.1				
Semi-Volatile Organic Compounds (ug/kg)															
2-Methylnaphthalene	ND			400 U	410 U	280 J	390 U	390 U	400 U	400 U	400 U	440 U	400 U	450 U	420 U
2-Methylphenol	150			400 U	410 U	430 U	390 U	390 U	400 U	400 U	400 U	440 U	400 U	450 U	420 U
3+4-Methylphenol	230			400 U	410 U	430 U	390 U	390 U	400 U	400 U	400 U	440 U	400 U	450 U	420 U
Acenaphthene	ND			400 U	98 J	1800 J	390 U	390 U	400 U	400 UJ	140 J	440 U	400 U	450 U	420 U
Anthracene	ND			160 J	410 U	2200 J	390 U	390 U	400 U	400 UJ	180 J	440 U	400 U	450 U	420 U
Benzo(a)anthracene	200			780	410 U	6600 J	390 U	390 U	130 J	400 UJ	340 J	130 J	150 J	160 J	420 U
Benzo(a)pyrene	230			830	410 U	5800 J	390 U	390 U	130 J	400 UJ	340 J	100 J	130 J	150 J	420 U
Benzo(b)fluoranthene	220			710	410 U	5600 J	390 U	390 U	400 U	400 UJ	400 U	130 J	140 J	180 J	420 U
Benzo(g,h,i)perylene	ND			490	410 U	2900 J	390 U	390 U	400 U	400 UJ	180 J	440 U	100 J	140 J	420 U
Benzo(k)fluoranthene	220			640	410 U	4600 J	390 U	390 U	400 U	400 UJ	400 U	130 J	160 J	180 J	420 U
bis(2-Ethylhexyl)phthalate	ND			180 J	410 U	200 J	86 J	390 U	150 J	400 U	150 J	440 U	150 J	450 U	420 U
Carbazole	ND			400 U	410 U	2200 J	390 U	390 U	400 U	400 UJ	400 U	440 U	400 U	450 U	420 U
Chrysene	230			760	410 U	6200 J	390 U	390 U	140 J	400 UJ	350 J	160 J	180 J	170 J	420 U
Dibenzo(a,h)anthracene	ND			400 U	410 U	770	390 U	390 U	400 U	400 U	400 U	440 U	400 U	450 U	420 U
Dibenzofuran	ND			400 U	410 U	1300 J	390 U	390 U	400 U	400 UJ	400 U	440 U	400 U	450 U	420 U
Di-n-octyl phthalate	ND			400 U	410 U	430 U	390 U	390 U	400 U	400 U	400 U	440 U	400 U	450 U	420 U
Fluoranthene	430			1500	120 J	14000 J	100 J	390 U	310 J	400 UJ	820	450	390 J	360 J	420 U
Fluorene	ND			400 U	410 U	1900 J	390 U	390 U	400 U	400 UJ	100 J	440 U	400 U	450 U	420 U
Indeno(1,2,3-cd)pyrene	ND			460	410 U	2900 J	390 U	390 U	400 U	400 UJ	140 J	440 U	93 J	110 J	420 U
Naphthalene	ND			400 U	410 U	470	390 U	390 U	400 U	400 U	400 U	440 U	400 U	450 U	420 U
Phenanthrene	140			730	410 U	13000 J	390 U	390 U	210 J	400 UJ	680	330 J	230 J	250 J	420 U
Pyrene	380			1300	410 U	9900 J	390 U	390 U	240 J	400 UJ	630	270 J	260 J	240 J	420 U
TOTAL SVOCs	2,430	7,290	12,150	**8,540**	218	**82,620**	186	-	1,310	-	4,050	2,140	4,893	2,390	-
Polychlorinated Biphenyls (ug/kg)															
Aroclor-1254	ND			950	120	77			350	72	220	480	280		
Aroclor-1260	ND			40 U	41 U	43 U			40 U	40 U	40 U	43 U	40 U		
Total PCBs	578	1,734	2,890	950	120	77			350	72	220	480	280		
Inorganics (mg/kg)															
Antimony	ND	ND	ND	0.62 U		0.66 UJ			0.62 UJ	0.61 U	0.41 U				
Arsenic	3	8	14	1.6		1.4			1.5	1.4	1.7 J				
Cadmium	ND	ND	ND	1.5 U		1.7 U			1.6 U	1.6 U	1.7 U				
Chromium	21	63	105	7.2		4.9			5.6	4.2	4.4				
Chromium (Hexavalent)	ND	ND	ND	2.5 UJ		2.5 UJ			2.4 UJ	2.5 UJ	2.3 UJ				
Copper	45	135	225	19		23			19	16	18				
Lead	5	16	26	3.7		2.7 UJ			0.58 J	**17**	13 J				
Mercury	ND	ND	ND	0.33 U		0.37 U			0.38 U	0.4 U	0.29 U				
Nickel	28	84	140	7.7		9.2			6.4	8.4	5.3				
Selenium	5	15	25	4.7 U		5.2 U			4.9 U	4.9 U	5.2 U				
Silver	0.4	1.2	2.0	0.48 U		0.52 UJ			0.5 UJ	0.5 U	0.53 UJ				
Thallium	ND	ND	ND	0.62 U		0.66 U			0.62 U	0.61 U	0.41 U				
Zinc	270	810	1,350	86		83			86	59	81				

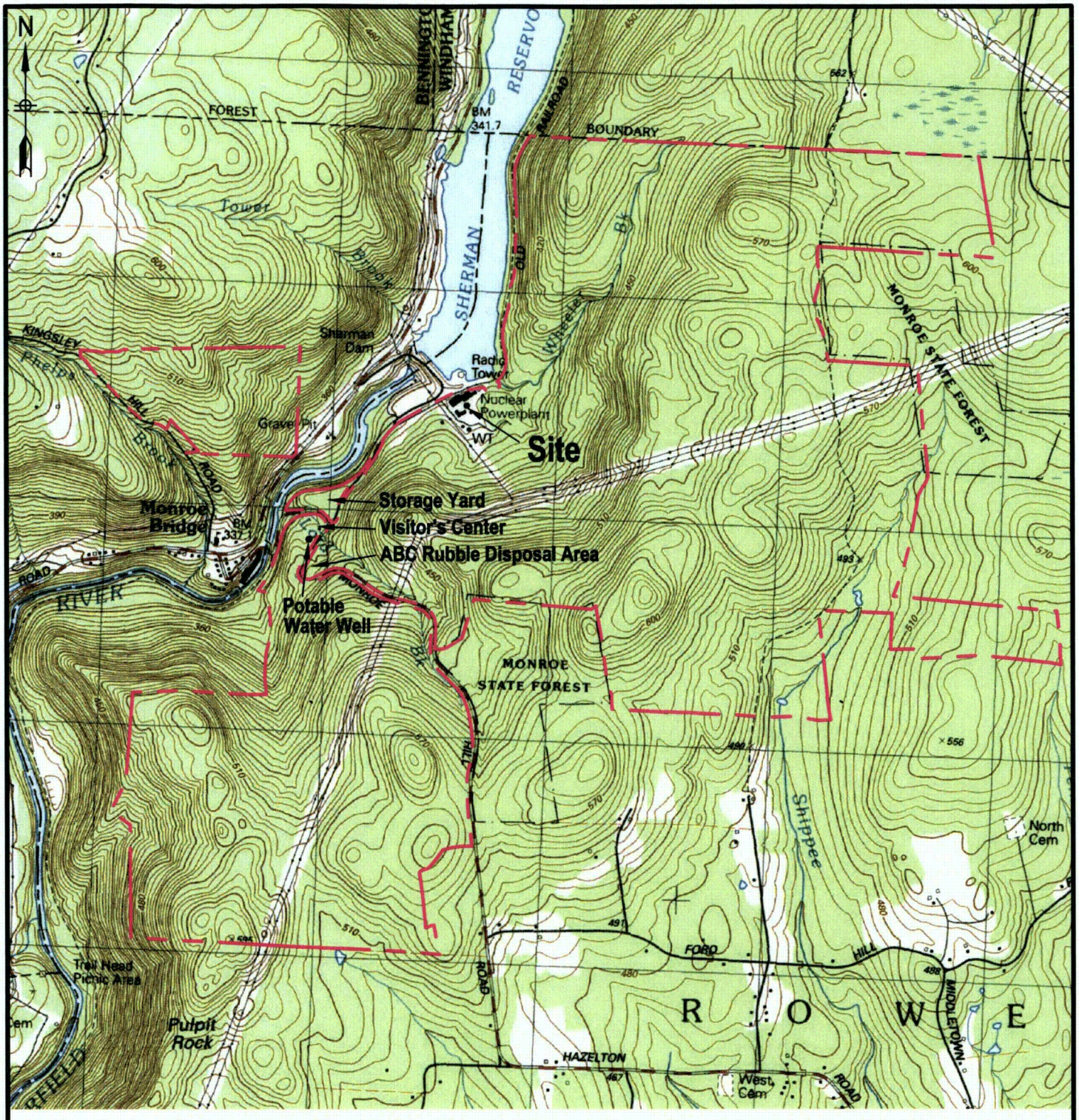
Notes:
Summary of detected compounds only
- = All constituents below detection limits
ND= Not Detected in background
Blank Cells Were Not Analyzed
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit
Value exceeds 3X Site Background maximum
Value exceeds 5X Site Background maximum
* PCBs not detected in background samples. Average of detections limits used to calculate Site background concentration.

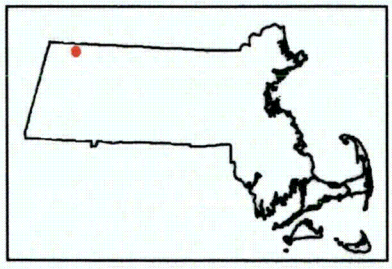
Table 25
OHM in Sediment (Non-Radiological)
Background (400 Series)
Yankee Nuclear Power Station
Rowe, MA

Station	SD-401	SD-402	SD-403	SD-404	SD-405	SD-406
Sample Designation	SD-401-00-04-I	SD-402-00-04-I	SD-403-00-04-I	SD-404-00-04-I	SD-405-00-04-I	SD-406-00-04-I
Date Sampled	8/14/2003	8/14/2003	8/14/2003	8/14/2003	8/14/2003	8/14/2003
Total Petroleum Hydrocarbons (mg/Kg)						
TPH-DRO (Diesel Range)	27	34	13 UJ	24 J	80 J	19 J
Volatile Organic Compounds (ug/Kg)						
1,1-Dichloroethene	23 J	24 J	15 J	19 J	21	7 UJ
1,2,4-Trimethylbenzene	6 UJ	10 UJ	5 UJ	7 UJ	9 UJ	7 UJ
2-Butanone	30 J	21 UJ	11 J	22 J	67	32 J
4-Isopropyltoluene	6 UJ	10 UJ	5 UJ	7 UJ	9 UJ	7 UJ
4-Methyl-2-pentanone	6 UJ	10 UJ	5 UJ	7 UJ	9 UJ	7 UJ
Acetone	110 J	19 UJ	42 J	76 J	280	190 J
Carbon disulfide	6 UJ	10 UJ	5 UJ	7 UJ	9 UJ	7 UJ
Chloromethane	6 UJ	10 UJ	5 UJ	7 UJ	9 UJ	7 UJ
Methylene chloride	18 UJ	31 UJ	15 UJ	21 UJ	27 UJ	21 UJ
Naphthalene	6 UJ	10 UJ	5 UJ	7 UJ	9 UJ	7 UJ
Toluene	21 J	31 J	12 J	27 J	20	14
TOTAL VOCs	184	55	80	144	388	236
Semi-Volatile Organic Compounds (ug/Kg)						
2-Methylnaphthalene	630 U	890 U	430 U	760 U	960 U	630 U
2-Methylphenol	150 J	890 U	430 U	760 U	960 U	630 U
3+4-Methylphenol	630 U	230 J	430 U	760 U	960 U	630 U
Acenaphthene	630 U	890 U	430 U	760 U	960 U	630 U
Anthracene	630 U	890 U	430 U	760 U	960 U	630 U
Benzo(a)anthracene	630 U	180 J	430 U	760 U	200 J	630 U
Benzo(a)pyrene	630 U	890 U	430 U	760 U	230 J	630 U
Benzo(b)fluoranthene	630 U	890 U	430 U	760 U	220 J	630 U
Benzo(g,h,i)perylene	630 U	890 U	430 U	760 U	960 U	630 U
Benzo(k)fluoranthene	630 U	890 U	430 U	760 U	220 J	630 U
bis(2-Ethylhexyl)phthalate	630 U	890 U	430 U	760 U	960 U	630 U
Carbazole	630 U	890 U	430 U	760 U	960 U	630 U
Chrysene	630 U	200 J	430 U	170 J	230 J	630 U
Dibenzo(a,h)anthracene	630 U	890 U	430 U	760 U	960 U	630 U
Dibenzofuran	630 U	890 U	430 U	760 U	960 U	630 U
Di-n-octyl phthalate	630 U	890 U	430 U	760 U	960 U	630 U
Fluoranthene	630 U	380 J	170 J	320 J	430 J	630 U
Fluorene	630 U	890 U	430 U	760 U	960 U	630 U
Indeno(1,2,3-cd)pyrene	630 U	890 U	430 U	760 U	960 U	630 U
Naphthalene	630 U	890 U	430 U	760 U	960 U	630 U
Phenanthrene	630 U	890 U	140 J	760 U	960 U	630 U
Pyrene	630 U	320 J	130 J	280 J	380 J	630 U
TOTAL SVOCs	150	1,310	870	770	1,910	-
Polychlorinated Biphenyls (ug/Kg)						
Aroclor-1254	59 U	89 U	43 U	76 U	1900 UJ	1300 UJ
Aroclor-1260	59 U	89 U	43 U	76 U	1900 UJ	1300 UJ
Total PCBs	-	-	-	-	-	-
Inorganics (mg/Kg)						
Antimony	R	R	R	R	R	R
Arsenic	1.6	2 J	0.21 UJ	1.7 J	2.8	1.6
Boron						
Cadmium	1.3 U	1.8 U	0.91 U	1.6 U	2 U	1.3 U
Chromium	9.8	19	4.5	17	21	16
Chromium (Hexavalent)	3.5 UJ	5.2 UJ	2.7 UJ	4.7 UJ	6 UJ	3.9 UJ
Copper	21	37	6.4	35	45	42
Lead	2.7 J	2.8 J	0.65 UJ	2.8 J	5.2 J	2.7 J
Lithium						
Mercury	0.58 U	0.4 U	0.34 U	0.69 U	0.65 U	0.32 U
Nickel	11	25	12	20	28	23
Selenium	3.9 J	5.7 UJ	2.8 UJ	4.9 J	UJ	4.1 UJ
Silver	0.4 J	0.58 UJ	0.29 UJ	0.5 UJ	0.64 UJ	0.42 UJ
Thallium	0.93 U	1.4 U	0.67 U	1.2 U	1.5 U	0.97 U
Zinc	130	270	49	170	250	200

Notes:
Summary of detected compounds only
- = All constituents below detection limits
Blank Cells Were Not Analyzed
J= Estimated result
R= Rejected result, unusable for project decisions
U= Not detected, value is the sample detection/reporting limit
UJ= Not detected, value is an estimate of detection/reporting limit

Figures





YAEC Property Boundary

Scale 1:25,000

0.5 km 0 500 m

0.5 mi 0 1,000 ft

Figure 1 - Locus Map
Yankee Nuclear Power Station - Rowe, MA

ERM

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N

Sherman Dam

Sherman Spring

Deerfield River

Sherman Reservoir

New Shooting Range

Circulating Water Discharge Structure

East Storm Drain Outfall

Screenwell House

Former Railroad Tracks

USGen NE

YAEC Property

Garage

Propane Storage

Wheeler Brook

North Warehouse

West Storm Drain Outfall

Service Building

Inactive Leaching Fields

Security Diesel Building

Office

Turbine Building

Former Railroad Tracks

Lower Parking Area

Active Leaching Fields

Former Fuel Oil Tank

Security/ Gatehouse

Transformer Yard

VC

Fuel Storage Building

Demineralized Water Tank

Tributary to Wheeler Brook

Septic System Pumphouse

Waste Disposal Building

East Construction Fill Area

Former Diesel Generator Building

PAB

Former Incinerator

Parking Area

Office Trailers

Rad Waste Warehouse

Old PCA

Upper Parking Area

Admin. Building

Former Incinerator

New PCA

Southeast Construction Fill Area

Former Pole Barn

Firetank/ Pumphouse

Monroe Hill Road

West Storm Drain Ditch

Inactive Leach Field

Former Potable Water Well

ISFSI

Old Shooting Range

Active Leach Field

USGen NE

YAEC Property

Trash Compactor

Middle Parking Area

Potable Water Storage Tank and Pumphouse

Sand/Salt Shed

Fire Fighting Training (occasional)

Industrial Area Fenceline

Wheeler Brook Divertment

Potable Water Well

Pre decommission aerial photo taken April 2001

Legend

YAEC Property Boundary

Edge of Water/Stream

Circulating Water Piping

Boundary of RCA

Fence

Estimated Boundary of Construction Fill Area

Scale (1"=160')

160' 0 80' 160' 320'

Figure 2 - Site Layout

Yankee Nuclear Power Station - Rowe, MA

ERM

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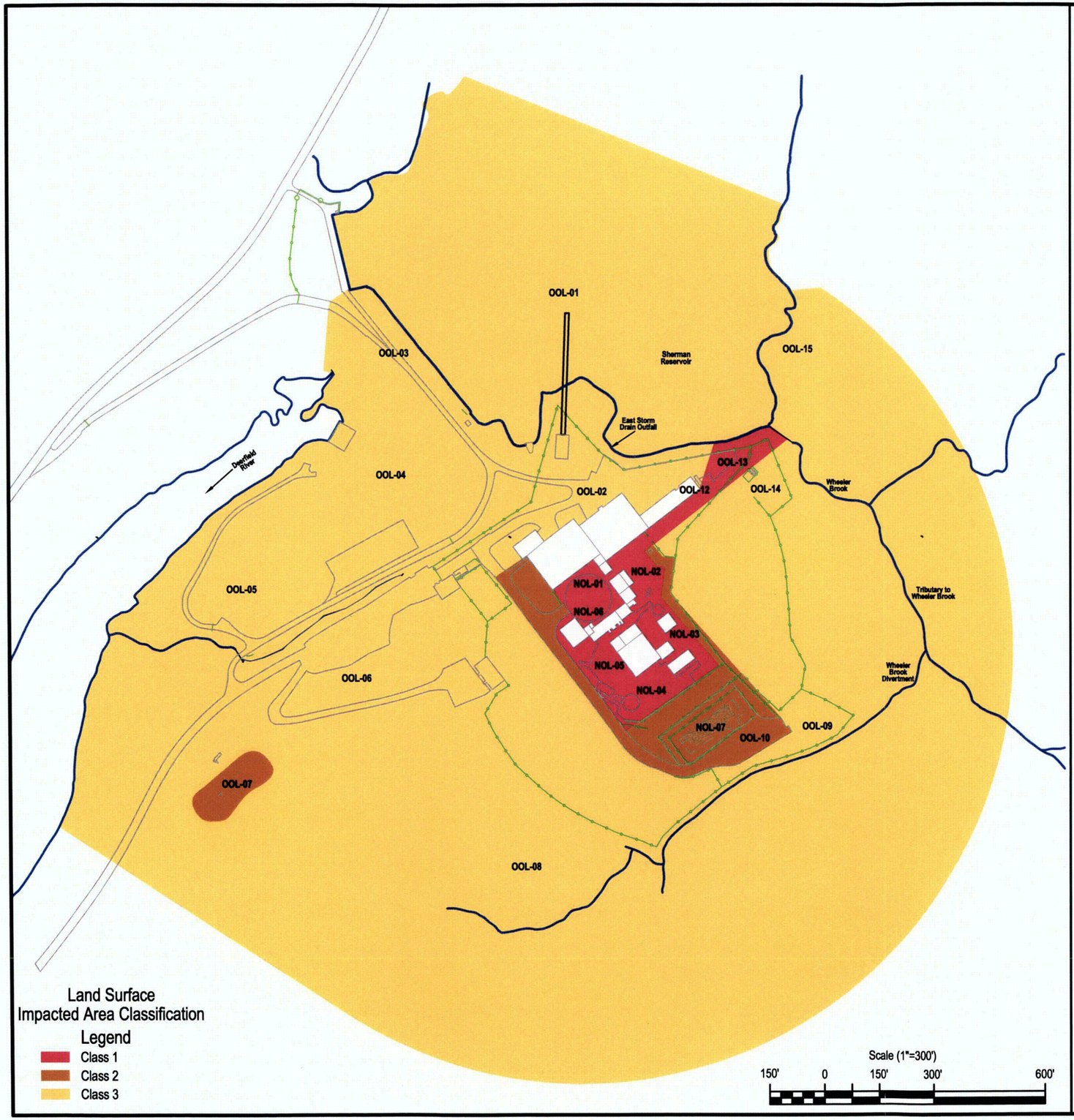

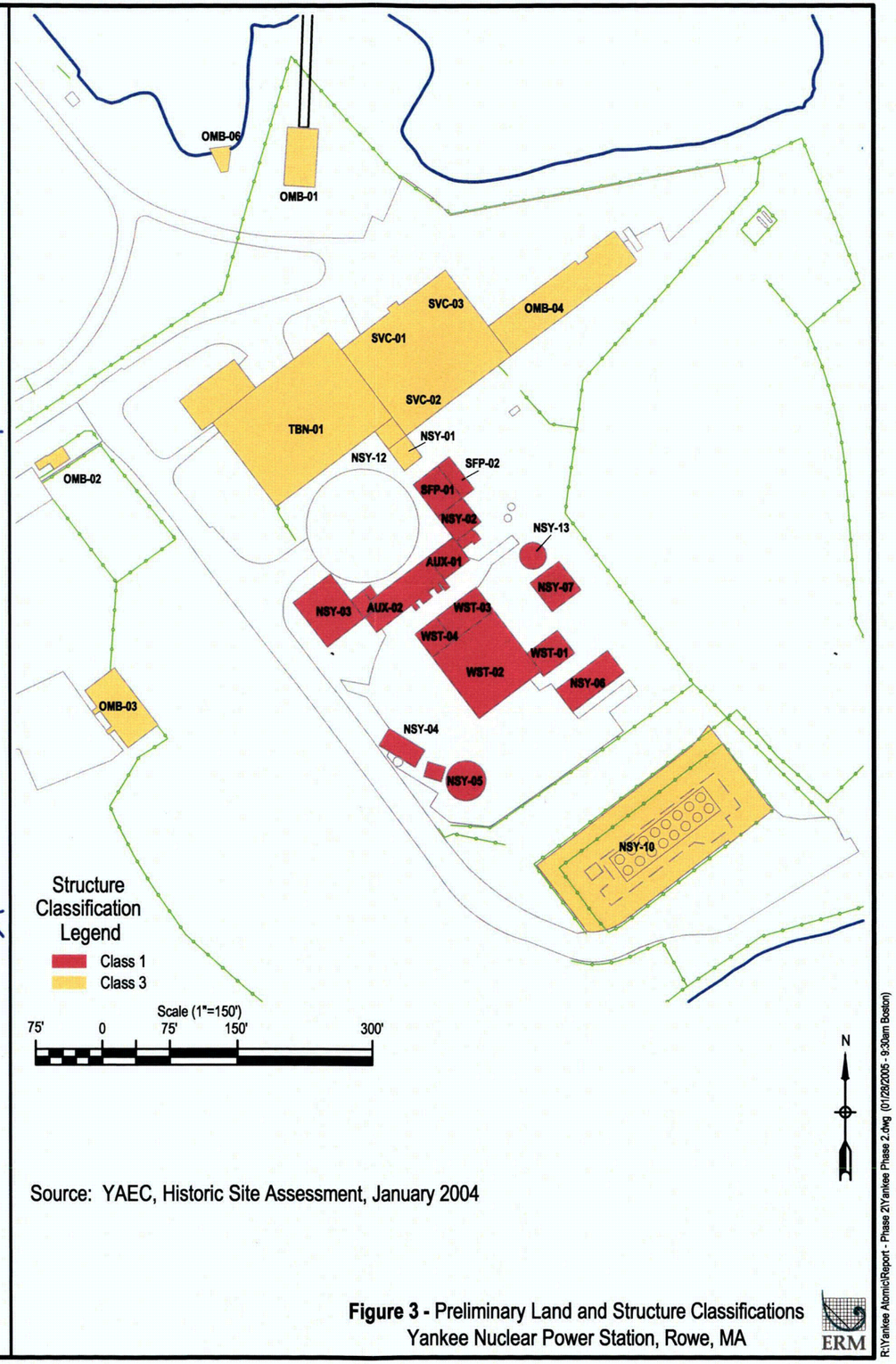

Source: YAEC, Historic Site Assessment, January 2004

Figure 3 - Preliminary Land and Structure Classifications
Yankee Nuclear Power Station, Rowe, MA

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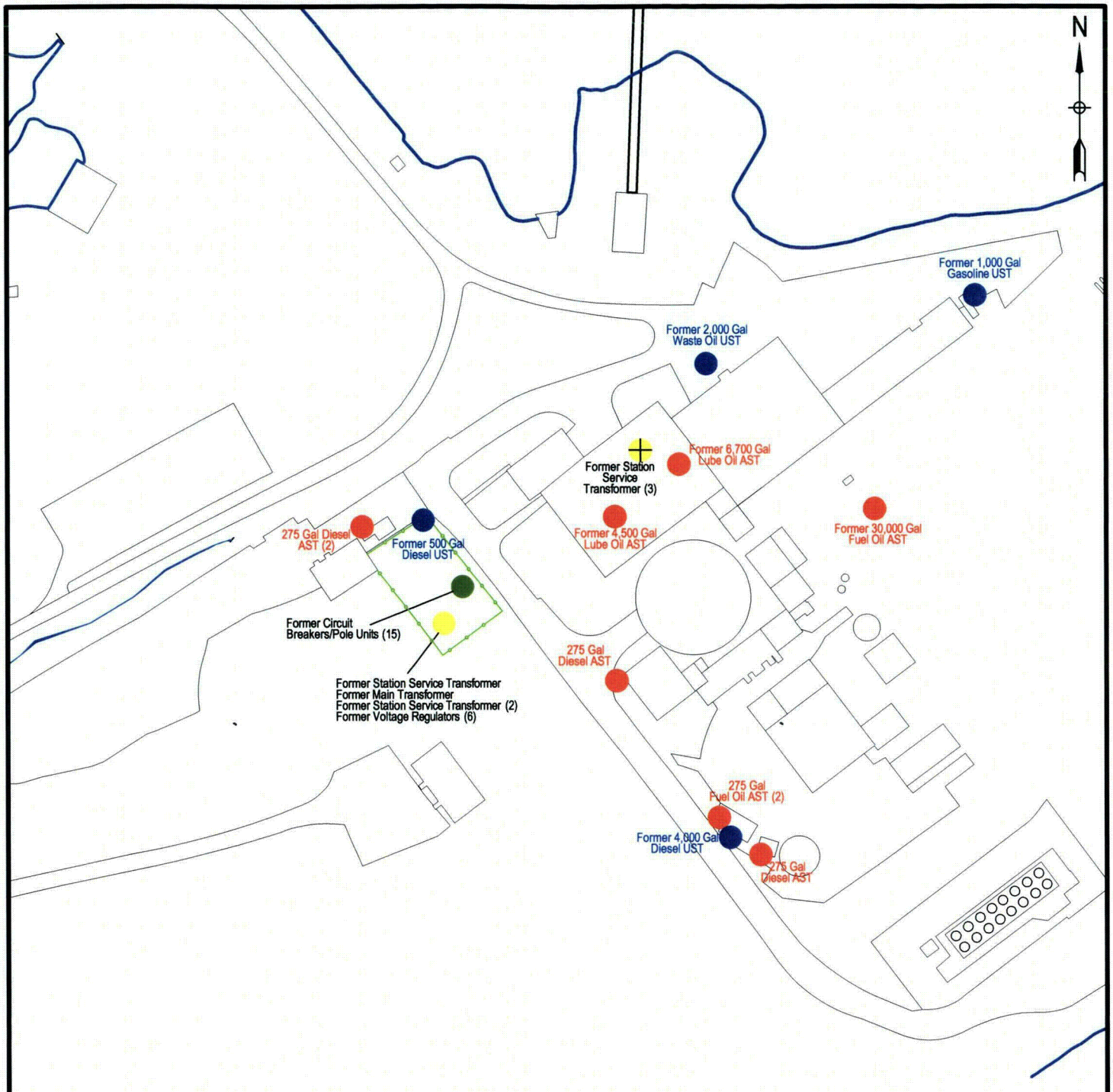

Notes:

The Following are not Shown on Figure

- 500 Gal. Diesel Portable AST
- 330 Gal. Fuel Oil AST Located In Visitor's Center Basement
- Former 275 Gal. Diesel AST Located in Middle Parking Lot
- Former 550 Gal. Fuel Oil UST Located at Visitor's Center

Figure 4 - AST, UST and Transformer Location Map
Yankee Nuclear Power Station - Rowe, MA

ERM

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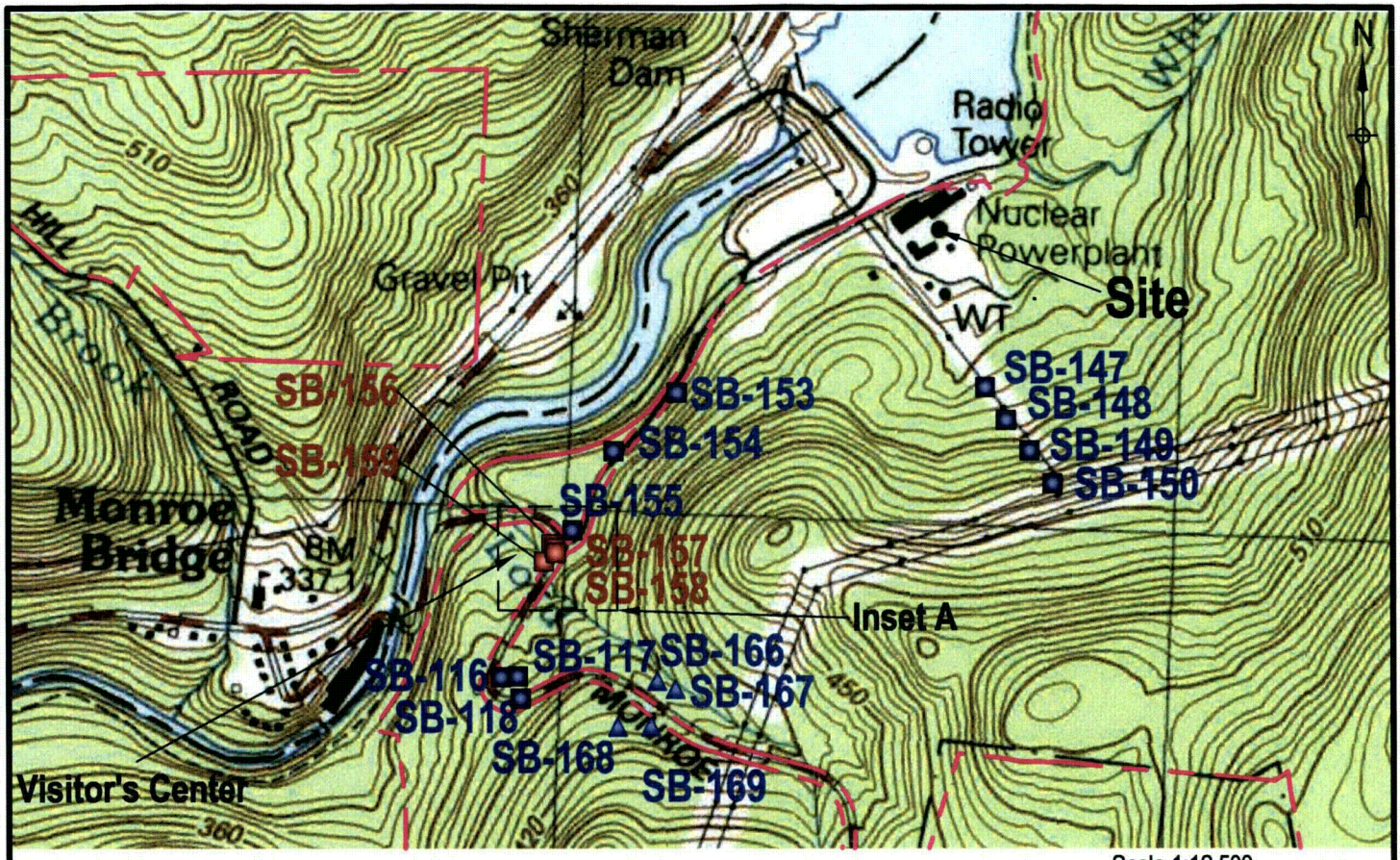
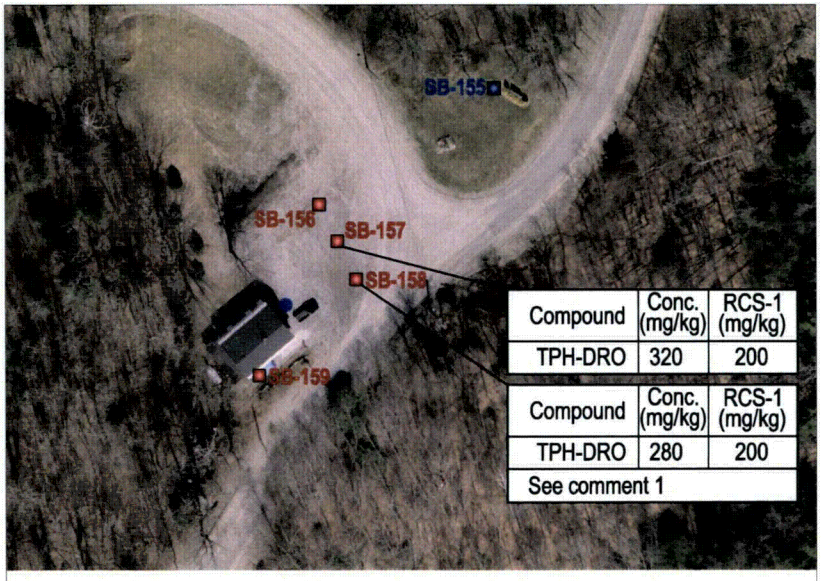


Scale 1:12,500

0.25 km 0 250 m

0.25 mi 0 500 ft



Compound	Conc. (mg/kg)	RCS-1 (mg/kg)
TPH-DRO	320	200

Compound	Conc. (mg/kg)	RCS-1 (mg/kg)
TPH-DRO	280	200
See comment 1		

Scale 1:120

YAEC Property Boundary

SB-157 Targeted Deep Sample

SB-155 Targeted Surface Sample

SB-168 Background Surface Sample

Former UST

Comments
1. Value represents maximum concentration detected at sample location.

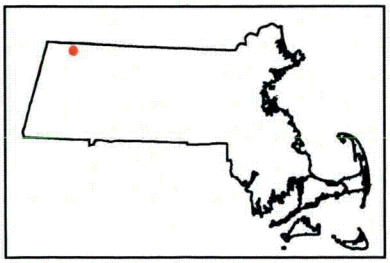


Figure 15 - Soil Sample Locations (Non-Industrial Area) and OHM Results Exceeding MCP Reportable Concentrations
Yankee Nuclear Power Station - Rowe, MA

ERM

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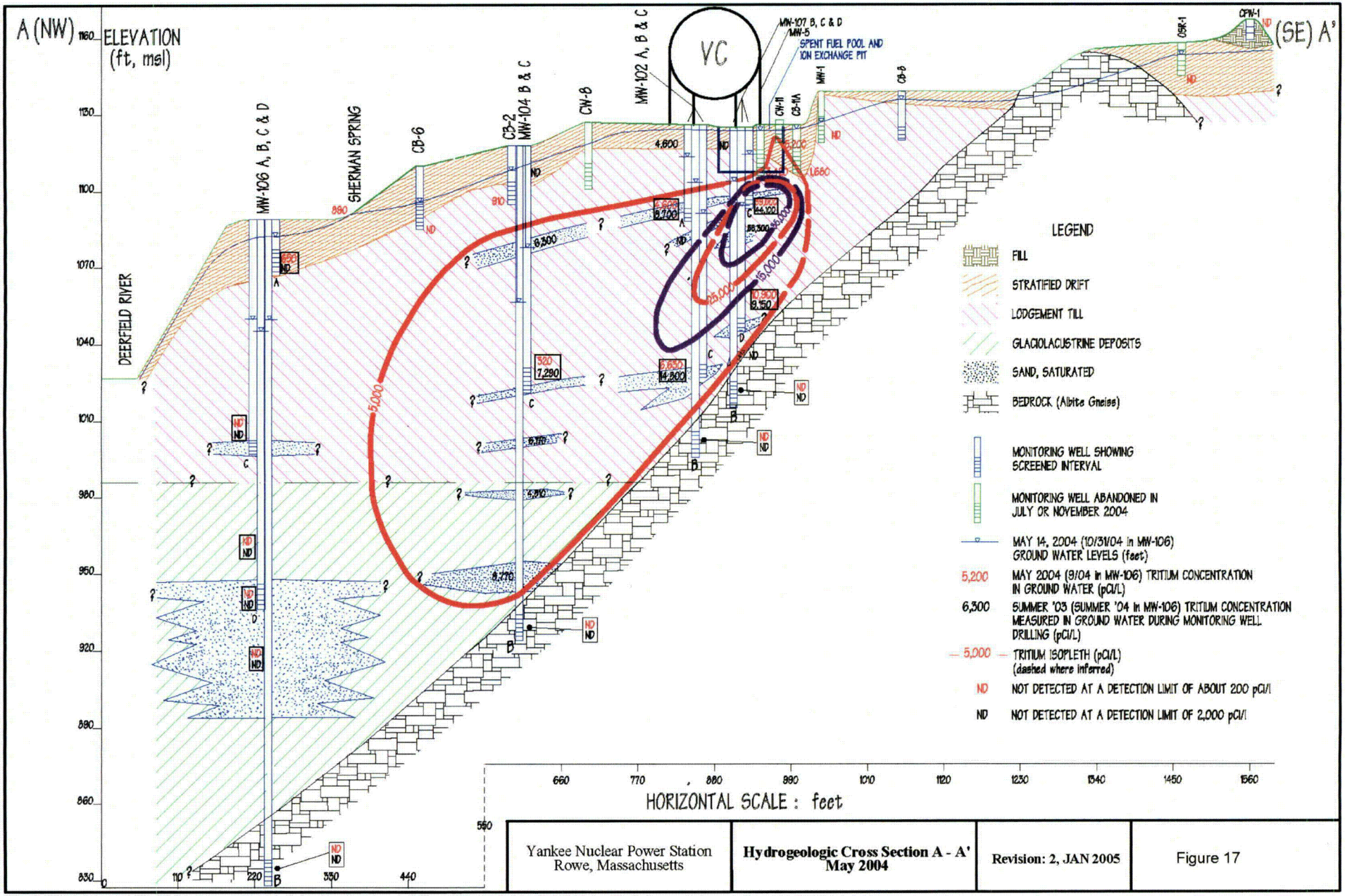
THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

THAT CAN BE VIEWED AT THE RECORD TITLED:

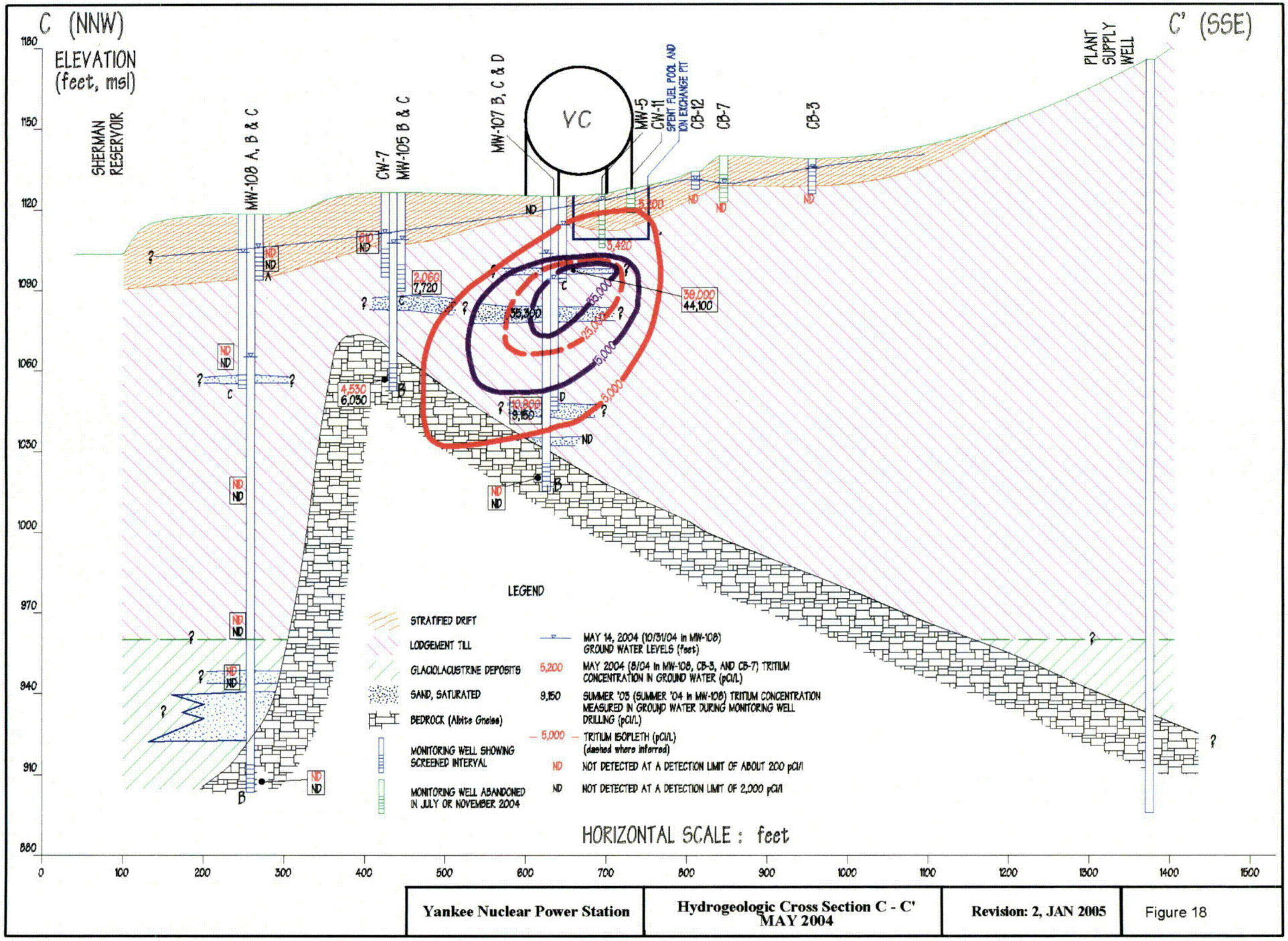
Figure 16
"Soil Sample Locations (Industrial and Non-Industrial area) and OHM Results Exceeding MCP Reportable Concentrations Yankee Nuclear Power Station-Rowe, MA."

WITHIN THIS PACKAGE... OR BY SEARCHING USING THE Figure 16

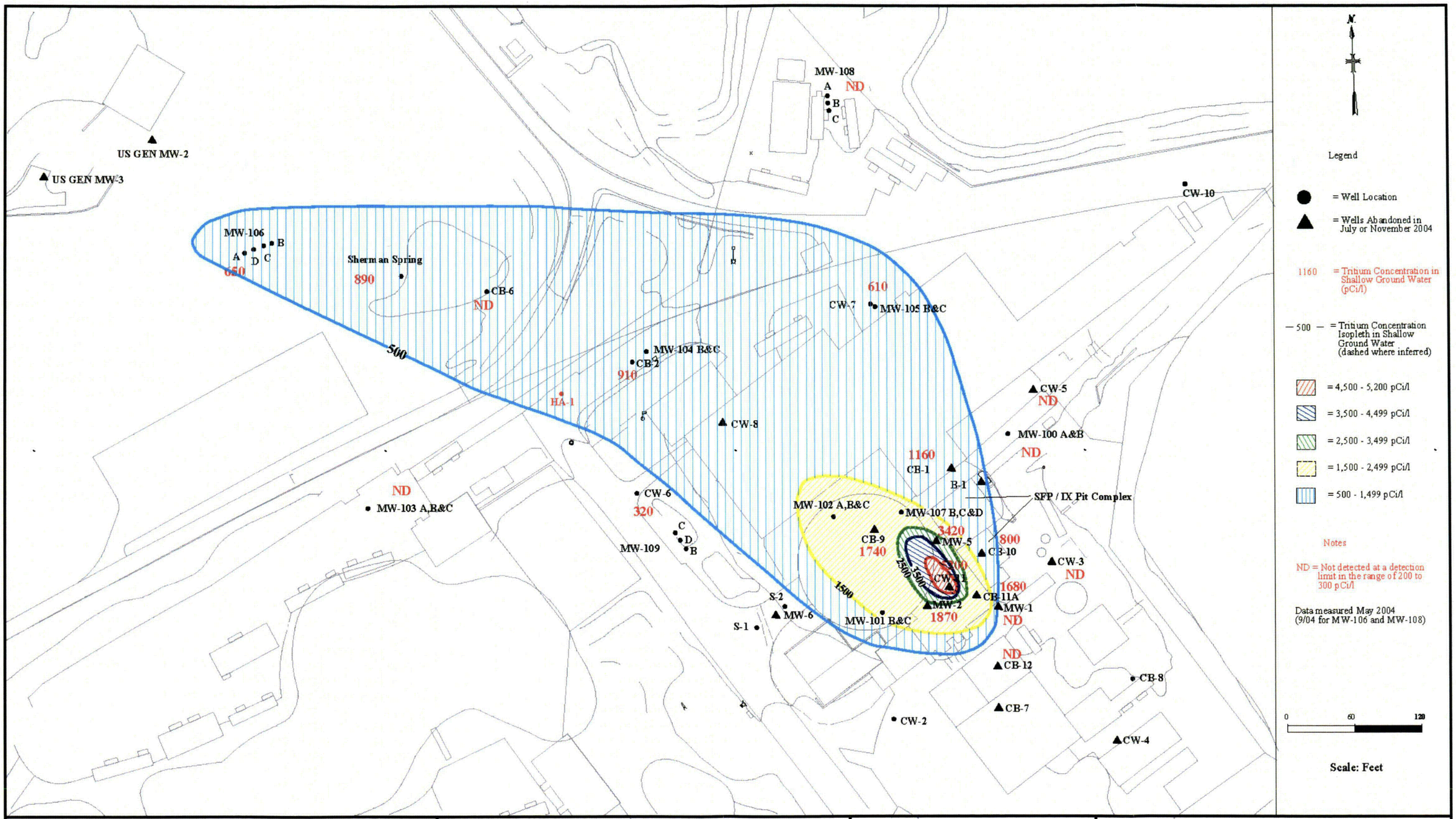
D-01X



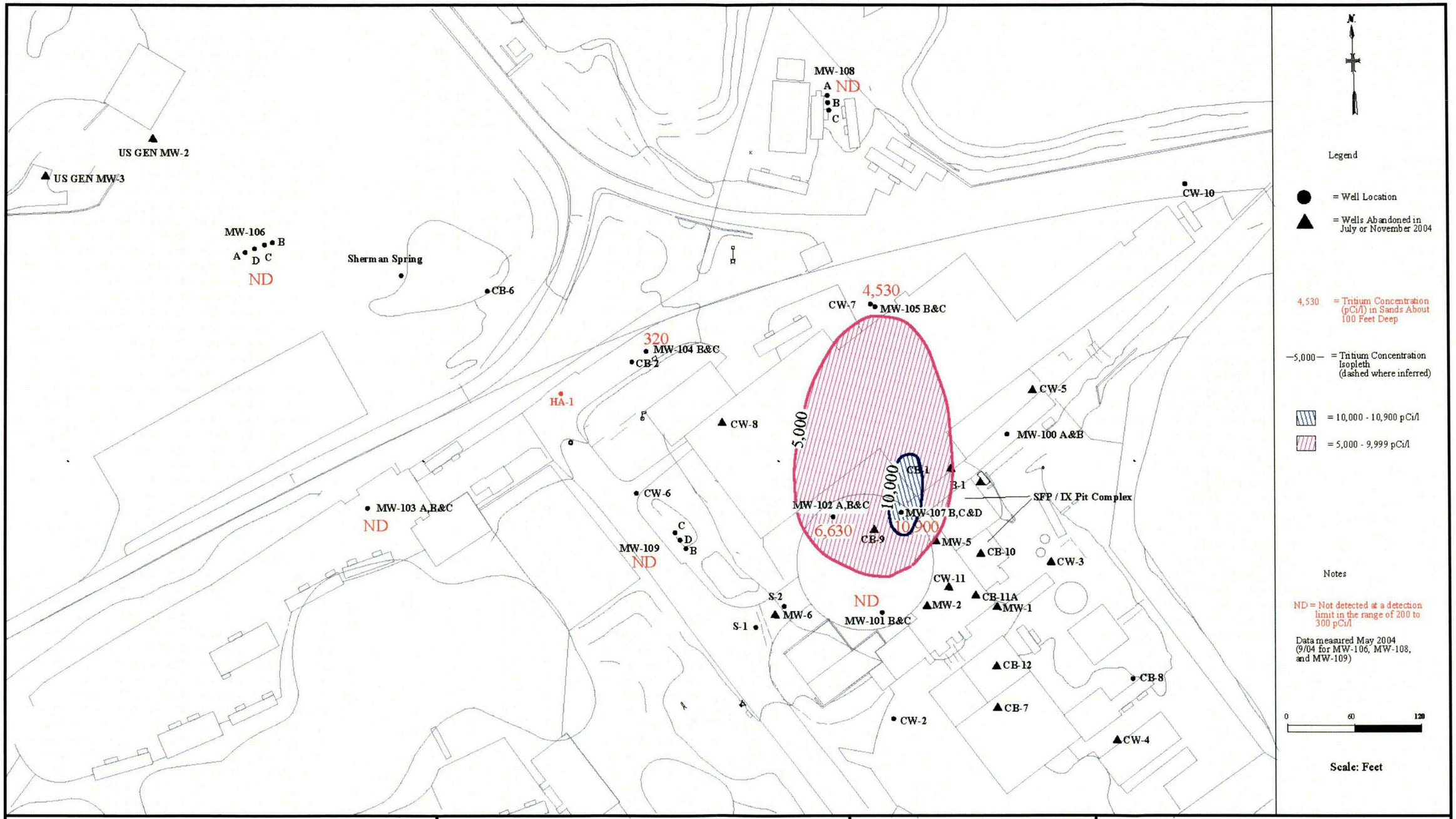
Yankee Nuclear Power Station Rowe, Massachusetts	**Hydrogeologic Cross Section A - A'** **May 2004**	**Revision: 2, JAN 2005**	Figure 17



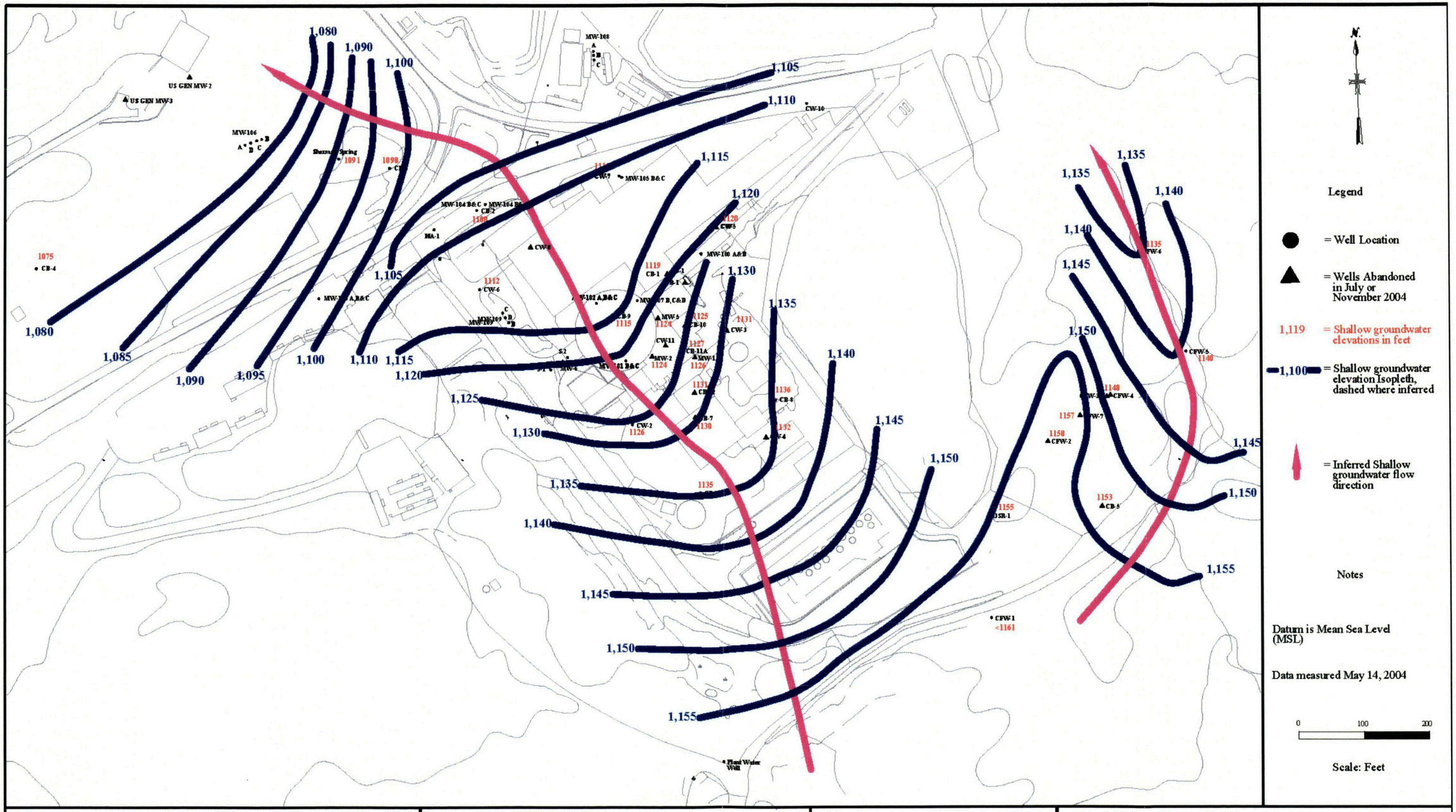
Yankee Nuclear Power Station	Hydrogeologic Cross Section C - C' MAY 2004	Revision: 2, JAN 2005	Figure 18



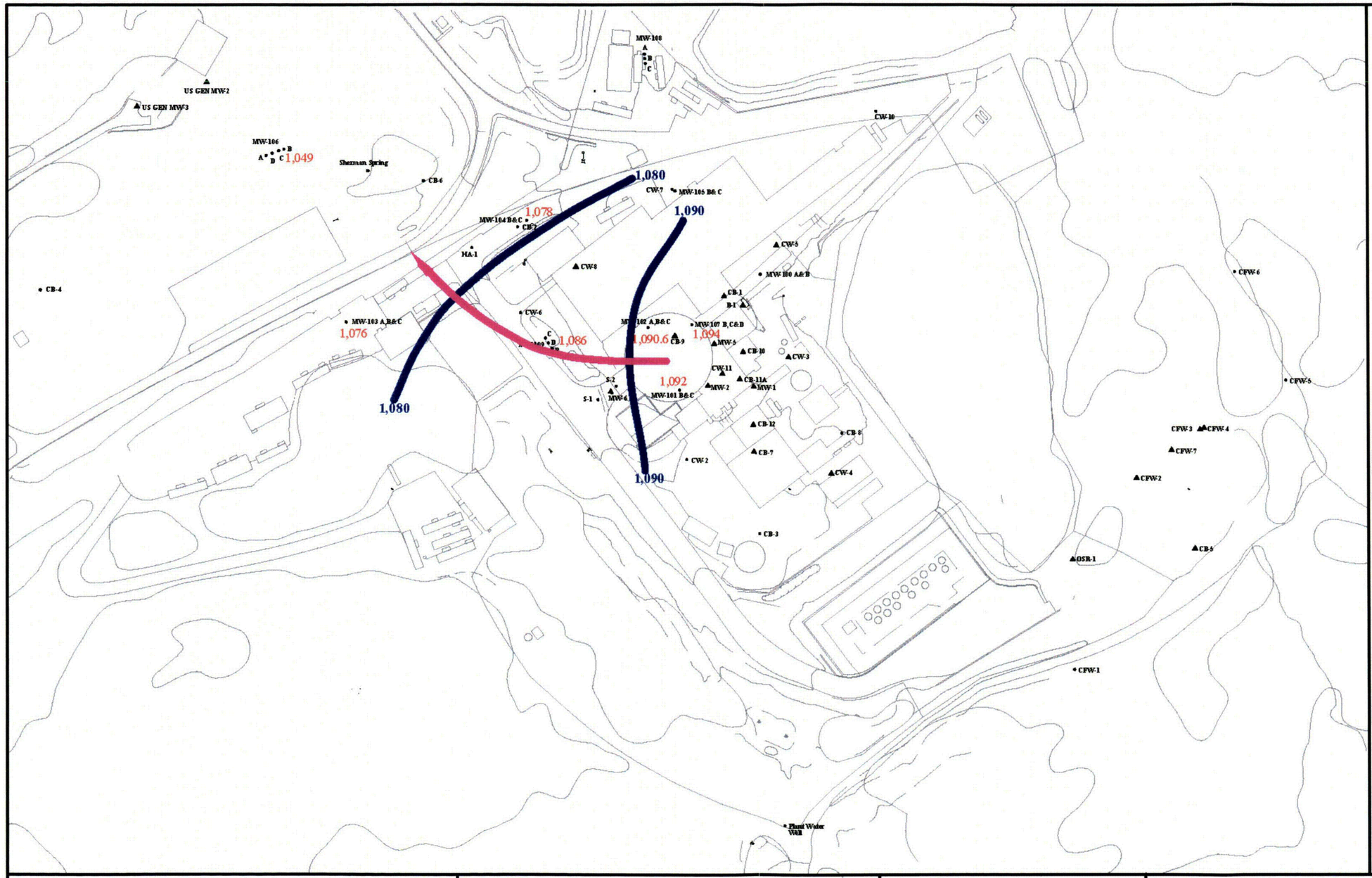
Yankee Nuclear Power Station **Rowe, Massachusetts**	**Shallow Tritium Plume Map for May 2004**	**Revision: 2, JAN 2005**	Figure 19



Yankee Nuclear Power Station Rowe, Massachusetts	**Tritium Plume in Sands About 100 Feet Deep May 2004**	**Revision: 2, JAN 2005**	Figure 20



Yankee Nuclear Power Station Rowe, Massachusetts	**Ground Water Elevation in Shallow Aquifer May 14, 2004**	**Revision: 1, JAN 2005**	Figure 21



N.

Legend

● = Well Location

▲ = Wells Abandoned in July or November 2004

1,119 = Groundwater elevations in sands about 100 feet deep (in feet)

1,100 = Groundwater elevation Isopleth in sands about 100 feet deep, dashed where inferred

= Inferred groundwater flow direction in sands about 100 feet deep

Notes

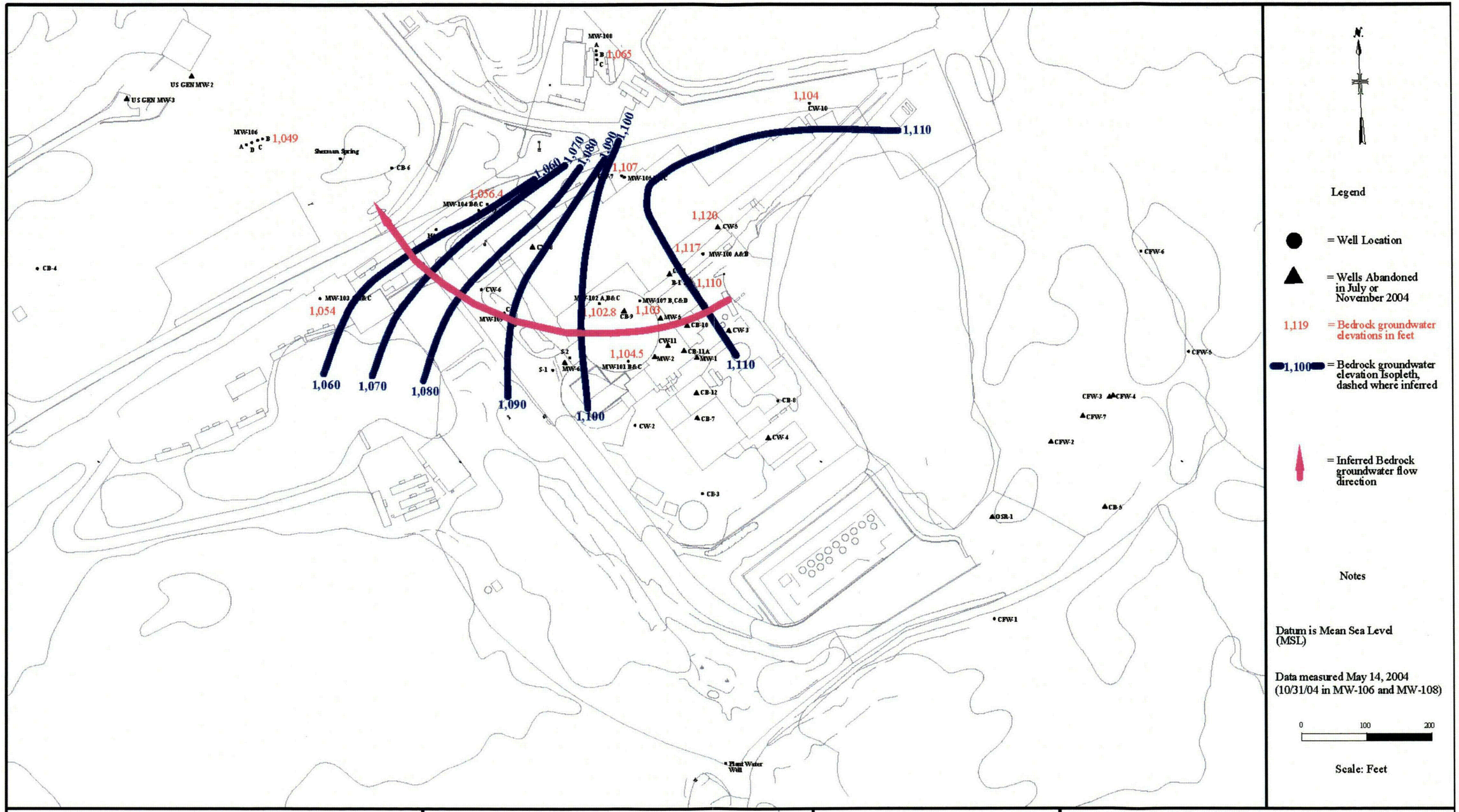
Datum is Mean Sea Level (MSL)

Data measured May 14, 2004 (10/31/04 in MW-106 and MW-109)

0 100 200

Scale: Feet

Yankee Nuclear Power Station **Rowe, Massachusetts**	**Ground Water Elevation in Sands About 100 Feet Deep** **May 14, 2004**	**Revision: 1, JAN 2005**	Figure 22



Yankee Nuclear Power Station Rowe, Massachusetts	**Ground Water Elevations in the Bedrock Aquifer May 14, 2004**	**Revision: 1, JAN 2005**	Figure 23

N

Legend
- Edge of Water/Stream
- Fence
- CFW-2 Monitoring Well Location

Note: Compounds detected above groundwater Reportable Concentrations are shown.
(F) = Filtered Sample
(DUP) = Duplicate
PCB's Total

MW-108B Compound	Conc. (ug/L)	RCGW-2 (ug/L)	Date
Bis(2-ethylhexyl)phthalate	36	30	9/8/04

MW-105C Compound	Conc. (ug/L)	RCGW-2 (ug/L)	Date
1,1 DCE	1.3	1	9/9/03
1,1 DCE	1.5	1	11/26/03
1,1 DCE	1.1	1	11/26/03
1,1 DCE	1.3	1	3/3/04
1,1 DCE	0.86	1	6/3/04
1,1 DCE	1.7	1	8/27/04

MW-107B Compound	Conc. (ug/L)	RCGW-2 (ug/L)	Date
PCBs	5.5	0.3	3/13/04
PCBs	3.9	0.3	5/22/04
(F)PCBs	0.38	0.3	5/22/04
PCBs	0.42	0.3	8/29/04
(F)PCBs	<0.25	0.3	8/29/04

MW-107D - Compound	Conc. (ug/L)	RCGW-2 (ug/L)	Date
PCBs	2	0.3	3/13/04
PCBs	<0.25	0.3	5/22/04
(DUP)PCBs	<0.25	0.3	5/22/04
PCBs	0.45	0.3	8/28/04
(F)PCBs	<0.25	0.3	8/28/04

MW-5 Compound	Conc. (ug/L)	RCGW-2 (ug/L)	Date
PCBs	4.6	0.3	7/22/03
PCBs	2.2	0.3	12/1/03
(F)PCBs	1.5	0.3	12/1/03
PCBs	<0.25	0.3	3/3/04
PCBs	3.1	0.3	3/17/04
(F)PCBs	1.5	0.3	3/17/04
PCBs	3.7	0.3	5/22/04
(DUP)PCBs	2.6	0.3	5/22/04
(F)PCBs	1.8	0.3	5/22/04
(F/DUP)PCBs	1.4	0.3	5/22/04
PCBs	3.0	0.3	8/21/04
(DUP)PCBs	3.4	0.3	8/21/04
(F)PCBs	<0.25	0.3	8/21/04
(F/DUP)PCBs	<0.25	0.3	8/21/04

Sherman Reservoir
Deerfield River
Wheeler Brook
Tributary to Wheeler Brook
Wheeler Brook Divertment
West Storm Drain Outfall
West Storm Drain Ditch
Former Potable Water Well
Potable Water Well
Interim Wellhead Protection Area
PWS ID #1253001-02G

MW-108A/B/C
MW-106A/B/C/D
MW-105B
MW-105C
MW-104B/C
MW-103A/B/C
MW-102A/B/C
MW-109B/C/D
MW-101B/C
MW-100A/B
MW-107B/C/D
MW-5
MW-6
MW-2
MW-1
CW-1
CW-2
CW-3
CW-4
CW-5
CW-6
CW-7
CW-8
CW-10
CW-11
CB-1
CB-2
CB-3
CB-4
CB-5
CB-6
CB-7
CB-8
CB-9
CB-10
CB-11A
CB-12
B-1
HA-1
OSR-1
CFW-1
CFW-2
CFW-3
CFW-4
CFW-5
CFW-6
CFW-7

Scale (1"=160')
160' 0 80' 160' 320'

Figure 24 - Groundwater Monitoring Well Locations and OHM Exceeding MCP Reportable Concentrations
Yankee Nuclear Power Station - Rowe, MA

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Compound	Conc.	Background Conc.
Units (mg/kg)		
Copper	150	45

Compound	Conc.	Background Conc.
Units (mg/kg)		
TPH-DRO	250	80

Compound	Conc.	Background Conc.
Units (mg/kg)		
Lead	34	5

Compound	Conc.	Background Conc.
Units (mg/kg)		
Lead	17	5

Compound	Conc.	Background Conc.
Units (mg/kg)		
Copper	300	45

Compound	Conc.	Background Conc.
Units (mg/kg)		
Copper	570	45

Compound	Conc.	Background Conc.
Units (mg/kg)		
Lead	17	5

Legend

- Edge of Water/Stream
- Fence
- SD-014 Sediment Sample Location
- SW-5 Surface Water Sample Locations
- >5x Background Maximum Concentration
- >3x Background Maximum Concentration

Note: Compounds detected above 3x and 5x background maximum concentrations are shown.

N

Sherman Reservoir

Deerfield River

East Storm Drain Outfall

West Storm Drain Outfall

West Storm Drain Ditch

Wheeler Brook

Tributary to Wheeler Brook

Wheeler Brook Divertment

See Inset A

Scale (1"=60')

A

Scale (1"=180')

90' 0 90' 180' 360'

Figure 25 - Sediment and Surface Water Sample Locations
Yankee Nuclear Power Station - Rowe, MA

ERM

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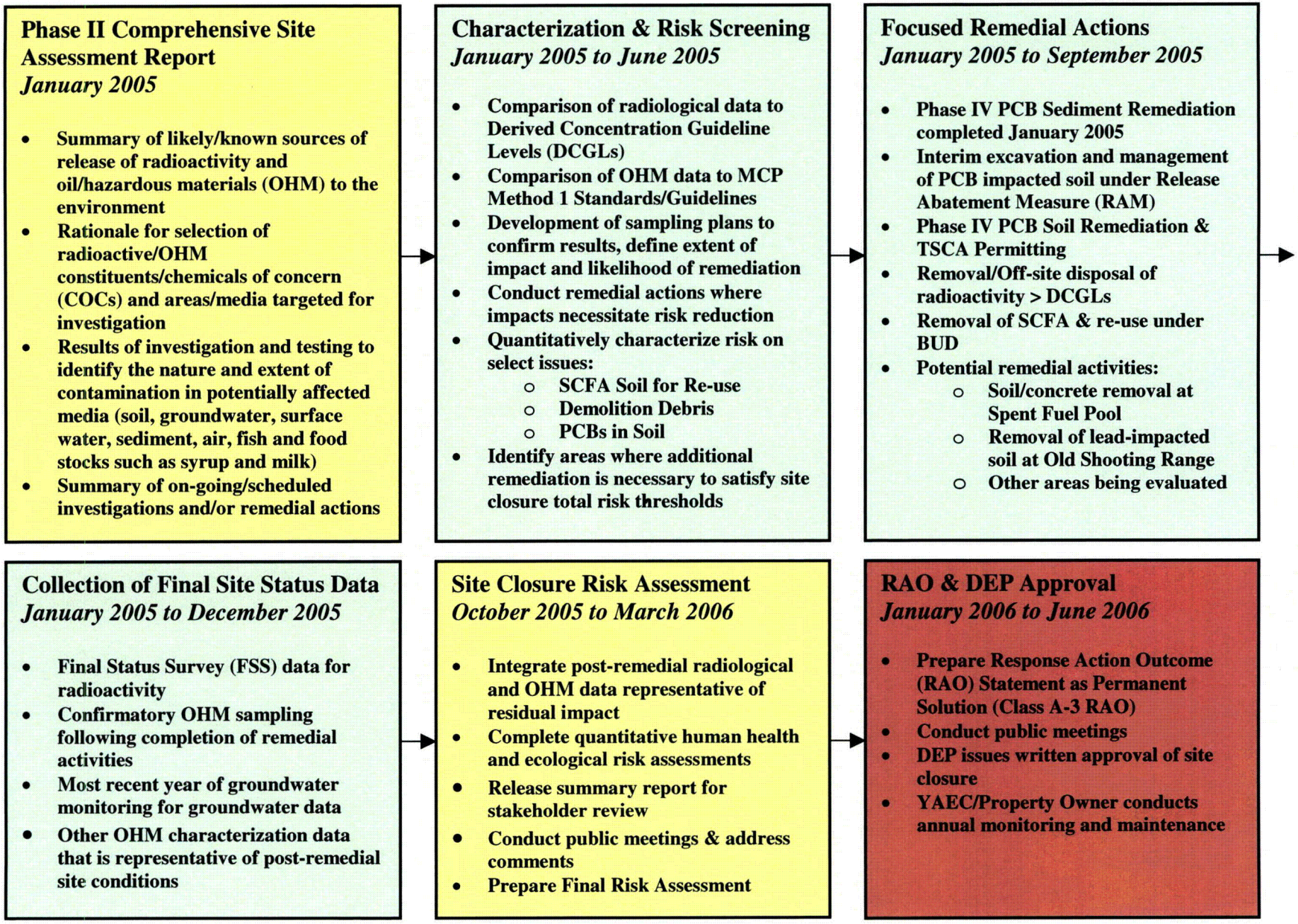
Figure 26
Proposed Pathway to Integrated Environmental Site Closure
Yankee Nuclear Power Station, Rowe, MA



Appendix A

APPENDIX A – SUPPORTING DOCUMENTS

The following supporting documents are available at www.yankee.com or the Site Closure Information Repository in Greenfield, Massachusetts.

License Termination Documents:

License Termination Plan, Revision 1 - November 19, 2004

Site Closure Documents:

Site Closure Project Brochure

Site Closure Project Plan

Site Assessment Documents

Abbreviated Notice of Resource Area Delineation (ANRAD), March 2004

Archaeological Reconnaissance Survey and Archaeological Resources Management Plant - November 2003

Baseline Environmental Report - April 30, 2004

Integrated Permit Package and Appendices – May 7, 2004

Phase IV Remedy Implementation Plan – April 23, 2004

Quality Assurance Project Plan (QAPP) – August 6, 2004

Risk-Based Disposal Approval Application (RBDAA) – June 30, 2004

Southeast Construction Fill Area Beneficial Use Determination (BUD) Application – August 2004

Historical Site Assessment

Hydrogeologic Report of 2003 Supplemental Investigation – March 16, 2004

Natural Resources Inventory and Management Plan – April 2004

Post-Decommissioning Planting Plan – August 2004

Post-Decommissioning Grading Plan and Stormwater Management Analysis – August 2004

Site Characterization Status Report and Appendices – June 4, 2004

Permitting Documents:

Application for Beneficial Use Determination for Structures – September 22, 2004

Expanded Environmental Notification Form (EENF) – March 31, 2004

Secretary's MEPA Certificate on the EENF – May 7, 2004

Southeast Construction Fill Area Corrective Action Design (CAD)

Water Quality Certification – September 9, 2004

Wetland Restoration and Replication Plan – August 2004

Appendix B

1.0 RADIOACTIVE SAMPLE ANALYSIS METHODS

1.1 Overview

Several analysis methods are available for the measurement of radioactivity in environmental samples. The method used for analysis depends on the objective of the analysis and the isotope(s) of concern. Table 1 provides a summary of the radiation detection and analysis methods used in radioactivity sample analysis.

Table 1: Summary of Radiation Detection Methods

Radiation Detection Method	Used For...	Analysis Consideration
Gamma Spectroscopy	Gamma Emitters	Low Cost, Minor Sample Prep.
Gross Beta	Beta or Beta/Gamma Emitters	Moderate Cost, Requires Chemical Preparation
Gross Alpha	Alpha Emitters	Moderate Cost, Requires Chemical Preparation
Liquid Scintilation	Beta, Alpha, or Low Energy Gamma Emitters	Moderate to High Cost, May Require Chemical Preparation and Separations
Alpha Spectroscopy	Alpha Emitters	High Cost, Requires Separation Chemistry
Beta Spectroscopy	Beta Emitters	High Cost, Requires Separation Chemistry

1.2 Gamma Spectroscopy

As noted in Table 1, gamma spectroscopy is the least expensive method generally employed for sample analysis. This method is able to identify and quantify any radioisotope that emits gamma radiation with few exceptions. The most common type of detector currently used for this analysis is a High Purity Germanium (HPGe). Prior to the mid 1980s, germanium lithium (Ge(Li)) detectors were used in most gamma spectroscopy analysis, and, prior to the mid 1970s, sodium iodide (NaI)

were used. Sample preparation for gamma spectroscopy sample analysis generally involves either drying for soil samples, and/or, placing the sample into a specific container to control the geometry of the sample-detector system to match the detector calibration conditions.

1.3 *Gross Beta and Gross Alpha*

Gross beta and gross alpha analysis involves preparing a sample such that its potential radioactive constituents are removed and evaporated onto a small (2 inch diameter) steel planchete. This planchete is then placed under gas-flow proportional counter and counted for beta or alpha particles. This analysis method is sensitive to any radioisotope that emits beta or alpha particles including naturally occurring radionuclides. This method is incapable of identifying the specific radionuclides contained within a sample, only whether alpha of beta radiation is emitted from the sample.

1.4 *Liquid Scintillation*

Liquid scintillation analysis requires that the potential radioactivity be chemically removed from a sample and placed into a small (50 ml) vial containing liquid scintillation fluid. This vial is then placed into a scintillation counter. This analysis is capable of measuring radioactivity from radionuclides that emit low energy gamma radiation (not detected via gamma spectrometry), beta or alpha particles provided the radionuclides are chemically separated from the sample material during the sample preparation and processing. Depending on the specific analysis needed, the sample preparation and separation process for liquid scintillation analysis can be a substantial component of the analysis cost.

1.5 *Alpha and Beta Spectroscopy*

Similar to liquid scintillation analysis, this method requires that separation chemistry be performed on each sample. This process generally results in a thin layer of dried processed sample deposited on a steel planchete. This planchete is placed close to a spectroscopy detector where a specific "fingerprint" of particle energy is identified. This "fingerpint" is used to identify and quantify a specific radioisotope.

1.6 *Sample Analysis for Final Status Surveys*

Many of the radioisotopes not included in the LTP include the emission of gamma rays. All final status survey (FSS) samples will include analysis by gamma spectroscopy in the same way as the characterization samples

have included. As such, any of these radionuclides will be identified, if present, during the FSS despite their absence from the LTP.

In addition to performing gamma spectroscopy of all FSS samples, at least 5% of all samples will be analyzed for radionuclides that only emit beta or alpha particles. These analyses will be performed by either alpha spectroscopy or liquid scintillation. The samples selected for these expanded analysis will, in part, be based on the activity of each sample as measured by gamma spectroscopy. Given that all the production of each type of radioisotope is similar (AP versus FP) and that the chemical properties are not vastly different, then it is reasonable to expect that samples containing elevated levels of APs as identified by gamma spectroscopy are likely to contain elevated levels of other APs with no gamma ray emissions.

2.0 *RADIOLOGICAL ANALYSIS METHODS USED IN REMP*

2.1 *Gross Alpha & Beta Analysis*

Air particulate samples, collected on a weekly basis, aid in verifying the in-plant controls used for monitoring the release of radioactive materials. Air particulate samples are analyzed on a low background alpha/beta gas proportional counting unit, following a delay of a 100-hour minimum to allow for the decay of radon products. Blank filters of the same size and type as the client filters are used for background subtraction. If the beta activity concentration is greater than 0.2 pCi/m^3, the sample may need to be analyzed for individual gamma emitters. Each sample is composited by sampling location and held until the end of the quarter for a gamma isotopic analysis.

Environmental water samples are also analyzed for gross alpha and/or gross beta radioactivity. Samples are evaporated and a planchet containing the particulate residue is analyzed by a gas proportional counter. Measurable amounts of naturally occurring alpha and beta emitting radionuclides are often found in environmental water samples. Gross alpha and gross beta measurements are rapid screening methods which may indicate the need for a nuclide specific isotopic analysis.

2.2 *Gamma Spectrometry*

The following media are typically analyzed for gamma isotopic content:

- milk

- water
- charcoal cartridges
- airborne particulate filters
- fish/shellfish
- vegetation/food crops
- sediment/soil samples

Samples are prepared by various controlled methods (blending, drying, milling) in order to maximize the volume which can be analyzed, and to achieve sample homogeneity. In order to ensure the precision and accuracy of the gamma measurements, specific counting containers are used to load sample media in a reproducible manner. Samples are analyzed via high purity germanium based gamma ray spectrometry detection systems. The gamma spectrometry software accounts for baseline corrections, background peak interferences, and photopeak multiplet resolution. Detected photopeaks are identified using a comprehensive library, specifically tailored for environmental monitoring around nuclear power facilities.

Concentrations are calculated and reported for 27 radionuclides, whether they are present in the sample or not. These radionuclides, listed in Table 2 represent gamma emitters most appropriate for nuclear power plant effluents. The gamma spectrometry analysis exceeds the current NRC assay requirements (3 radionuclides for MDC or Reporting Levels) for this analysis at YNPS. In addition to the 27 reported radionuclides, another 16 radionuclides are included in the software library and will be identified, if present. Lastly, the gamma spectrometry software will report to the analyst all photopeaks found in the sample, whether identified or not. Thus, a radionuclide like Eu-154, with approximately ten measurable photopeaks, would be revealed by its unique combination of characteristic gamma photons, whether or not it is included in the library.

Table 2. Radionuclides Reported in Gamma Spectrometry Analysis

Radionuclide List for YR REMP Analysis		
AcTh-228	Co-60	Mn-54
Ag-108m	Cr-51	Nb-95
Ag-110m	Cs-134	Ru-103
Ba-140	Cs-137	Ru-106
Be-7	Fe-59	Sb-124
Ce-141	I-131	Sb-125
Ce-144	I-133	Se-75
Co-57	K-40	Zn-65
Co-58	La-140	Zr-95

2.3 *Iodine Analysis*

The required low detection limit for I-131 in milk, vegetation and water samples can only be achieved by radiochemical separation and concentration of the iodine.

The beta-gamma coincidence system is calibrated to detect the characteristic I-131 beta and gamma radiation. This system combines a plastic scintillator beta detector with a Na(I) gamma detector. Beta gamma coincidence counting allows for a very low background since the system is optimized for I-131 and therefore, increased detection sensitivity.

2.4 *Tritium Analysis*

The determination of tritium in environmental samples involves distillation and analysis of the pure distillate by liquid scintillation spectrometry. The tritium counting efficiency is determined using an efficiency curve generated as a function of the sample quench.

A multi-channel analyzer associated with the liquid scintillation counting system is optimized for the tritium beta energy. Additionally, the spectra are evaluated to ensure that the distilled samples are free of interferences.

2.5 *Strontium Analysis*

The determination of Sr-89, 90 in environmental media is achieved by pre-concentration followed by separation and purification followed by analysis for total strontium using the Cerenkov counting technique. The Cerenkov radiation, resulting from the interactions of the Sr-89 and Y-90 beta emissions in the liquid scintillation counter is detected and processed by the multi-channel analyzer. Following yttrium(Y)-90 in-growth, Sr-90 is separated and the Y-90 fraction is analyzed by Cerenkov counting. The concentrations of each strontium isotope are determined mathematically based on the two measured results.

3.0 *LABORATORY QUALITY ASSURANCE PROGRAM*

The quality assurance program at the Framatome-ANP Laboratory (FANP) is designed to serve two overall purposes: 1) Establish a measure of confidence in the measurement process to assure the licensee, regulatory agencies, and the public that analytical results are accurate and precise; and 2) Identify deficiencies in the sampling and/or measurement process to those responsible for these operations so that corrective action

can be taken. Quality assurance is applied to all steps of the measurement process, including the collection, measurement and reporting of data, as well as to record keeping of the final results. Quality control, as part of the quality assurance program, provides a means to control and measure the characteristics of the measurement equipment and processes, relative to established requirements.

The FANP employs a comprehensive quality assurance program designed to monitor the quality of analytical processing to ensure reliable environmental monitoring data. The program includes the use of controlled procedures for all work activities, a nonconformance and corrective action tracking system, systematic internal audits, audits by external groups, a laboratory quality control program, and a staff training program. Monitoring programs include the Intra-laboratory Quality Control Program administered by the Laboratory QA Officer (used in conjunction with the National Institute of Standards and Technology Measurement Assurance Program, NIST MAP) and a third party cross check program administered by Analytics, Inc. Together these programs are targeted to supply QC/QA samples at 5% of the client sample analysis load. In addition, a blind duplicate program is conducted through client environmental monitoring programs.

A yearly summary of the FANP Laboratory performance on Quality Assurance samples is provided in the Annual Radiological Environmental Operating Report that is submitted to the NRC.