Meeting Minutes

Yankee Rowe Community Advisory Board
October 23, 2008

The Yankee Rowe Fuel Storage and Removal Community Advisory Board held their Fall 2008 meeting at the Mohawk Park Restaurant in Charlemont, Massachusetts, on October 23, 2008.

Attendees: Robert Gallagher, Allan Twitchell, Lenny Laffond, Dawn Peters, Art Schwenger, Thomas Wilson, Robert Capstick, Jana Hunkler-Brule, Bill Loomis

Chairman Lenny Laffond called the meeting to order. The April 24th, 2008 meeting minutes were reviewed and approved. A suggestion was made by the Board that in future meetings, the meeting minutes and any associated information are in a separate package from the information being presented at this meeting.

Project Status was presented by Robert Mitchell. His presentation is attached to these meeting minutes.

Regional and Federal Nuclear Waste Issue Update was presented by Robert Capstick. His presentation is attached to these meeting minutes. It was noted by the Board that they had not received any acknowledgement or response to their letter to the Congressional Delegation. Bob will follow up on this.

CAB New Business: During the meeting there were extensive discussions on the location of the tritium plume, its concentration, size and direction of travel.

The Chairperson read a letter from Ms. Anita Barker representing the Berkshire Regional Planning Commission, resigning from the CAB.

The next CAB meeting is scheduled for Thursday April 9th, 2009.

The Meeting was adjourned @ 8:00 p.m.

For more information, contact Bob Mitchell at 413-424-5261 X-303 or via email at rmitchell@3yankees.com.

CAB Meeting
October 23, 2008
Project Status

Yankee Rowe Spent Fuel Storage & Removal
Community Advisory Board Meeting

Thursday, 10/23/2008

Project Status

Overall

Emphasis continues on Project closeout with DEP.

The Sherman Dam extension tie-in is on hold.

Site preparations for Winter Operation are underway.

Industrial Safety

The project has worked more than 2.9 years since the last lost time accident as of September 30, 2008

There was one first aid case, since the last meeting, which was the result of a bee sting to an officer.

Site Activities

- Site activities completed since the last meeting was the restoration of the area where the Furlon House use to be and stabilization of the area where work was being planned on the Sherman Dam extension. Any additional work in the area of the Sherman Dam is on hold pending the out come of discussions with TransCanada.
- Vegetative growth evaluations by biologists which are required by Water Quality Certification and Order of Conditions indicated that the site restoration is progressing well with no issues identified during the last site inspection.
- Water Quality Certification should be done this year and Order of Conditions next year.
- Completed 2008 groundwater sampling and discussed results during last meeting, the next round of samples will be in the spring of 2009.

Physical Work

- Area where additional tie-in work relative to the Sherman Dam has been stabilized and YAEC and TransCanada are discussing the scope of the remaining work.
- Completed annual inspection of the Vertical Concrete Casks (VCCs) with only minor maintenance required on some of the exposed metal surfaces.
- YAEC is in discussions with Dirigo Lumber located in Solon, Maine about implementing a "forest management" program that we expect to continue for the foreseeable future.

Site Closure

Working with the DEP to complete the final close out of the following 2 remaining activities:

- Wetlands related (Water Quality Certification and Order of Conditions)
- Environmental Closure under the MCP and Solid Waste Regulations

Wetland Closure will be this fall or early next year based on the timing of the completion of the additional year of monitoring for the Bordering Vegetative Wetland (BVW) Area – West Storm Drain Ditch. The monitoring will be completed in November with a report issued to the DEP in December 2008. This will allow closure of the Water Quality Certification.

With no additional physical work performed at the site, the Certificate of Compliance can be obtained for the completion of the site activities under the Order of Conditions next year. This will allow closeout of the Order of Conditions. All required monitoring will be completed this fall (unless we build the Dam Extension.)

Environmental Closure is nearing completion with the final closure documentation issued 10/16/08 by the DEP.

Post Closure Groundwater Monitoring will continue at the site for up to 30 Years. The groundwater sampling completed in 2008 indicated that the decreasing trend with the tritium concentrations is continuing as predicted.

All Deed Notices and Restrictions for the property as discussed earlier this year have been filed (Residential Deed Restriction, SCFA Deed Notice, BUD Deed Notices and TSCA Deed Restriction).

Yankee Property Disposition

- No activities planned by Yankee at this time. Yankee is in discussion with Tran-Canada on modification of the existing indenture and easement agreement.
- All major stake holders (Local, County, State and Federal) will be briefed on the Expression of Interest Process (EOI).
- Vita Nuova, LLC with offices in Sandy Hook, CT have been retained to assist YAEC with disposition of its property in the Towns of Rowe and Monroe.

CAB Meeting
October 23, 2008
MA DEP
Phase II -
Comprehensive Site Assessment Report

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WESTERN REGIONAL OFFICE
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Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

October 16, 2008

Yankee Atomic Electric Company
49 Yankee Road
Rowe, MA 01367
Attention: Wayne Norton, President

RE: Rowe-BWSC-RTN #1-13411
Phase II – Comprehensive Site Assessment Report
Final Report - Review
310 CMR 40.0000
Yankee Nuclear Power Station
49 Yankee Road

Dear Mr. Bourassa:

The Massachusetts Department of Environmental Protection (the MassDEP) has completed review of the Final Phase II - Comprehensive Site Assessment (Phase II) Report for environmental assessment of the Yankee Nuclear Power Station (YNPS) in Rowe, MA, according to the MassDEP's Bureau of Waste Site Cleanup (BWSC) regulations at 310 CMR 40.000 (the Massachusetts Contingency Plan, or the MCP). The MassDEP's approval of this Final Phase II Report, as described below, represents the final approval necessary to achieve site closure under the Massachusetts Contingency Plan. The Final Phase II Report consists of a number of individual reports, submitted on behalf of Yankee Atomic Electric Company (Yankee) by its consultants to satisfy the requirements of the MassDEP's October 7, 2005 review of the Interim Phase II Report (the Interim Phase II Review). The primary environmental consultant for the Final Phase II reports was ERM, Inc. of Boston, MA, and the Licensed Site Professionals (LSPs) of record for these reports were John McTigue and Gregg Demers of ERM.

YNPS was shut down in 1992 and has undergone decommissioning in accordance with Nuclear Regulatory Commission (NRC) regulations under 10 CFR Part 50. All radiological issues associated with decommissioning fall under the authority of the NRC, the Massachusetts Department of Public Health's Radiation Control Program (the MADPH), the MassDEP and the United States Environmental Protection Agency (the EPA), as applicable. The NRC issued on August 10, 2007 a partial release of the YNPS License Termination Plan (LTP) for all areas of the YNPS site except the Independent Spent Fuel Storage Installation (ISFSI). The MADPH issued its partial release approval to YNPS on March 14, 2008

Non-radiological contamination at the site falls under the authority of the MassDEP and the EPA, as applicable. The assessment and remediation of polychlorinated biphenyls (PCBs) at the YNPS was primarily performed according to the authority and oversight of the EPA, in accordance with EPA Toxic Substance Control Act (TSCA) requirements and approvals. The EPA approval letter for the PCB remediation was issued to Yankee on April 26, 2006, and the required PCB Remediation Certification statement was completed by Yankee on March 28, 2007. The MassDEP had previously classified the YNPS site as a Tier 1B site, according to the BWSC regulations at 310 CMR 40.000.

The Final Phase II Report contains the results of assessment for both radiological and non-radiological parameters at the site. All assessment and remedial actions at the YNPS site have at this point been completed (with the exception of the ISFSI utilized for spent fuel storage, which is not within MassDEP authority) Yankee completed cumulative (radiological and non-radiological) Human Health and Ecological Stage II Risk Assessments (the Risk Assessment) for the YNPS site, according to MCP regulations and requirements, following remedial actions. As agreed to by the MassDEP, the Phase II investigation and Report were completed within the context of the MCP for the purposes of site closure, but not as a formal Release Tracking Number (RTN) for the entire site The MassDEP is issuing this Review of the Final Phase II Report according to its authority under M.G.L. c. 21E and the regulations promulgated thereunder at 310 CMR 40.000.

The Final Phase II Reports submitted by Yankee in response to MassDEP's Interim Phase II Review included the reports outlined below (note that all documents associated with the YNPS site are public information and may be viewed or copied at the MassDEP Regional Office in Springfield, MA, or at the Yankee Public Document Repository in Greenfield, MA):

- Groundwater Monitoring Plan to Support Closure under the Massachusetts Contingency Plan, dated September 1, 2006;
- Supplemental Phase II Comprehensive Site Assessment Report, dated September 21, 2006, by ERM, Inc.;
- Human Health Risk Assessment Work Plan & Environmental Risk Characterization Work Plan, dated September 11, 2006, by Gradient Corp.;
- Revised Beneficial Use Determination (BUD) for Structures, dated November 6, 2006, by ERM, Inc ;
- Addendum to the Phase II Comprehensive Site Assessment Report, dated February 6, 2007, by ERM, Inc.;
- Method 3 Risk Characterization, dated November 2007, by Gradient Corp.;
- Response Action Outcome Statements, RTN 1-13411, dated February 25, 2008, by ERM, Inc.; and
- Post-Closure Maintenance and Monitoring Report, dated May 6, 2008 by MACTEC, Inc

On June 9, 2007, MassDEP issued to Yankee the Revised Beneficial Use Determination (BUD) Permit approval (the BUD Permit) regarding the disposition of on-site structures and fill material within the historical Industrial Area of the plant site. As required, Yankee submitted to MassDEP a Groundwater Monitoring Plan, which was approved by MassDEP on June 19, 2007 (copy of approval attached).

The YNPS site was divided into three land areas for the purposes of assessment and remediation. These areas are:

- The Radiologically Controlled Area (RCA), which is approximately a 4-acre parcel immediately surrounding the former operating nuclear plant area;
- The Industrial Area, which is approximately a 13-acre parcel immediately surrounding the RCA, within the previous YNPS plant fence line, which formerly contained industrial structures

associated with the plant; and

- The Non-Industrial Area, which is that portion of YNPS property outside the fenced Industrial Area, containing woodlands, roadways, etc , which encompasses approximately 1,783 acres, including surface water bodies adjacent to and downstream from YNPS site The Southeast Construction Fill Area (SCFA) is just outside the previous Industrial Area, and has been assessed and remediated according to separate permit approvals from the MassDEP's Solid Waste Section

The Interim Phase II Review contained a detailed summary of environmental assessment work performed as part of the Interim Phase II Report - that summary will not be repeated in this Review; however, a copy of the Interim Phase II Review is attached for reference This Final Phase II Review will not summarize in detail the additional assessment results, but will address whether the requirements of the Interim Phase II review have been satisfactorily completed, for each of the environmental media assessed at the site. For each of the following review sections, the applicable conditions of the Interim Phase II Report requirements are listed.

1. **Final Phase II Report – General** (Interim Ph II Condition 14)

The cumulative Final Phase II Report contained the following information, as required:

- Summaries of additional assessment work, including analytical data (non-radiological and radiological) in tabular form, with appropriate standards or criteria for each media shown (for reference purposes);
- Updated basemaps, depicting the locations of soil sampling locations, groundwater monitoring wells, surface water and sediment sampling locations, and fish sampling locations;
- Groundwater contour maps of the Industrial Area and immediate vicinity, and updated maps of tritium concentrations in groundwater;
- Contour maps of the top of bedrock, top of till, and top of glaciolacustrine unit;
- Contour maps of gross alpha and gross beta activity in site groundwater monitoring wells;
- Historic summaries of Radiological Environmental Monitoring Program (REMP) monitoring performed prior to 1971;
- The ASTM Phase I BWSC (21E) assessment report for the Non-Industrial Area of the Facility; and
- Cumulative (radiological and non-radiological) Human Health and Ecological Stage II Risk Assessments for the YNPS site, prepared in accordance with approved Scopes-of-Work (SOWs), according to MassDEP regulations and requirements.

2. **Soil - Assessment** (Interim Ph. II Conditions 2, 3, 4 & 6)

Decommissioning activities within the Industrial Area resulted in the removal of substantial volumes of soil (and demolition material, including concrete rubble) for proper disposal as radiological waste at permitted off-site disposal facilities, according to NRC requirements. Soil remediation was also completed for non-radiological parameters within the Industrial Area, and in more limited amounts in the Non-Industrial Area Confirmatory soil samples were obtained after remedial activities were completed As required in the BUD Permit, following assessment and soil removal, a 3-foot thick layer of clean soil was placed over the entire, 3.5-acre BUD Fill Area, which encompasses the RCA at the center of the Industrial Area.

A total of approximately 2,700 soil samples have been obtained and analyzed for non-radiological

parameters as part of the assessment of the YNPS site. The soil sampling required by the Interim Phase II Review was completed, both within the Industrial Area and in the Non-Industrial Area. All of these additional soil samples were analyzed at a minimum for the standard non-radiological parameter list for the YNPS site (as approved by MassDEP), which consists of all samples being analyzed for volatile organic compounds (VOCs) by EPA Method 8260 and the thirteen (13) Priority Pollutant metals by EPA Method 6010B, and selected additional samples being analyzed for various portions of the following parameter list:

- Semi-volatile organic compounds (SVOCs) by EPA Method 8270;
- Polychlorinated biphenyls (PCBs) by EPA Method 8082;
- Extractable petroleum hydrocarbons/volatile petroleum hydrocarbons (EPH/VPH) by the MassDEP method;
- Dioxins and furans;
- Hydrazine;
- Pesticides; and
- Herbicides by EPA Method 8151.

The results of full radiological analyses for approximately 1,600 soil samples were utilized in the Risk Assessment review, including the specific additional soil sampling required by the Interim Phase II Review. A large amount of additional radiological monitoring and assessment of soils (and other media) was performed at the YNPS site to satisfy the NRC and MADPH requirements for the NRC License Partial Site Release , as part of the Final Status Survey (FSS) for the site.

All soil samples were analyzed for the presence of radionuclides by gamma spectroscopy, and as outlined in the LTP requirements, a minimum of 5% of these samples were also analyzed for the Hard-To-Detect (HTD) radionuclides H-3 (tritium), Am-241, C-14, Cm-243/244, Fe-55, Ni-63, Pu-238, Pu-239/240, Pu-241, Sr-90 and Tc-99. For all media samples, including soil, the radiological analyses by gamma spectroscopy at a minimum quantified the FSS list of radionuclides Ag-108m, Cs-134, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Nb-94 and Sb-125. The LTP states that these radionuclides are analyzed as part of the entire gamma spectroscopy library, and that if any other radionuclides were detected by gamma spectroscopy above minimum detectable activities (MDAs), they would have been reported as part of these analyses. **Following remedial activities, the results of soil analyses (both radiological and non-radiological) do not exceed the risk criteria of the Risk Assessment.**

3. <u>Groundwater - Assessment</u> (Interim Ph. II Conditions 2, 3, 4, 7, 8, 9 & 10)

A total of 83 groundwater monitoring wells have been installed and monitored at the site to date, including 22 wells installed in 2006 subsequent to (and, in part, in response to) the Interim Phase II Review. Due to decommissioning activities, 26 monitoring wells have been properly abandoned in accordance with MassDEP guidelines. Currently, there are a total of 57 monitoring wells on-site, consisting of shallow (water-table) wells, intermediate depth wells, and deep, bedrock wells. Groundwater flow maps show that groundwater flow beneath the previous Industrial Area is primarily towards the Deerfield River below Sherman Dam (towards the vicinity of Sherman Spring), with some indication of a minor amount of deeper, radial flow towards Sherman Reservoir.

Groundwater samples were analyzed for the standard YNPS non-radiological parameter list, and the additional samples required in the Interim Phase II Review were also analyzed for boron, as required. Several monitoring wells have historically shown limited exceedances of groundwater standards for non-radiological parameters, primarily for arsenic

All groundwater samples were analyzed during at least four quarterly Phase II monitoring rounds for the presence of radionuclides by gamma spectroscopy, and also for the HTD radionuclides. All groundwater samples from all monitoring rounds were analyzed at a minimum for tritium, gross alpha and gross beta, and a significant number of selected monitoring wells have also been analyzed historically for the gamma spectroscopy and the HTD parameter list

The former Visitors' Center potable well was sampled and analyzed for radiological analyses, and the results of the last two years of sampling and analysis of the YNPS Facility potable well were included in the Final Phase II Report The results showed no exceedances of any MA Drinking Water Standards & Guidelines (MCLs), and no detectable tritium or other plant-related radionuclides.

The Final Phase II Report states that tritium continues to be the only plant-related radionuclide detected in groundwater at YNPS site The source of the tritium contamination in groundwater at the site was the result of a documented leak(s) in the former Spent Fuel Pool/Ion Exchange Pit complex (SFP/IXP complex) which began in the 1960s, within the center of the former Industrial Area/RCA The tritium contamination in groundwater extends laterally downgradient from the former SFP/IXP complex location towards Sherman Spring and the Deerfield River, primarily in the shallow glaciolacustrine unit. The deeper tritium contamination is more limited in extent and concentrations, extending at depth into the sand layers within the glacial till and into bedrock in one well, MW-105B (within the former RCA), and extending laterally from the former SFP/IXP complex a shorter distance towards Sherman Reservoir.

The June 19, 2007 Post-Closure Groundwater Monitoring Plan approval issued to Yankee by MassDEP requires continued sampling of 4 monitoring wells and Sherman Spring, within and downgradient of the BUD Area, during the post-closure monitoring period of 30 years and includes analyses for the radionuclides by gamma spectroscopy, Sr-90 and tritium. Tritium monitoring is also required at 2 additional site monitoring wells, non-radiological monitoring is required at 4 additional site monitoring wells, and 30-year post-closure monitoring (radiological and non-radiological) is also required at 3 monitoring wells located at the SCFA.

During the most recent monitoring in March of 2008, tritium continued to be detected in 8 of the site monitoring wells, with the highest tritium concentration of 25,700 picoCuries/liter (pCi/l) in well MW-107C, an intermediate-level well screened at a depth of 27 to 32 feet immediately downgradient of the former SFP/IXP complex location (this has decreased from a concentration of 48,000 pCi/l in 2003 in this well). In 2008, tritium continued to be detected in bedrock monitoring well MW-105B, at 4,710 pCi/l (equivalent to 2003 levels), while the water sample from Sherman Spring was non-detectable (ND) for tritium (decreased from previous levels).

The groundwater sample from well MW-107C continues to exceed the USEPA drinking water criteria (MCL) of 20,000 pCi/L. However, as required by the BUD Permit, the recorded deed notification(s) for the BUD Area, which encompass this well location and the central area of groundwater tritium contamination, prohibits the installation or use of any water supply wells within the BUD Area **Given the BUD Area deed restrictions and based on the remaining data outside the BUD Area, the results of groundwater analyses for both radiological and non-radiological parameters do not exceed the risk criteria of the Risk Assessment.**

4. **Surface Water - Assessment** (Interim Ph. II Conditions 2, 3, 4, & 11)

As part of the entire Phase II Assessment, a total of 126 surface water samples were collected from the site and surrounding vicinity, with samples collected from upstream (background) locations, Sherman Reservoir, the Deerfield River, Sherman Spring, the East and West Storm Drain Ditches, and in Wheeler Brook (as part of the SCFA assessment) Initial Phase II surface water samples were analyzed for the standard YNPS non-radiological parameter list and for radionuclides by gamma spectroscopy and for HTDs. All of the additional surface water samples required in the Interim Phase II Review were obtained as required and analyzed for the thirteen (13) Priority Pollutant metals plus lithium and boron, and for radionuclides by gamma spectroscopy plus tritium.

The additional surface water samples showed slightly elevated levels of some metals in Sherman Spring and the Deerfield River immediately downriver of the YNPS Tritium was detected in Sherman Spring and the West Storm Drain Ditch in 2006. **The results of the surface water analyses for both radiological and non-radiological parameters do not exceed the risk criteria of the Risk Assessment.**

5. **Sediment - Assessment** (Interim Ph. II Conditions 2, 3, 4, & 11)

As part of the entire Phase II Assessment, a total of approximately 700 sediment samples were collected from the site and surrounding vicinity, with samples generally collected from the same locations as surface water samples Initial Phase II surface water samples were analyzed for the standard YNPS non-radiological parameter list and for radionuclides by gamma spectroscopy and for HTDs All of the additional sediment samples required in the Interim Phase II Review were obtained as required and analyzed for the thirteen (13) Priority Pollutant metals plus lithium, boron and total uranium, and for radionuclides by gamma spectroscopy plus HTDs.

As part of decommissioning activities, PCB-contaminated sediments (from PCB-containing paints previously used at the YNPS) were remediated from Sherman Reservoir and the West Storm Drain Ditch in accordance with TSCA approvals from the EPA, as noted previously Confirmatory sediment samples were obtained from these areas after remediation

The additional sediment samples showed slightly elevated levels of some metals and some radionuclides (including Cs-137) in Sherman Spring, the Deerfield River immediately downriver of the YNPS, and in Sherman Reservoir near the Cooling Water Discharge. Total uranium was slightly elevated in the Deerfield River immediately downriver of the YNPS **The results of the sediment analyses for both radiological and non-radiological parameters do not exceed the risk criteria of the Risk Assessment.**

6. **Fish - Assessment** (Interim Ph II Conditions 2, 4, & 12)

Fish were collected in the Summer/Fall of 2006 from background locations upriver at Harriman Reservoir; two locations within Sherman Reservoir (the East Storm Drain Outfall near the YNPS facility, and the northern end of Sherman Reservoir); and the Deerfield River immediately downriver of the YNPS facility, upriver of the Monroe Bridge dam Fillets from the fish were analyzed for PCBs (both Aroclors and congeners), for radionuclides by gamma spectroscopy, and for tritium

Fish samples from Sherman Reservoir showed slightly elevated levels of PCBs, relative to the background samples from Harriman Reservoir. Fish samples from Sherman Reservoir showed

detectable, but very low levels of tritium, while the background samples from Harriman Reservoir and the samples from the Deerfield River were non-detectable for tritium. The Final Phase II Report concluded that the detectable levels of tritium were naturally-occurring and not related to YNPS plant operations. No other radionuclides were detected by gamma spectroscopy in the fish samples, except for naturally-occurring K-40. **The results of the fish analyses for both radiological and non-radiological parameters do not exceed the risk criteria of the Risk Assessment.**

6 Risk Assessment – Results (Interim Ph. II Conditions 13 & 14)

As required by the Phase II Interim Review, Yankee's consultant, Gradient Corp., submitted to MassDEP the Scopes-of-Work (SOWs) for cumulative (radiological and non-radiological) Human Health and Ecological Stage II Risk Assessments (the Risk Assessment) for the YNPS site, according to the regulations, requirements and guidance as outlined in the MCP. The SOWs were approved by MassDEP's Office of Research & Standards (ORS) on December 6, 2006. The completed Method 3 Risk Characterization (the Risk Assessment) for the YNPS was submitted to MassDEP on November 13, 2007. **The Risk Assessment concludes that the YNPS site meets the MassDEP's Risk Assessment standards for cumulative risk attributable to the site (radiological and non-radiological) of no more than 1 X 10^{-5} Excess Lifetime Cancer Risk (ELCR) and no more than a Hazard Index (HI) of 1.**

USEPA/Region I provided assistance to MassDEP/ORS in the review of the Risk Assessment. The ORS review of the Risk Assessment was issued on December 31, 2007 (copy attached). **The ORS review memorandum states that the Risk Assessment is consistent with the risk assessment requirements of the MCP.**

The NRC's August 10, 2007 Partial Site Release issued in accordance with the YNPS License Termination Plan (LTP) concluded that the YNPS site meets the NRC approved Yankee Atomic Electric Company's LTP/FSS standard of no more than 25 millirem/year (mrem/yr) total radiation dose above background, or Total Effective Dose Equivalent (TEDE) attributable to the site. The MADPH's March 14, 2008 partial site release approval concluded that the YNPS site meets the MADPH standard of no more than 10 mrem/yr TEDE attributable to the site. Neither of these approvals required the placement of the 3-foot soil cover over the BUD Fill Area (the RCA) to meet these respective dose-based standards.

The MassDEP's approval of the Risk Assessment conclusions are contingent, in part, on the Deed Notifications (Activity and Use Limitations, or AULs) for the YNPS site, which contain the following requirements (among others) for 30-year post-closure maintenance and monitoring by Yankee:

- The continued maintenance of the three-foot layer of clean soil placed over the 3.5-acre BUD Fill Area in the central portion of the YNPS site, and the requirements for no excavations or other invasive procedures within that soil layer;
- The requirement that no potable water supply wells may be installed or used within the BUD Area; and
- The requirements for continued monitoring of the YNPS site, including the BUD Area and the SCFA

Yankee recorded the Deed Notification for the SCFA on October 3, 2007, and the Deed Notification for the YNPS portion of the BUD Area on February 1, 2008, and TransCanada recorded the Deed Notification for the TransCanada portion of the BUD Area on June 27, 2008. Yankee executed Financial Assurance Mechanisms (FAMs) for the BUD Area on November 25, 2007, and for the SCFA on February 11, 2008, consisting of letters-of-credit in the monetary amounts approved by MassDEP, for 30-

year post-closure maintenance and monitoring costs. As noted previously, the MassDEP's June 19, 2007 approval of the Groundwater Monitoring Plan requires long-term monitoring of the BUD Area and the SCFA.

II. MASSDEP DETERMINATIONS

Personnel of the MassDEP have reviewed the Final Phase II Report for the YNPS in accordance with MGL c. 21E, the regulations promulgated thereunder at 310 CMR 40.0000 (the Massachusetts Contingency Plan, or the MCP), and applicable MassDEP policies and guidance. The MassDEP has determined that the Final Phase II Report is acceptable in accordance with MGL c. 21E and 310 CMR 40.0000, and that YNPS has achieved site closure under the MCP, subject to the conditions outlined below.

1 Yankee shall continue to comply with the requirements for post-closure maintenance and monitoring of the entire BUD Area (both the YNPS portion and the TransCanada portion of the BUD Area), as outlined in the MassDEP's Revised BUD Permit Approval, dated June 9, 2007.

2. Yankee shall continue to comply with all of the stipulations contained within the Deed Notification for the YNPS portion of the BUD area, as recorded on February 1, 2008, at the Greenfield Registry of Deeds, Book 5455, Page 320.

3 Yankee shall continue to comply with all of the stipulations contained within the Deed Notification for the SCFA, as recorded on October 3, 2007 at the Greenfield Registry of Deeds, Book 5401, Page 167

4. Yankee shall continue to comply with the requirements for post-closure monitoring of the YNPS BUD Area (including the portion of the BUD Area on the TransCanada property) and the SCFA, as outlined in the MassDEP's approval of the Groundwater Monitoring Plan dated June 19, 2007, including the requirement for submittal of monitoring results to MassDEP within 45 days of the date of sampling. As outlined in the attached ORS Risk Assessment review memo, the metal thallium shall be added to the analytical parameter list for sampling of Sherman Spring as part of post-closure monitoring.

5. Yankee shall continue to comply with the post-closure maintenance and monitoring requirements for the SCFA, as outlined in separate correspondence from MassDEP.

6. Yankee shall continue to comply with all other applicable local, state and federal regulations and requirements, including those of the NRC, EPA, MADPH, and the Rowe Conservation Commission.

7. Appropriate Health & Safety (H&S) measures shall be utilized for all post-closure maintenance and monitoring work at the YNPS.

MassDEP is issuing this Final Report Review for public comment. In accordance with 310 CMR 40.1400, Yankee shall publish a legal notice in a newspaper which circulates in the community of Rowe, which shall identify that the Final Report Review has been issued and which shall identify the 30-day public comment period. MassDEP will accept public comments on the Final Report Review for a period of 30 days following MassDEP's receipt of documentation that the legal notice has been published.

The MassDEP reserves the right to require additional investigatory or remedial work at the YNPS site, if continued monitoring results indicate such a need. If you should have any questions or comments regarding this correspondence please contact Larry Hanson (#413-755-2287) or David Howland (#413-755-2280) of this office

Sincerely,

Michael J Gorski
Regional Director

Yankeeph2final908 LH
cc: Joe Bourassa - Yankee Atomic Electric Company
Robert Mitchell – Yankee Atomic Electric Company
John McTigue – ERM, Inc
Rowe Board of Selectmen
Rowe Board of Health
Michael Whalen, MA DPH - Radiation Control Program
John Hickman - Nuclear Regulatory Commission
Anna Symington, Tony Kurpaska – DEP/WERO/BWSC
David Howland, Steven Ellis, Daniel Hall – DEP/WERO
Nancy Bettinger, Carol Rowan -West – DEP/Boston/Office of Research & Standards
Earnest Waterman, Kimberly Tisa, Mary Ballew, Philip Newkirk – EPA
Franklin Regional Council of Governments
Citizens Awareness Network – Deborah Katz
TransCanada – William Taylor, Thomas Hwang, Esq.

COMMONWEALTH OF MASSACHUSETTS
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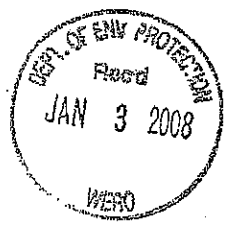
Commissioner

MEMORANDUM

To: Larry Hanson, Project Manager
David Howland, Regional Engineer CRW
Through: Carol Rowan West, Director, ORS
From: Nancy Bettinger, ORS
Date: December 31, 2007

Subject: Method 3 Risk Characterization
Former Yankee Nuclear Power Station
Rowe, Massachusetts



As requested, ORS has reviewed the revisions made to the Method 3 Risk Characterization for the former Yankee Nuclear Power Station site in Rowe, Massachusetts. The revised Method 3 Risk Characterization was submitted to MassDEP by Gradient Corporation on behalf of Yankee Atomic Electric Company in response to ORS's August 24, 2007 comments on the June 2007 draft of the Method 3 Risk Characterization.

The risk assessment is comprehensive, clearly presented, and consistent with the risk assessment requirements of the MCP. Gradient has incorporated most of the recommendations offered by ORS in our August 2007 memorandum. In our view, the risk assessment is essentially complete. For the record, however, ORS wishes to note the following:

- Where surface water concentrations of contaminants of concern exceed Massachusetts Surface Water Quality Standards, a condition of "no significant risk" does *not* exist by definition under the MCP For toxics, the National Recommended Water Quality Criteria (NRWQCs) are cited as Massachusetts Surface Water Quality Standards. The Risk Characterization report acknowledges that the maximum detected levels of some inorganics (cadmium, copper and lead) in Wheeler Brook surface water do exceed the criteria (surface water standards), but it does not state explicitly that a condition of "no significant risk" does not exist in Wheeler Brook. The practical implication of a condition of significant risk in Wheeler Brook is that long term monitoring, which is already planned, will be needed to confirm that the sources of contamination to the Brook

and thus to Sherman Reservoir have been eliminated, and that contaminant concentrations in surface water are decreasing as expected.

- The maximum detected concentration of cadmium in Sherman Reservoir of 0.00009 mg/L slightly exceeds the hardness-adjusted surface water standard of 0.00008 mg/L. This apparent exceedance may be insignificant by itself for two reasons: (1) The maximum detected concentration reported in Table 3-20 is the same as the maximum Sherman Reservoir concentration; and (2) The absolute value of the exceedance is small. Nevertheless, considering that the maximum is based on only three samples, additional monitoring may be warranted in order to evaluate whether exceedances persist.
- The thallium concentration (0.003 mg/L) in the sample collected from Sherman Spring in the Deerfield River Study Area is significantly higher than the NRWQC for protection of human health (0.00047 mg/l). Sherman Spring discharges to the Deerfield River. The human health-based surface water standard is not applicable to the Sherman Spring itself, which is not fishable. Nevertheless, additional monitoring in Sherman Spring may be prudent to ensure that contaminant levels in the spring decrease as expected.
- In ORS's August 24, 2007 memorandum, the fourth bullet under the "Human Health" heading calls for a fuller description of uses and activities that will be prohibited by Activity and Use Limitations and other institutional controls applied in the vicinity of the site. This comment was not explicitly addressed in the November 2007 revision of the Method 3 Risk Characterization. Nevertheless, ORS understands that the activities of concern will be addressed in the AULs that are applied.
- In ORS's August 24, 2007 memorandum, the sixteenth bullet under the "Human Health" heading notes several typographical errors in the toxicity value tables. Most appear to have been corrected in the November 2007 revision. At least one error remains, but it will not affect the outcome of the risk assessment.

If you have any questions about this memorandum, please feel free to contact me at (617)556-1159 or at nancy.bettinger@state.ma.us

CAB Meeting
October 23, 2008
Nuclear Waste Issues Update

YAEC SPENT FUEL STORAGE ADVISORY COMMITTEE MEETING
October 23, 2008

NUCLEAR WASTE ISSUE UPDATE

Federal Nuclear Waste Management Program Update

- **Yucca Mountain License Application:** Was filed by DOE in June and docketed by the NRC in September initiating a 3 to 4 year review process. The licensing review schedule will be subject to DOE and NRC funding levels.

- **Second Repository Report:** DOE is expected to issue the report (required under the Nuclear Waste Policy Act regarding the need for a second repository) before the end of the year. Congress has established a storage capacity limit for Yucca Mountain (70,000 MTU's) which is not large enough to accommodate the current amount of stored spent fuel plus the additional spent fuel projected to be produced as a result of continued plant operations, plant license extensions, and potential new plants.

- **Decommissioned Plant Report:** The DOE has not yet issued the report (which was directed by Congress in the FY-08 Appropriations Bill) for a plan to take custody of spent fuel currently stored at decommissioned reactor sites and demonstrate that DOE can move forward in the near-term with at least some element of nuclear waste policy. The Department was requested to consider consolidation of the spent fuel from decommissioned reactors either at an existing DOE site, at one or more existing operating reactor sites, or at a competitively-selected interim storage site associated with Global Nuclear Energy Partnership facilities.

- **Radiation Protection Standard:** At the end of October, the EPA issued the radiation standards for Yucca Mountain. EPA is required to set standards consistent with the findings and recommendations of the National Academy of Sciences and satisfy a July 2004 court decision to extend the standards duration. The final standards establish a dose limit of 15 millirem per year for the first 10,000 years after disposal and a dose limit of 100 millirem annual exposure per year between 10,000 years and 1 million years. The Nevada Attorney General has filed a lawsuit in federal court to overturn the standard.

Congressional Appropriations and Legislation Update

- **Appropriations:** The House and Senate Appropriations Committees passed FY 2009 appropriations bills for the Energy & Water Development programs this summer. As a result of Senate Majority Leader Reid's efforts, the Senate bill funded the federal nuclear waste management program at $390 million, rather than the $495 requested by the Administration or the $445.5 million approved by the House. These bills have not been voted on yet. Congress passed a Continuing Resolution at the end of September for FY-09 that will run until March 2009. The DOE waste program funding will be prorated at the same funding level as the current year, $386.3 million ($199.1 million from the nuclear waste fund and $187.2 million from defense).

- **NRC Budget:** The NRC requested $78.3 million from the Nuclear Waste Fund in its FY 2009 budget for review of the Yucca Mountain license application. However, OMB only allocated $37.3 million in the FY 2009 budget request to Congress. The House Appropriations Committee added $36 million from the NWF to the government's FY 2009 budget request. However, the Senate Appropriations Committee did not include any additional funds from the NWF for the NRC Yucca repository license application review for FY 2009. NRC funding for the next six months out of the NWF will be at the FY-08 level ($29 million) and because no additional nuclear waste fund money was provided in the FY-09 Continuing Resolution, NRC's licensing review of the Yucca application is expected to be slowed until the FY-09 appropriation bills are revisited in March.

- **Nuclear Waste Legislation:** There were several nuclear waste related bills filed this session in the House and Senate. Senator Domenici most recently introduced a bill this summer promoting recycling as a way to reduce the volume of waste that will require disposal in the federal repository. Of particular note is section 6(d) of the bill which provides for priority acceptance of the fuel for facilities that are shut down permanently and have been decommissioned. None of the nuclear waste bills will pass this session; however they will serve to frame the nuclear waste debate for the next administration and legislative session.

- **Decommissioned Plant Issue:** The number of organizations weighing in on the need for the federal government to address the decommissioned plant spent fuel storage issue continues to increase (updated handout). In July the New England Council sent a letter to the New England Congressional delegation urging action on the nuclear waste issue and emphasizing the need to specifically address the decommissioned plant situation in the region. Also, in testimony before a House Committee this September, the Senior Director for the Nuclear and Radiation Studies Board of the National Research Council stated that DOE should initiate the transport of older fuel from closed reactors to the federal repository through a pilot program to demonstrate its ability to carry out its responsibilities. YAEC will continue its efforts to expedite the removal of the fuel from the site with the Nuclear Waste Strategy Coalition; the Decommissioning Plant Coalition; the Nuclear Energy Institute; the National Association of Regulatory and Utility Commissioners; the New England Council; and other organizations as well.

DOE Lawsuit Status

- On August 7, the three-judge US Federal Circuit Court of Appeals panel issued a decision in the Yankee cases that vacated the U.S. Court of Federal Claims decision and remanded the cases back to the lower court. At the same time, the Court also issued decisions in the related Pacific Gas and Electric and the Sacramento Municipal Utility District appeals, vacating and remanding those decisions as well. Accordingly, the damage awards in all these are no longer pending.

- The Appeals panel found that the damages awarded were not calculated properly because the courts did not use the spent nuclear fuel acceptance rates in the DOE's 1987 Annual Capacity Report when calculating the damages. The Yankee judge and the SMUD case judge used "reasonable rates" and the PG&E judge adopted a different (and lower) ACR acceptance rate. I would also note that the Court also supported the lower court decision that DOE is responsible for removing the GTCC waste under the spent fuel contracts.

- There was a 45 day appeal/reconsideration period and the DOE requested and received a 30 day extension.

- There is currently a stay in effect in the Yankees' second round of DOE damage claims cases.

- As of March 2008, New England ratepayers have paid over $2 billion dollars into the Nuclear Waste Fund.

REPORTS EMPHASIZING THE NEED TO ADDRESS THE SPENT FUEL STORAGE ISSUE AT DECOMMISSIONED NUCLEAR POWER REACTORS

American Physical Society, Panel on Public Affairs, "Consolidated Interim Storage of Commercial Spent Nuclear Fuel: A Technical and Programmatic Assessment" – (February 2007)

"We focus on the issues associated with proposals to establish one or more sites for the consolidated storage of spent nuclear power reactor fuel as an interim measure before final disposition." ... Consolidated storage could facilitate the decommissioning of sites with reactors that have been shut down." (Executive Summary)

"If consolidated interim storage becomes available and should repackaging of existing dry casks become necessary then existing casks could, in principle, be repackaged at the consolidated sites instead of at the reactor sites. There are advantages to repackaging away from the reactor sites. First there are no facilities at decommissioned sites for opening and transferring spent fuel from existing casks. A consolidated site can offer consolidated, efficient fuel handling, eliminating the need for a facility at each closed site." (Page 14)

National Commission on Energy Policy, "Energy Policy Recommendations to the President and the 110th Congress" Section 6. Nuclear Energy (April 2007)

"Take action to address the current impasse on nuclear waste disposal, while reaffirming the ultimate objective of siting and developing one or more secure geologic disposal facilities, by amending the Nuclear Waste Policy act (NWPA) to: ... Require the Secretary of Energy to take possession of and/or remove fuel from reactor sites that have been, or are in the process of being fully decommissioned." (Page 7)

The Keystone Center, "Nuclear Power Joint Fact-Finding Report" (June 2007)

"Centralized interim storage is a reasonable alternative for managing waste from decommissioned plant sites." (Report Press Release)

"A centralized facility that took all the spent fuel from decommissioned reactors would reduce the number of spent fuel installations, provide for consolidated and more efficient oversight of the waste, and allow the decommissioned sites to be reclaimed for other purposes. Furthermore, centralizing the management of the waste would relieve plant owners of the ongoing liability for facilities that no longer generate revenue and would provide a framework for DOE's assumption of direct responsibility for management of spent fuel." ... For example, if waste must be repackaged before it can be placed in Yucca Mountain, a centralized facility could provide consolidated fuel handling, eliminating the need at each shut-down reactor. Further, if the final Yucca Mountain design requires a buffer storage area so that a mix of wastes can be used to meet heat load requirements, this could also be done at a centralized facility". (Page 79).

House Appropriations Committee Report 110-185: Energy & Water Development Bill H.R. 2641 – Nuclear Waste Disposal Section (June 2007)

"The Committee directs the DOE to develop a plan to take custody of spent fuel currently stored at decommissioned reactor sites to both reduce costs that are ultimately borne by the taxpayer and demonstrate that DOE can move forward in the near-term with at least some element of nuclear waste policy. The Department should consider consolidation of the spent fuel from decommissioned reactors either at an existing DOE site, at one or more existing operating reactor sites, or at a competitively-selected interim storage site. The Department should engage the 11 sites that volunteered to host GNEP facilities as part of this competitive process."

The New England Council: Washington Report (June 26, 2007)

"The House Appropriations Committee approved the Subcommittee on Energy and Water's FY 2008 funding level recommendation, which contained a provision that would provide $494.5 million for the Department of Energy's (DOE) waste management program. The Committee report directs the DOE to "... develop a plan to take custody of spent fuel currently stored at decommissioned reactor sites," including those in New England. The Committee went on to instruct the DOE to consolidate the spent fuel. The Council has consistently supported such consolidation, and we will work to ensure that this provision remains in the final appropriations bill."

The FY-08 Consolidated Omnibus Bill Report (HR 2764 –PL 110-161)

NUCLEAR WASTE DISPOSAL

"The Department is directed to develop a plan to take custody of spent fuel currently stored at decommissioned reactor sites to both reduce costs that are ultimately borne by the taxpayer and demonstrate that DOE can move forward in the near-term with at least
some element of nuclear waste policy. The Department should consider consolidation of the spent fuel from decommissioned reactors either at an existing federal site, at one or more existing operating reactor sites, or at a competitively-selected interim storage site.
The Department should engage the sites that volunteered to host Global Nuclear Energy Partnership facilities as part of this competitive process."

NARUC "Resolution Regarding Guiding Principles for Disposal of High Level Waste" (February 2008)

"Continued storage of spent nuclear fuel at permanently shut down plants is unacceptable because it imposes additional costs on ratepayers responsible for paying the costs associated with such on-site storage without offsetting benefits and prevents economic reuse of the site, while transfer of spent nuclear fuel from such sites to appropriate, centralized interim storage would likely reduce the government's liability for failure to begin waste acceptance in a timely manner and improve public safety."

Nuclear Waste Strategy Coalition – Nuclear Waste Disposal Program - Next Steps (February 2008)

> *"Centralized Interim Facilities.* The NWSC generally supports the recommendation in the FY 2008 Consolidated Omnibus Appropriations Act directing the DOE to develop a plan to take custody of spent fuel currently stored at decommissioned reactor sites for consolidation at an existing federal site, operating reactor site(s), or sites that volunteered to host GNEP facilities. In addition, DOE should also address the need for interim storage and disposal of greater-than-class-C waste."

Nuclear Waste Strategy Coalition – Mission and Goals (February 2008)

"The Federal government must initiate removal of spent nuclear fuel and high-level radioactive waste currently stranded at more than 72 commercial and decommissioned nuclear electric power plants across the nation. Timely waste removal encompasses:

> *INTERIM STORAGE.* Centralized interim storage facilities are a safe and cost-effective option for managing spent nuclear fuel and high-level radioactive waste from decommissioned power plants and other facilities and should be authorized and funded for the near-term while a permanent facility is being licensed and constructed."

Nuclear Energy Institute – Interim Storage of Used Fuel Presentation (February 2008)

"Key Elements for Interim Storage" (slide 11 – bullet #6)

- "Move Decommissioned Plant Fuel First"

National Conference of State Legislatures – Policy Statement April 26, 2008

"The National Conference of State Legislatures adopted new policy language on April 26th NCSL urges Congress and the administration/DOE to:

- "Pursue the development of one or two private Nuclear Regulatory Commission-licensed, interim storage facilities to which spent/used nuclear fuel can be safely shipped and stored until such time as a permanent repository is open and commercial nuclear fuel recycling facilities are available."

- "Determine the Department of Energy's role and responsibilities under the Nuclear Waste Policy Act in moving spent/used nuclear fuel, including fuel from decommissioned plant sites, to interim storage facilities."

Senate 2315: "Strengthening Management of Advanced Recycling Technologies Act of 2008" introduced June 26, 2008

SEC. 6. ACCEPTANCE, STORAGE, AND SETTLEMENT OF CLAIMS.

(d) Priority for Acceptance for Closed Facilities- If a request for fuel acceptance is made under paragraph (2) by a facility that has produced used nuclear fuel and that is shut down permanently and the facility has been decommissioned, the Secretary shall provide priority for the acceptance of the fuel produced by the facility.

Letter on Nuclear Waste from Jim Brett, President of the New England Council, Inc to the New England Senate and House Delegation Members, July 23, 2008

"As you also know, New England is home to three shutdown commercial reactors in Massachusetts, Maine, and Connecticut. Until the early-mid 1990's, these three sites provided New England residents with safe, reliable, and affordable power, and are now storing the spent material (and incurring the costs) the federal government had agreed to take possession of by 1998. In the case of the New England plants, because they are now fully decommissioned, the costs being incurred are entirely related to the secure storage of the spent fuel." … "We were pleased to see Congress include language in the Fiscal Year 2008 omnibus appropriations bill that directs the U.S. Department of Energy to develop a meaningful plan to remove spent nuclear fuel stored at decommissioned reactor sites and provide for the consolidated storage."

Testimony of Kevin D. Crowley, Ph.D. Senior Board Director, Nuclear and Radiation Studies Board, National Research Council, Before the Senate Committee on Commerce, Science, and Transportation Regarding the Safety and Security of Spent Nuclear Fuel Transportation, September 24, 2008

"Within the context of its current contracts with commercial spent fuel owners, DOE should initiate transport to the federal repository through a pilot program involving relatively short, logistically simple movements of older fuel from closed reactors to demonstrate its ability to carry out its responsibilities in a safe and operationally effective manner."