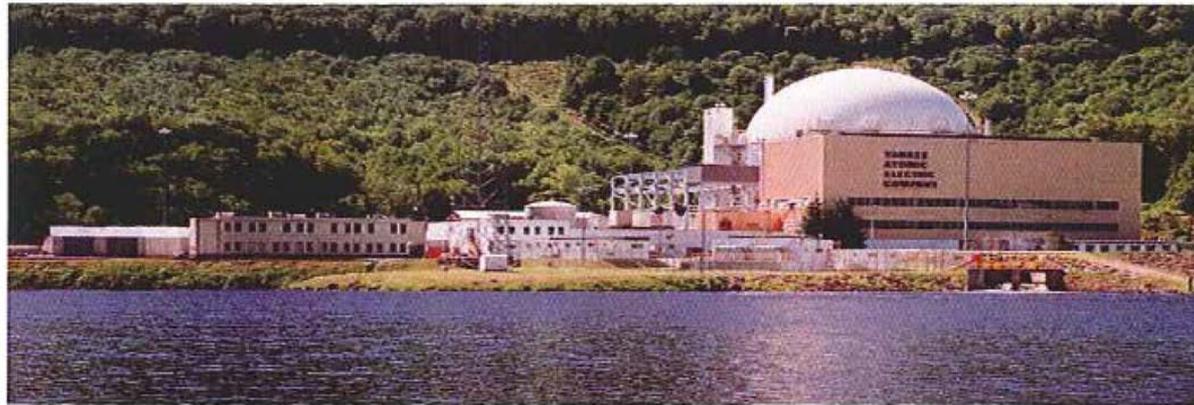


YANKEE NUCLEAR POWER STATION ROWE, MASSACHUSETTS SITE CLOSURE PROJECT

Vermont Nuclear Decommissioning Citizens Advisory Panel

October 27, 2016

Massachusetts Department of Environmental Protection



Multiple Agency – Decommissioning Oversight

Radiological:

- USNRC – License Termination Plan
- MADPH – Closure standards

Non – Radiological:

- USEPA – CWA, CAA, NESHAP, TSCA, RCRA, ESA, NPDES
- USACOE – CWA, Section 404
- MAEOEEA – MEPA
- MADEP – State & Federal Delegated Environmental Regulations
- Rowe Conservation Commission – WPA

MassDEP's Role and Objectives

- Encourage Inter-agency cooperation
- Work with YAEC to achieve common goals
- Ensure environmental requirements and standards were met while sorting out overlapping regulations
- Develop a comprehensive risk assessment approach
- Identify, review and issue required approvals/permits
- Foster stakeholder participation
- Support the goal of an “unrestricted status ” for the site

MassDEP Programs Oversight

- Wetlands Protection Act (310 CMR 10)
- MA Clean Water Act (314 CMR 4)
- Public Waterfront Act (310 CMR 9)
- Solid Waste Management (310 CMR 19)
- MA Contingency Plan (310 CMR 40)
- NPDES (314 CMR 3 and 40 CFR 122)
- Hazardous Waste Management (310 CMR 30)
- Title 5 (310 CMR 15)
- Air Pollution Control (310 CMR 7)

Example Activities

- Landfill Closure
- PCB Soil and Pond Sediment Clean-up
- Contaminated Soil Removal
- Spent Fuel Pool Water Treatment and Discharge
- Water Quality Certification
- HW and SW Disposal
- Demolition of Structures
- Beneficial Use of Solid Waste
- Groundwater Hydrological Assessment
- Site Human and Ecological Risk Assessment
- Wetland Protection

Environmental Assessment

- Soil – 2,700 samples
- Groundwater – 83 monitoring wells (4 rounds)
- Surface Water – 126 samples
- River Sediment – 700 samples
- Fish – 27 individuals
- Parameters:

Chemical – VOCs; SVOCs; EPH/VPH; PP13 metals; PCBs, Herbicides/Pesticides, Hydrazine, Bo, Li, U

Radiological – Gamma Spec., Ag-108m, Cs-134, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Nb-94, Sb-125, H-3, Am-241, C-14, Cm-243/244, Fe-55, Ni-63, Pu-238/39/40/41, SR-90, TC-99

Assessment Approaches for Radionuclide Contamination

Dose Approach – NRC

- Dose equivalent (rem, mrem, or sievert)
- Standards expressed in terms of dose equivalent (NRC-25 mrem/year, MassPH – 10 mrem/yr)
- Based on radionuclide concentrations or radiation measurements
- Background comparison based on radiation measures

Risk Approach – EPA

- Cancer Risk (unitless)
- Standards expressed in terms of risk (EPA 10^{-5})
- Based on radionuclide concentrations
- Background comparison based on radionuclide concentrations

Combined Risk Assessment

- Cumulative radiological and chemical human health risk approach
- Responsive to public comments for a comprehensive assessment
- Met prevailing human health and ecological risk standards
- Assessments were conducted by Gradient Corporation
- Protocols for the assessments were approved by MassDEP and EPA toxicologists

Lessons Learned

- Benefit of a comprehensive decommissioning agreement between MassDEP and the regulated entity
- The need for committed local, state and federal leads that foster a coordinated project
- A transparent public process with a website based bulletin board to inform stakeholders in a timely manner
- A pre-approved waste management plan allowed for the efficient and predicable disposal of all wastes (i.e. thermal desorption of PCB soils)