



# YANKEE ATOMIC ELECTRIC COMPANY

49 Yankee Road, Rowe, Massachusetts 01367

March 8, 2007  
BYR 2007-019

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555-001

- References:
- (a) License No. DPR-3 (Docket No. 50-29)
  - (b) Yankee Nuclear Power Station – Issuance of Amendment 158 Re: License Termination Plan, dated July 28, 2005.
  - (c) BYR 2006-107, License Termination Plan Biennial Update, dated November 16, 2006.
  - (d) BYR 2005-001, Letter of Intent Concerning the Phased Release of Land from the Part 50 License, dated January 3, 2005, as supplemented by BYR 2005-088 dated October 13, 2005.
  - (e) Letter Hickman, NRC, to Norton, YAEC, Yankee Nuclear Power Station— Release of Non-Impacted Site Area from Part 50 License, dated November 21, 2005.

Subject: Letter of Intent Concerning the Phased Release of Land from the Part 50 License

The purpose of this letter is to provide written notification to the Nuclear Regulatory Commission (NRC) of Yankee Atomic Electric Company's (YAEC's) intent to release a portion of the Yankee Nuclear Power Station (YNPS) site from the 10 CFR 50 License, DPR-3 (Reference a). Specifically, YAEC intends to release an area consisting of twenty-four (24) open land survey areas, eight (8) survey areas associated with partially or fully removed structures, and one (1) subsurface soil survey area. This area encompasses the majority of the site, leaving only the areas associated with the Independent Spent Fuel Storage Installation (ISFSI), Survey Areas/Units OOL-10-02, NOL-07 and NSY-10, within the Part 50 License.

The requirements of 10 CFR 50.83, "Release of part of a power reactor facility or site for unrestricted use," are not applicable in cases where there is an approved License Termination Plan (LTP). In the Statements of Consideration for Section 50.83, the Commission stated that "[p]artial releases following LTP approval would be governed by the LTP or changes thereto" provided that the "LTP contained a sufficient change process or describes staged releases of the property prior to license termination." In a letter dated July 28, 2005, the NRC approved the YNPS LTP via License Amendment No. 158 (Reference b). The Safety Evaluation Report that supports the License Amendment indicates that the NRC accepted the process for releasing the land area(s) from the Part 50 License. Section 1.5 of the YNPS LTP specifies the scope of the

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review and the process for removing land areas from the license. The non-impacted areas of the site were previously released from the Part 50 license, under a separate partial site release request (References d and e).

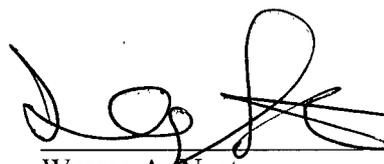
As stated previously, YAEC intends to release the site areas outside of the ISFSI and associated land area from its Part 50 License. Table 1 provides a listing of all survey areas/units included in this proposed release of land from the Part 50 License. In accordance with Section 1.5 of the YNPS LTP and NRC Safety Evaluation dated July 28, 2005 (Reference b), YAEC has reviewed and assessed the subject survey areas (see Table 1 for a listing of specific survey areas to be released) to ensure that this proposed action will have no adverse impact on the ability of the site in aggregate to meet 10 CFR 20, Subpart E, criteria for unrestricted release.

Attachment 1 contains a summary of the assessment performed. It is noted that Attachment 1 does not contain the Final Status Survey (FSS) reports for the subject survey areas as these reports were previously submitted to the NRC (Table 1 contains a list of submittal dates).

YAEC plans to begin undertaking activities associated with the release of the subject survey areas from the YNPS Part 50 License on or before June 30, 2007. Therefore, we request that the NRC approve the acceptability of the release of the subject survey areas from the YNPS Part 50 License by June 15, 2007.

If you should have any questions regarding this submittal, please contact Mr. G. P. van Noordennen at (860) 267-3938.

Sincerely,

  
Wayne A. Norton  
President & CEO

3/18/07  
Date

Attachment

cc: Mr. S. J. Collins, NRC Region I Administrator  
Mr. J. B. Hickman, NRC Project Manager  
Ms. L. Kaufman, Decommissioning Branch, NRC Region I  
Mr. R. Walker, Radiation Control Program, MA DPH

**TABLE 1**  
**Survey Area/Unit Classification and Description**  
**for Areas Proposed for Release**

<b>Survey Area/Unit</b>	<b>Description</b>	<b>MARSSIM Classification</b>	<b>Medium</b>	<b>Report Submittal Date</b>
<b>OOL-01 Sherman Pond Sediments</b>				<b>1/5/2007</b>
OOL-01-01		1	Sediment	
OOL-01-02		2	Sediment	
OOL-01-03		1	Sediment	
OOL-01-04		3	Sediment	
OOL-01-05		2	Sediment	
<b>OOL-02 Yankee Non-Rad Yard Areas</b>				<b>12/4/2006</b>
OOL-02-01		1	Soil	
OOL-02-02		1	Soil	
OOL-02-03		3	Soil	
OOL-02-04		1	Soil	
OOL-02-05		2	Soil	
<b>OOL-03 Sherman Reservoir Dam and South Shoreline</b>				<b>1/4/2007</b>
OOL-03-01		3	Sediment/Soil	
OOL-03-02		1	Sediment/Soil	
OOL-03-03		2	Sediment/Soil	
<b>OOL-04 USGen/Sherman Station Overlying Groundwater Plume</b>				<b>11/21/2006</b>
OOL-04-01		3	Sediment/Soil	
OOL-04-02	Not used, combined with OOL 04-04	N/A	Sediment/Soil	
OOL-04-03	Not used, combined with OOL 04-04	N/A	Sediment/Soil	
OOL-04-04		3	Sediment/Soil	
<b>OOL-05 USGen/ Deerfield River Frontage</b>				<b>12/14/2006</b>
OOL-05-01		3	Sediment/Soil	
OOL-05-02	Not used, combined with OOL 05-03	N/A	Sediment/Soil	
OOL-05-03		2	Sediment/Soil	

Survey Area/Unit	Description	MARSSIM Classification	Medium	Report Submittal Date
OOL-05-04		2	Sediment/Soil	
OOL-05-05		1	Sediment/Soil	
OOL-05-06		1	Sediment/Soil	
OOL-05-07		3	Sediment/Soil	
OOL-05-08		2	Sediment/Soil	
OOL-05-09		1	Sediment/Soil	
OOL-05-10		1	Soil/Asphalt	
<b>OOL-06 Yankee Western Access</b>				<b>12/4/2006</b>
OOL-06-01		3	Sediment/Soil	
OOL-06-02		3	Sediment/Soil	
OOL-06-03		2	Soil/Asphalt	
<b>OOL-07 Soils Deposit Area</b>				<b>10/6/2006</b>
OOL-07-01	Soil pile extending from OOL 05-08 to OOL 04-04	2	Soil	
OOL-07-02		1	Soil	
OOL-07-03		1	Soil	
<b>OOL-08 Yankee Site Exclusion Zone</b>				<b>12/19/2006</b>
OOL-08-01		3	Sediment/Soil	
OOL-08-02		2	Sediment/Soil	
OOL-08-03		3	Sediment/Soil	
OOL-08-04		2	Sediment/Soil	
OOL-08-05		1	Sediment/Soil	
OOL-08-06		2	Sediment/Soil	
OOL-08-07		1	Sediment/Soil	
<b>OOL-09 Southeast Construction Fill Area</b>				<b>10/16/2006</b>
OOL-09-01		1	Soil	
OOL-09-02		1	Soil	
OOL-09-03		3	Soil	
OOL-09-04		3	Soil	
OOL-09-05		1	Soil	
<b>OOL-10 ISFSI/Access, Exclusion Zone, Buffer Zone</b>				<b>11/9/2006</b>
OOL-10-01		1	Soil/Asphalt	
OOL-10-03		1	Soil/	
OOL-10-04		1	Soil	

Survey Area/Unit	Description	MARSSIM Classification	Medium	Report Submittal Date
<b>OOL-11 East RCA Buffer Zone</b>				<b>12/2/2006</b>
OOL-11-01		2	Soil	
OOL-11-02		2	Soil	
<b>OOL-12 Warehouse Rail Spur</b>				<b>10/19/2006</b>
OOL-12-01		1	Soil	
<b>OOL-13 USGen/Rail Spur Terminus</b>				<b>9/26/2006</b>
OOL-13-01		1	Soil	
<b>OOL-14 USGen/Wheeler Brook Frontage</b>				<b>10/27/2006</b>
OOL-14-01		3	Soil	
<b>OOL-15 USGen/Sherman Reservoir East Shoreline</b>				<b>8/9/2006</b>
OOL-15-01	USGen/Sherman Reservoir East Shoreline	3	Soil	
<b>OOL-16 Furlon House Parking Lot</b>				<b>9/18/2006</b>
OOL-16-01		3	Soil	
<b>OOL-17 Asphalt, Brick and Concrete Storage Yard</b>				<b>12/1/2006</b>
OOL-17-01		2	Soil	
<b>OOL-18 Waste Container Staging Area</b>				<b>11/9/2006</b>
OOL-18-01		2	Soil	
<b>NOL-01 East Lower RCA Yard</b>				<b>3/30/2006</b>
NOL-01-01		1	Soil	
NOL-01-02		1	Soil	
NOL-01-03		1	Soil	
NOL-01-04		1	Soil	
<b>NOL-02 Northeastern Upper RCA Yard</b>				<b>11/20/2006</b>
NOL-02-01		1	Soil	
NOL-02-02		1	Soil	
NOL-02-03		1	Soil	
NOL-02-04		1	Soil	
<b>NOL-03 Southeastern Upper RCA Yard</b>				<b>11/3/2006</b>
NOL-03-01	Combined with NOL 03-02 and NOL 05-02	N/A	Soil	
NOL-03-02		1	Soil	
<b>NOL-04 Southwestern Upper RCA Yard</b>				<b>8/31/2006</b>
NOL-04-01		1	Soil	

Survey Area/Unit	Description	MARSSIM Classification	Medium	Report Submittal Date
<b>NOL-05 Northwestern Upper RCA Yard</b>				<b>10/5/2006</b>
NOL-05-01		1	Soil	
NOL-05-02		1	Soil	
<b>NOL-06 West Lower RCA Yard</b>				<b>10/28/2006</b>
NOL-06-01		1	Soil	
NOL-06-02		1	Soil	
NOL-06-03		1	Soil	
<b>AUX-01 PAB East End</b>				<b>5/11/2006</b>
AUX-01-01		1	Concrete structure	
AUX-01-02		1	Concrete structure	
AUX-01-03		1	Concrete structure	
AUX-01-04		1	Concrete structure	
<b>AUX-02 PAB West End</b>				<b>9/7/2006</b>
AUX-02-01		1	Concrete structure	
AUX-02-02		1	Concrete structure	
<b>BRT-01 Foundations and Support Pedestals of the VC Supports and Reactor Support Structure</b>				<b>8/28/2006</b>
BRT-01-01		1	Concrete structure	
BRT-01-03		1	Concrete structure	
BRT-01-04		1	Concrete structure	
BRT-01-05		1	Concrete structure	
BRT-01-06		1	Concrete structure	
BRT-01-07		1	Concrete structure	
BRT-01-08		1	Concrete structure	
BRT-01-09		1	Concrete structure	
BRT-01-10		1	Concrete structure	
BRT-01-11		1	Concrete structure	
BRT-01-12		1	Concrete structure	
BRT-01-13		1	Concrete structure	
<b>NSY-12 Tank #1 Base</b>				<b>5/11/2006</b>
NSY-12-01		1	Concrete structure	
<b>OMB-06 Seal Pit</b>				<b>8/9/2006</b>
OMB-06-01		1	Concrete structure	

Survey Area/Unit	Description	MARSSIM Classification	Medium	Report Submittal Date
<b>SVC-01 North Part of Service Building</b>				<b>9/21/2006</b>
SVC-01-18		1	Concrete structure	
<b>TBN-01 Turbine Building and Office Pads</b>				<b>2/20/2006</b>
TBN-01-01		1	Concrete structure	
TBN-01-02		1	Concrete structure	
TBN-01-03		1	Concrete structure	
TBN-01-04		1	Concrete structure	
TBN-01-05		1	Concrete structure	
TBN-01-06		1	Concrete structure	
TBN-01-07		1	Concrete structure	
TBN-01-08		1	Concrete structure	
TBN-01-09		1	Concrete structure	
TBN-01-10		1	Concrete structure	
TBN-01-11		1	Concrete structure	
TBN-01-12		1	Concrete structure	
TBN-01-13		1	Concrete structure	
TBN-01-14		1	Concrete structure	
TBN-01-15		1	Concrete structure	
TBN-01-16		1	Concrete structure	
TBN-01-17		1	Concrete structure	
<b>WST-01 PCA #1 (Old)</b>				<b>4/17/2006</b>
WST-01-02		1	Concrete structure	
<b>SSS-01 Subsurface Soil</b>				<b>12/1/2006</b>
SSS-01-01		n/a	Soil	

Attachment 1

Yankee Nuclear Power Station

Phased Release of Land from the Part 50 License

March 2007

**YNPS Release Request for  
Non-ISFSI Areas**

**Background:**

The Yankee Nuclear Power Station (YNPS) is located at 49 Yankee Road, Rowe, in Franklin County, Massachusetts. Yankee Atomic Electric Company (YAEC) is the license holder for YNPS. The plant site originally contained 2200 acres, approximately 10 acres of which were developed for plant use. The site is at the bottom of a deep valley along the Deerfield River (elevation 1022') at the southeast corner of Sherman Reservoir (also referred to as Sherman Pond). The area surrounding the site is mostly wooded with very steep slopes on both sides of the Deerfield River. The hills on either side of the site rise about 1000 feet above the river and extend from 12 miles north to 8 miles southeast of the site. Sherman Reservoir served as the source of cooling water for the plant. On January 3, 2005, as supplemented on October 13, 2005, a request was made to release 2170 acres of non-impacted open land from the Part 50 license. The request was approved by the NRC on November 21, 2005.

By letter dated November 24, 2003, as supplemented by letters dated December 10 and December 16, 2003 and January 19, February 10, April 27, August 3, September 2, and November 19, 2004, YAEC requested an amendment to the Operating License for the YNPS. The proposed change would add a License Condition which would approve the License Termination Plan (LTP) for the YNPS and provide the criteria by which YAEC could change the LTP without prior NRC approval. In addition, YAEC indicated in Section 1.5 of the LTP that it may want to remove areas from the license once decommissioning and remediation tasks are complete and the licensee can demonstrate that the area and any associated buildings will have no adverse impact on the site in the aggregate to meet the 10 CFR Part 20, Subpart E, criteria for unrestricted release. Section 1.5 of the LTP specifies the scope of the review and the process for removing the land area(s) from the license. In a letter dated July 28, 2005, the NRC issued Amendment No. 158 to the YNPS Facility Operating License No. DPR-3. The amendment adds a license condition which approves the LTP for the YNPS. The Safety Evaluation that supports the license amendment indicates that the NRC accepted the proposed process for releasing the land area(s) from the license (Part 50 license).

**Purpose:**

The purpose of this report is to provide written notification to the NRC of YAEC's intent to release a portion of the YNPS site from the 10 CFR 50 License DPR-3. Specifically, YAEC intends to release an area consisting of twenty-four (24) open land survey areas, eight (8) survey areas associated with partially or fully removed structures, and one (1) subsurface soil survey area. This area encompasses the majority of the site, leaving only the areas associated with the Independent Spent Fuel Storage Installation (ISFSI), Survey

Areas/Units OOL-10-02, NOL-07 and NSY-10, within the Part 50 License (see Figure 1 for a general view of the areas to be released). In accordance with Section 1.5 of the YNPS LTP and NRC Safety Evaluation dated July 28, 2005, YAEC has reviewed and assessed the subject survey areas to ensure that this proposed action will have no adverse impact on the ability of the site in aggregate to meet 10 CFR 20, Subpart E, criteria for unrestricted release.

## **1.0 Site Information (Related to Survey Areas Covered Under This Request)**

### **1.1 Physical description of the survey areas to be released**

The Yankee Nuclear Power Station is located at 49 Yankee Road, Rowe, in Franklin County, Massachusetts. Yankee Atomic Electric Company is the license holder for YNPS. The plant site originally contained 2200 acres, approximately 10 acres of which were developed for plant use. The site is at the bottom of a deep valley along the Deerfield River (elevation 1022') at the southeast corner of Sherman Reservoir (also referred to as Sherman Pond). The area surrounding the site is mostly wooded with very steep slopes on both sides of the Deerfield River. The hills on either side of the site rise about 1000 feet above the river and extend from 12 miles north to 8 miles southeast of the site. Sherman Reservoir served as the source of cooling water for the plant. On January 3, 2005, as supplemented on October 13, 2005, a request was made to release 2170 acres of non-impacted open land from the Part 50 license. The request was approved by the NRC on November 21, 2005.

Presently, YAEC intends to release an area consisting of twenty-four (24) open land survey areas, eight (8) survey areas associated with partially or fully removed structures, and one (1) subsurface soil survey area. This area encompasses the majority of the remainder of the site, leaving only the Survey Area NOL-07, the land area directly adjacent to the ISFSI pad; Survey Unit OOL-10-02, the area surrounding NOL-07; and the ISFSI pad, Survey Area NSY-10, within the Part 50 License.

In 2002 a Historical Site Assessment (HSA) and initial site classification commenced, following the guidelines of MARSSIM, and was completed in 2003. Site characterization identified areas of surface soil contamination, contamination of structures, and an area of subsurface contamination. A summary of the site characterization and the Historical Site Assessment are provided in Section 2 of the LTP.

Derived Concentration Guideline Levels (DCGLs), representing a dose of 25 mrem/yr or less to the average member of the critical group, were calculated for soils and building surfaces and included in the LTP. Section 6 of the LTP discusses the scenarios used for the DCGL calculations and the associated dose pathways assumed. These DCGLs were then scaled down to 8.73 mrem/yr to address separate state requirements and groundwater dose considerations and were used in conducting remediation and final status survey design and implementation.

A groundwater monitoring program has also been developed and implemented at YNPS to investigate the hydrogeology at the site and monitor radiological and non-radiological contamination in groundwater at the site. A Groundwater Compliance Plan was developed and submitted to the NRC on August 31, 2006. The purpose of the Groundwater Compliance Plan was to describe the groundwater monitoring program and to define the method by which Yankee Atomic Electric Company would demonstrate that plant-related radioactivity in groundwater at YNPS meets the license termination requirements defined in its License Termination Plan and License Amendment No. 158 to License No. DPR-3.

Tritium has been detected in a number of wells located at the site. Based upon fourth quarter 2006 data, the highest level of tritium in any well located onsite is 29,100 pCi/L in MW-107C, near the former location of the Spent Fuel Pit/Ion Exchange Pit. Tritium data from 2006 sampling rounds is provided in Table 1 of this attachment. A discussion concerning the demonstration of compliance with the criteria included in the Groundwater Compliance Plan is provided in Section 2.3.7 of this attachment.

Although not required by the LTP, YAEC has taken surface water samples in order to satisfy a data request from the Massachusetts Department of Environmental Protection. No plant-related radionuclides were detected in the Deerfield River.

## 1.2 Survey Area/Unit Description

**AUX-01:** AUX-01 consisted of the portion of the Primary Auxiliary Building (PAB) (a structure constructed of reinforced concrete) designed to contain the radiological constituents resulting from operation of the primary (radioactive) systems of the YNPS. AUX-01 is bounded by NOL-01 on the north, NOL-02 on the east, NOL-05 on the south and AUX-02 on the west. The PAB structure was free released post operation and demolished. However, portions of AUX-01 were below grade and inaccessible for the free release survey until subsequently exposed during the demolition and excavation processes. The remaining walls and foundation comprise this Survey Area. AUX-01 is located within the Radiological Controlled Area (RCA) and has been classified as a MARSSIM Class 1 area due to initial HSA, surveys and remedial activities performed in adjacent areas.

Survey Area AUX-01 consists of four Survey Units, AUX-01-01 through AUX-01-04. Survey Unit AUX-01-01 consists of the remaining PAB walls that lie within the SFP Excavation footprint. Survey Unit AUX-01-02 encompasses the concrete walls and floor of the pit from the 1022' elevation down to and including the floor of the pit at the 1004' elevation. Survey Unit AUX-01-03 consists of remnant PAB walls and floor existing in the east side of the former structure. Survey Unit AUX-01-04 consists of remnant PAB walls and floor existing in the middle section of the former structure.

**AUX-02:** AUX-02 consists of that portion of the PAB that was not designed to contain portions of the primary (radioactive) operating systems of the plant. The design of the AUX-02 portion of the PAB did not provide for collection and control

of radioactive liquid and gaseous spills or releases, if they occurred within this portion of the PAB. During the early years of operations, all areas within AUX-02 had floor drains that channeled liquids to the storm drain system. These spaces were not ventilated through the Primary Ventilation System. AUX-02 is bounded by NOL-01 and NOL-06 on the north, AUX-01 on the east, NOL-05 on the south and NOL-06 on the west. AUX-02 is located within the Radiological Controlled Area and has been classified as a MARSSIM Class 1 area due to initial HSA, surveys and remedial activities performed in adjacent areas.

**BRT-01:** Survey Area BRT-01 consists of the reinforced concrete structures that comprise the foundations and support pedestals of the sixteen Vapor Container (VC) supports and the eight Reactor Support Structures (RSS) that are remained after demolition of the VC and RSS. BRT-01 is located in the RCA yard area and is within the bounds of survey areas NOL-01 and NOL-06. BRT-01 consists of twelve Survey Units, BRT-01-01, and BRT-01-03 through BRT-01-13. The BRT-01-02 nomenclature was used in conjunction with a survey of material that failed FSS and was shipped off site as radiological waste. The survey units associated with BRT-01 are classified as MARSSIM Class 1 areas.

**NOL-01:** NOL-01 is described in the LTP as the Eastern Lower RCA Yard. Decommissioning of the area resulted in the complete excavation of the land area and the encompassed structures. As a result, the boundaries of NOL-01 include the areas discussed as follows.

NOL-01 consists of the designated open land areas and is the site of the former Spent Fuel Pool (SFP-01), Ion Exchange Pit (NSY-02), Vapor Container Elevator Foundation (NSY-09), the North and South Decontamination Pads and Fuel Transfer Enclosure (NSY-01). All structures have been demolished and removed from the survey area resulting in an open land FSS area survey.

NOL-01 is located within the Radiologically Controlled Area, as delineated in years 2004-2005, and is classified as a MARSSIM Class 1 area. The survey area encompasses a land area of approximately 2,183 square meters and has been subdivided into four distinct Survey Units.

**NOL-02:** The NOL-02 Survey Area is comprised of 4 Survey Units in the RCA comprising the previous site of the New Fuel Vault, surrounding areas east of the former Spent Fuel Pool and the Northeast Upper RCA Yard. Sub-surface systems that traversed or connected within the Survey Area include electrical, storm drain, fuel oil and auxiliary service water, fire protection, and radioactive liquid drain and transfer lines. Many of these systems were encased in concrete duct banks. Survey Unit NOL-02-01, on the west side of the survey area, is an open land area approximately 562 m<sup>2</sup> in size. NOL-02-01 was surveyed as a Class 1 Survey Unit. Survey Unit NOL-02-02, on the east side of the survey area, is an open land area consisting of approximately 698 m<sup>2</sup> in surface area. NOL-02-02 was surveyed as a Class 1 Survey Unit. Survey Unit NOL-02-03, on the south side of the survey area is an open land

area consisting of approximately 469 m<sup>2</sup> in surface area. NOL-02-03 was surveyed as a Class 1 Survey Unit. Survey Unit NOL-02-04, on the north side of the survey area is an open land area consisting of approximately 524 m<sup>2</sup> in surface area. NOL-02-04 was surveyed as a Class 1 Survey Unit

**NOL-03:** Survey Area NOL-03 consists of a single Survey Unit, NOL-03-02. NOL-03-01 was originally a survey unit consisting of a portion of the Old PCA Storage Building. During the FSS of NOL-03-01, however, it was discovered that the unit would not pass FSS and management decision directed the complete removal of the structure. As such, NOL-03-01 no longer exists. NOL-03-02 is a Class 1 Survey Unit consisting of an open land area within the southeast section of the RCA yard. It comprises approximately 1,515 m<sup>2</sup>. Portions of Survey Unit NOL-03-02 were posted and controlled as an RCA.

**NOL-04:** NOL-04 is the land area within the RCA that is bounded by the NOL-05 on the north, NOL-03 on the east, OOL-10 on the south and west. NOL-04 has a single Survey Unit, NOL-04-01 which is a Class 1 survey unit.

**NOL-05:** Survey Area NOL-05 consists of land area that, since the beginning of plant operations, was posted and controlled as an RCA. The surface of NOL-05 is the exposed land area remaining from the demolition of the concrete pad associated with the RCA Warehouse, Waste Disposal Building, and Radioactive Waste Compactor Building and the remaining remnants from demolition of the PCA-1 bathtub foundation. The remaining footprint includes miscellaneous excavations which expose underlying soil and/or concrete remnants, and the exposed soil grade. Survey Unit NOL-05-01 is a sub unit of survey area NOL-05 and is bordered by NOL-06-02 to its north, NOL-05-02 to its east, NOL-04-01 to the south and OOL-10-01 to its west. It is approximately 1505 m<sup>2</sup> of surface area. The other sub unit, NOL-05-02, is bordered by AUX-01 and AUX-02 on the north, NOL-02-03 and NOL-03-02 on the east, NOL-04-01 on the south and NOL-05-01 on the west. It consists of an open land survey unit comprised of non-contiguous depressions which expose a large contiguous soil area encompassing a surface area of 1,544 m<sup>2</sup>. NOL-05-01 and NOL-05-02 are classified as MARSSIM Class 1 survey units.

**NOL-06:** Survey Unit NOL-06-02 is located within the RCA, as delineated in years 2004-2005, and is bounded by OOL-10-03 on the north, OOL-10-01 on the west, NOL-05-01 on the south and NOL-06-01 on the east. Survey Area NOL-06-02 is located west of the former Reactor Support Structure and had been subjected to extensive remediation. A steel reinforced concrete duct bank had fallen within the footprint of NOL-06-02 however; management decision called for the complete removal of this structure, which was completed. The majority of NOL-06-02 was within the RCA during plant operations and is classified as a MARSSIM Class 1 area. NOL-06-02 is open land area consisting of a surface area of approximately 1,024 m<sup>2</sup>. Survey Unit NOL-06-03 consists of a small soil area that surrounds the concrete base for TK-1, located in the northeast section of the RSS footprint. The area was initially part of survey unit NOL-06-01, but was delineated as a separate survey unit to serve

as a buffer zone between Survey Unit NOL-06-01 and the decommissioning work in NSY-01 (the north and south decontamination pads which have been removed). Survey Unit NOL-06-01 forms the west boundary, the turbine building foundation forms the north boundary, and survey unit NOL-01-04 forms the east and south boundaries. NOL-06-03 was part of the RCA and is classified as a MARSSIM Class 1 area. NOL-06-03 is open land area consisting of a surface area of approximately 45 m<sup>2</sup>.

**NSY-12:** NSY-12 Survey Area consists of a single Survey Unit, NSY-12-01, which comprises the base for Tank-1 (TK-1) and a subsurface pipe chase that connected the TK-1 base to the Auxiliary Boiler Room in the Turbine Building. NSY-12 is bounded entirely by NOL-06. NSY-12 is part of the original plant structure. There is no documentation indicating that NSY-12 is contaminated; however, there is information that indicates that the area around NSY-12 is potentially contaminated. However, based upon the radiological condition of this survey area identified in the operating history and as a result of the decommissioning activities performed to date, Survey Area NSY-12 is identified as a Class 1 Area.

**OMB-06:** Survey Area OMB-06 consists of the remains of the concrete structure located at the discharge end of the circulating water system known as the Seal Pit. OMB-06 has an area of 140 m<sup>2</sup>, including walls (floor area: 60 m<sup>2</sup>). Survey area OMB-06 is bounded, on the north, by survey area OOL-01, a land survey area (the reservoir). On the south by TBN-01-08, and east and west sides are bounded by OOL-03, a land survey area. The Seal Pit has been extensively characterized with a combination of sediment samples, concrete core samples, gamma scans, beta scans and beta fixed measurements. OMB-06 consists of a single Survey Unit, OMB-06-01.

**OOL-01:** OOL-01 is described as Sherman Pond Sediment. OOL-01 Survey Area has been further subdivided into six distinct Survey Units encompassing the Sherman Reservoir, the Seal Pit Cove, the East Storm Drain System Discharge, and Circulating Water System Discharge and up to and including part of the shoreline of the reservoir. The entire Survey Area OOL-01 is situated underwater.

The OOL-01 Survey Area is divided into 6 survey units. OOL-01-01, OOL-01-02, and OOL-01-05 are Class 2 survey units. OOL-01-03 and OOL-01-06 are Class 1 survey units. Survey Unit OOL-01-04 is a Class 3 survey unit.

**OOL-02:** The OOL-02 Survey Area is comprised of 5 Survey Units in the original non-RCA portion of the YNPS site inside the security fence, which is owned by YAEC. Three of survey units are in the area of the site known as the Non-Rad Yard Area, one survey unit occupies portions of the Turbine Building footprint and one survey unit occupies the Service Building footprint. Survey Unit OOL-02-01, located in the northern portion of the site industrial area in the footprint of the former Turbine Building, is an open land area approximately 927 m<sup>2</sup> in size. OOL-02-01 was surveyed as a Class 1 Survey Unit. Survey Unit OOL-02-02, located in the northern portion of the site industrial area in the footprint of the former Service Building, is an

open land area consisting of approximately 1643 m<sup>2</sup> in surface area. OOL-02-02 was surveyed as a Class 1 Survey Unit. Survey Unit OOL-02-03, located in the northwestern corner of the site industrial area, is an open land area consisting of approximately 2648 m<sup>2</sup> in surface area. The security gatehouse and its diesel generator, which are in the survey unit, were surveyed to free release criteria and therefore are not part of OOL-02-03. OOL-02-03 was surveyed as a Class 3 Survey Unit. Survey Unit OOL-02-04 lies north of and adjacent to the turbine building and service building footprints and is an open land area consisting of approximately 1912 m<sup>2</sup> in surface area. OOL-02-04 was surveyed as a Class 1 Survey Unit. Survey Unit OOL-02-05, located to the north of Survey Unit OOL-02-04 is an open land area consisting of approximately 5953 m<sup>2</sup> in surface area and is referred to as the “north road.” OOL-02-05 was surveyed as a Class 2 Survey Unit.

**OOL-03:** OOL-03 Survey Area is comprised of 3 survey units in the area of the site known as the Sherman Reservoir Dam & South Shoreline. Survey Area OOL-03 consists of the surface area of the Sherman Dam and the south shoreline of Sherman Reservoir, which is property owned by TransCanada. OOL-03 consists of soil, asphalt and vegetation. OOL-03 is bounded by OOL-01 (Sherman Reservoir) on the north, OOL-01 and OOL-02 on the east, OOL-02 on the south and OOL-04 on the west. OOL-03-01 is classified as a MARSSIM Class 3 survey unit; OOL-03-02 is a Class 1 survey unit; and OOL-03-03 is a Class 2 survey unit.

**OOL-04:** Survey Area OOL-04 consists of open land surface area surrounding Sherman Station (a hydroelectric plant). OOL-04 is comprised of two (2) MARSSIM Class 3 survey units: OOL-04-01 and OOL-04-04. The land is owned by Trans Canada. Survey Unit OOL-04-01 is the section of OOL-04, about 11,000 m<sup>2</sup> in size, representing approximately the northern two-thirds of Survey Area OOL-04. It is primarily open land area with some brush, some grass and a small amount of asphalt. It surrounds the hydroelectric power station on three sides, and includes a substation and breakers for the power coming from the hydro station. OOL-04-01 is bordered by OOL-03-01 on the north, OOL-04-04 and OOL-05-03 on the east and south and the Deerfield River on the west.

Survey Unit OOL-04-04 consists of an open land area stretching east to west along the north end of the site bordering OOL-04-01 (Sherman Station land unit) on the north and the security fence and vehicle barrier on the south (OOL-02-05). OOL-03 lies on the east and OOL-05-05 and OOL-05-03 are located on the west.

**OOL-05:** The OOL-05 Survey Area is comprised of 9 Survey Units in the area of the site known as the USGen, (now Trans Canada) Deerfield River Frontage. OOL-05 consists of the TransCanada owned land area located between the YAEC property and the Deerfield River. Survey Unit OOL-05-01 is a Class 3 Survey Unit approximately 10,400 m<sup>2</sup> in size. Survey Unit OOL-05-02 was combined into adjacent survey units and therefore not used. Survey Unit OOL-05-03 is a Class 2 Survey Unit consisting of approximately 9,772.9 m<sup>2</sup> in surface area. Survey Unit OOL-05-04 is a Class 2 Survey Unit comprising approximately 2718 m<sup>2</sup> in surface

area. Survey Unit OOL-05-05 is a Class 1 Survey Unit consisting of approximately 1520 m<sup>2</sup> in surface area. Survey Unit OOL-05-06 is a Class 1 Survey Unit consisting of approximately 937 m<sup>2</sup> in surface area. Survey Unit OOL-05-07 is a Class 3 Survey Unit consisting of approximately 2,468 m<sup>2</sup> in surface area. Survey Unit OOL-05-08 is a Class 2 Survey Unit consisting of approximately 3,388 m<sup>2</sup> in surface area. Survey Unit OOL-05-09 is a Class 1 Survey Unit consisting of approximately 1,662 m<sup>2</sup> in surface area. Survey Unit OOL-05-10 is a Class 1 Survey Unit consisting of approximately 975 m<sup>2</sup> in surface area.

**OOL-06:** OOL-06 consists of the land area west of the site and is comprised of soil and asphalt. The land is level to steeply sloping and ranges from heavily wooded to open land. Survey Unit OOL-06-01 is a heavily wooded open land area approximately 10,988 m<sup>2</sup> in size and was surveyed as a Class 3 survey unit. Survey Unit OOL-06-02 is heavily wooded with some asphalt comprising approximately 16,918 m<sup>2</sup> in surface area and was surveyed as a Class 3 survey unit. Survey Unit OOL-06-03, located north of OOL-06-02 is a asphalt covered open land area consisting of approximately 4,030 m<sup>2</sup> in surface area and was surveyed as a Class 2 survey unit.

**OOL-07:** OOL-07 Survey Area is comprised of three Survey Units. OOL-07-01 was used to identify a pile of soil that was released from the YNPS industrial area during the construction of the ISFSI pad and placed in Survey Area OOL-07 (the mid-level parking lot). Prior to release from the industrial area, the soil pile was extensively sampled and analyzed by gamma spectroscopy and determined to not contain plant related radioactivity. In April 2005, the mid lot soil pile was moved from Survey Area OOL-07 to Survey Unit OOL-04-04 to prepare the mid-level parking lot for thermal desorption of PCB-contaminated soil. OOL-07-01 was surveyed as a Class 2 Survey Unit. OOL-07-02 and OOL-07-03 are Class 1 open land survey units adjacent to each other, which at one time served as a personnel parking area and were used to stockpile soil, from excavations in the industrial area, awaiting thermal desorption.

**OOL-08:** The OOL-08 Survey Area is divided into 7 Survey Units. OOL-08-01 and OOL-08-03 are Class 3 survey units. OOL-08-02, OOL-08-04 and OOL-08-06 are Class 2 survey units. OOL-08-05 and OOL-08-07 are Class 1 survey units.

**OOL-09:** The OOL-09 Survey Area is in the area of the site known as the Southeast Construction Fill Area (SCFA). The SCFA was not part of the plant RCA and there were no sub-surface systems that traversed or connected within the survey unit. Survey Unit OOL-09-01 is a partially wooded open land area approximately 1,102 m<sup>2</sup> in size and was surveyed as a Class 1 survey unit. Survey Unit OOL-09-02, located to the west-central portion of the SCFA, is an open land area consisting of approximately 1,123 m<sup>2</sup> in surface area and was surveyed as a Class 1 survey unit. Survey Unit OOL-09-03, located to the western half of the SCFA, is a partially wooded open land area consisting of approximately 5,217 m<sup>2</sup> in surface area and was surveyed as a Class 3 survey unit. Survey Unit OOL-09-04, located to the eastern

half of the SCFA, is a partially wooded open land area consisting of approximately 7,186.7 m<sup>2</sup> in surface area and was surveyed as a Class 3 survey unit. Survey Unit OOL-09-05, located to the southwestern corner of the SCFA, is an open land area consisting of approximately 735.6 m<sup>2</sup> in surface area and was surveyed as a Class 1 survey unit.

**OOL-10:** The OOL-10 Survey Area is comprised of 4 survey units. Survey Unit OOL-10-01 is a Class 1 survey unit comprised of a 1452 m<sup>2</sup>, narrow strip of land located between OOL-08-05, OOL-08-06 and OOL-02-03 on the western side and NOL-05-01, NOL-06-02 and OOL-10-03 on the eastern side. Survey Unit OOL-10-02 is a Class 2 survey unit comprised of a 6898 m<sup>2</sup> open land area forming the perimeter of the ISFSI up to the "security" fence. The survey unit is composed of sod, grasses, and asphalt. It is bounded on the south and west by OOL-08-02, on the east by OOL-09-03 and on the north by OOL-10-04. Survey Unit OOL-10-03 is a Class 1 survey unit consisting of approximately 1,346m<sup>2</sup> of open land area located within the western portion of the RCA buffer zone. Survey unit OOL-10-03 is bounded by survey unit OOL-02-01 to the East, NOL-06-02 to the east and south, OOL-10-01 to the west and OOL-02-04 to the north. OOL-10-04 is an open land area that was on the west and south side (outside) of the RCA comprising approximately 1,857m<sup>2</sup> of surface area. OOL-10-04 is a Class 1 survey unit, which is bounded on the south by OOL-10-02, on the west by OOL-08-06, on the north by NOL-04-01 and NOL-03-02, and is bounded on the east by OOL-11-02. It is noted that Survey Unit OOL-10-02 is *not* included in this release request and *will remain* within the Part 50 license to act as buffer for and to facilitate eventual ISFSI decommissioning activities.

**OOL-11:** The OOL-11 Survey Area is comprised of 2 survey units that are both classified as Class 2 survey units. Survey Unit OOL-11-01 is a 487 m<sup>2</sup>, narrow strip of land located between Northeastern Upper RCA Yard (NOL-02) and the southwest face of the adjacent hill side (OOL-08-03). Survey Unit OOL-11-02 is a 668 m<sup>2</sup> narrow strip of open land located between SE Upper RCA Yard (NOL-03) and the southwest face of the adjacent hill side (OOL-08-03 and OOL-09). OOL-11-02 was an unused area adjacent to the Radiologically Controlled Area.

**OOL-12:** OOL-12 Survey Area is comprised of one Class 1 survey unit, OOL-12-01, which has a surface area of approximately 1,351 m<sup>2</sup>. OOL-12-01 is an open land area, in the northeast portion of the Yankee Rowe site and is bounded by adjacent survey units OOL-02-05 to the north, OOL-13-01 to the east, OOL-08-04 to the south and NOL-02-04 to the west. The area included a rail spur which was used for transport of radioactive waste, including spent fuel and irradiated reactor internals hardware. The area was also a main path for personnel and material traffic into and out of the RCA. OOL-12-01 is located down slope from the RCA and may have been impacted by surface water run-off. Systems that traversed or connected within the survey unit include the Auxiliary Service Water System, the Fire Protection System and electrical conduits. During Decommissioning, OOL-12-01 was the site of the Truck Monitor system.

**OOL-13:** OOL-13 has a single survey unit, OOL-13-01 which is a Class 1 Survey Unit. OOL-13-01 is a section of the Sherman Reservoir bank near the rail spur terminus. It is located adjacent to and down slope of the location of the Radiologically Controlled Area at the time of characterization and is currently owned by TransCanada (formerly owned by US Gen).

**OOL-14:** Survey Area OOL-14 (Wheeler Brook Frontage) consists one Class 1 survey unit, OOL-14-01, comprised of an open land area, approximately 2,163 m<sup>2</sup> in size, which is owned by TransCanada. OOL-14 is south of an upslope from the railroad track located in Class 1 area OOL-13. There are no sub-surface systems that traverse or connect within OOL-14, and the area was considered to be minimally impacted by site activities given that it was at a distance from the RCA, and was not accessible by vehicular traffic. The majority of OOL-14 is heavily wooded containing a small section of cleared land that was used as a temporary storage site for thermally desorbed soil. OOL-14 is bordered by Survey Unit OOL-13-01 and OOL-08-04 on the north, OOL-08-04 and OOL-08-03 on the west, OOL-08-03 on the south and OOL-08-01 on the east.

**OOL-15:** Survey Area OOL-15 consists of one Class 3 open land survey unit, OOL-15-01, approximately 4,704 m<sup>2</sup> (49,686 ft<sup>2</sup>) in size, located northeast of the plant site. The property is owned by TransCanada and extends north from the TransCanada/YAEC property line (i.e., the boundary between Survey Areas OOL-08 and OOL-15) to the Sherman Reservoir shore. Survey Area OOL-15 was established as a buffer zone to Survey Area OOL-13. There are no sub-surface systems or plant structures within area OOL-15. The area was not accessible by vehicle traffic, nor was it used for storing radioactive material or for processing/packaging radioactive waste.

**OOL-16:** Survey Unit OOL-16 consists of a single Class 3 survey unit, OOL-16-01, known as the Furlon House Lot, approximately 2,342.4 m<sup>2</sup> of surface area. Survey Unit OOL-16-01 is entirely bounded by non-impacted YAEC-owned property. The only subsurface structure that traverses or connects within OOL-16-01 is the sanitary sewer system that services the Furlon House. Survey Unit OOL-16-01 contains soil that was excavated during the construction activities of the YNPS site. Because site excavated soils were deposited, low levels of radioactivity may minimally impact this area. OOL-16-01 was never part of the RCA, did not contain any radioactive systems and no decommissioning activities were performed in this area. Therefore, it meets the criteria for a Class 3 survey unit.

**OOL-17:** OOL-17 consists of one survey unit, OOL-17-01, which is a Class 2 open land area comprised of stone fill and soil. There are no sub-surface systems that traverse or connect within OOL-17. The land area is located in the non-RCA portion of the site and is entirely bounded by non-impacted YAEC owned property. Survey area OOL-17 contains soil that was excavated during construction activities at the YNPS site. Decommissioning activities potentially impacted the surface soil due to

temporarily storing material inside the bounds of the survey area that originated from inside the RCA. All affected material was removed, the area was graded and clean fill was deposited on the expanded surface to utilize it as a personnel parking area.

**OOL-18:** Survey Area OOL-18 consists of one survey unit, OOL-18-01, which is a Class 2 open land area, comprised of packed soil and which constitutes approximately 3,942 m<sup>2</sup>. There are no sub-surface systems that traverse or connect within OOL-18. This land area is located in the non-RCA portion of the site and has been used for temporary storage of roll-off containers. Based upon the radiological condition of this survey area as a result of the decommissioning activities performed to date, Survey Area OOL-18-01 is designated a Class 2 Area.

**SSS-01:** The SSS-01 Survey Area is comprised of statistical samples in subsurface soil in the industrial area footprint surveyed to a depth of 3 meters (or until refusal) with a total surface area of 14,375 m<sup>2</sup>. The DQO process for this survey area is similar to the DQO process used for the other FSS at YNPS. However, there were differences in design input parameters necessary to satisfy the objectives of the plan (e.g. sample collection methodology, sample location selection, investigation levels, etc.)

**SVC-01:** SVC-01 is comprised of the Service Building foundation that was exposed during excavation campaigns to remove radiologically contaminated soil and PCB-contaminated soil from the “alley way”, Survey Unit NOL-01-04. Survey Unit SVC-01-18 serves as the north boundary for Survey Unit NOL-01-04. It is approximately 512 ft<sup>2</sup> (48m<sup>2</sup>) of concrete surface area. SVC-01-18 is a portion of the Service Building foundation that remained after demolition of the Service Building and has been designated as a Class 1 survey unit. It is the sole surviving SVC survey unit, as the remainder were demolished and disposed of as radioactive waste.

**TBN-01:** TBN-01 consists of the remaining concrete floors and exposed foundations of the former Turbine Building and the Circulating Water discharge piping. All above grade structures have been demolished and removed, as well as portions of the floors and foundations of the Turbine Building. The Administration Building, turbine pedestal and the control room shield wall have been partially removed and the footprints of these former structures are incorporated into adjacent open land survey areas. The Circulating Water Discharge line, as a large accessible area easily traversed by surveying personnel, is considered the basement of the turbine hall and is considered to be a part of Survey Area TBN-01 as Survey Units TBN-01-02 through -08.

TBN-01 is located outside of the Radiological Controlled Area, and was originally classified, in the HSA, as a MARSSIM Class 3 area. Subsequent demolition activities performed in and adjacent to TBN-01 have prompted a reclassification of TBN-01 to a MARSSIM Class 1 area.

**WST-01:** Survey Area WST-01 consists of a single survey unit, WST-01-02, which is comprised of the reinforced concrete foundation of the ‘Old Potentially Contaminated Area Storage Building’ as well as the remaining concrete partial walls exposed during the excavation of Survey Unit NOL-05-02. WST-01-02 encompasses a 61.3 m<sup>2</sup> footprint having a total surface area of 153.5 m<sup>2</sup>. WST-01 was used, during plant operation, as a decontamination facility and as a storage area for heavily contaminated items. WST-01 is located within the Radiological Controlled Area and has been classified as a MARSSIM Class 1 area.

## **2.0 Impact of Release of the Area**

### **2.1 Statement of Dismantling Activities**

With the exception of decommissioning activities at the ISFSI to be undertaken when all fuel has been removed, all decommissioning and dismantlement activities have been completed at this site. Thus, no dismantlement activities are required in these survey areas for YAEC to release them. The FSS Reports for each of these survey areas has been submitted to the NRC as indicated in Table 1 of the associated letter.

### **2.2 Potential for Cross-Contamination from Subsequent Activities**

Prior to FSS, areas ready for survey were isolated and controlled under DP-8854, “Turnover and Control of Areas for Final Status Survey” and in accordance with LTP Section 5.4.5.1. This included posting of the area as well as notifications to site personnel. Permission to enter and work in these areas was required to be obtained from the Control Room, the Radiation Protection Manager, or the Final Status Survey Manager. During decommissioning, controls were placed on the release of material from radiological controlled areas and the industrial area which decreased the probability that areas would be impacted from decommissioning activities. These control measures included contamination containment, dust control measures, storm water runoff measures, building demolition controls, and additional evaluations and surveys of material leaving the industrial area.

LTP Section 5.4.5.2 describes periodic surveillance/re-survey to confirm that no radioactive material had been introduced into the areas that would invalidate the results of the final status surveys.

These isolation and control measures (both pre- and post-FSS) have been implemented in these survey areas through approved procedures at the time of turnover to the Final Status Survey Group and remained in effect throughout site final survey activities and until the undue risk of recontamination from decommissioning activities was alleviated.

These requirements for decommissioning activities, as well as the additional protections afforded from FSS isolation and control measures, provide strong assurance that the potential for cross-contamination of the subject survey areas is

minimal. It is noted that all areas of the site were remediated and surveyed using the same dose criteria/set of DCGLs.

In addition, the site has instituted a rigorous erosion control program to greatly reduce the potential for soil erosion into adjacent land areas and surface water bodies.

The YNPS spent fuel at the ISFSI is stored in the NAC-MPC System. The NAC-MPC System is a sealed and leak-tight spent fuel storage system. In addition, YAEC completed in-process inspections and tests during fabrication and sealing of the canisters. Consequently, there is no release of radioactive material during normal conditions of storage. The structural analysis of the canister for off-normal and accident conditions of storage, which is presented in Chapter 10 of the NAC-MPC-FSAR, shows that the canister is not breached in any of the evaluated events. Consequently, there is no release of radioactive material during off-normal and accident conditions of storage that could impact the areas proposed for release.

### **2.3 Impact of Releasing the Specific Area on Part 50 License Basis**

The license basis for the YNPS includes the maintenance of certain programs to fulfill regulatory requirements and functional responsibilities. Throughout decommissioning, these programs have been modified as necessary and terminated when the applicable concern is no longer relevant. These program changes are implemented using the change processes specified for each type of program. The phased release approach is described in Section 1.5 of the YNPS LTP. The methodology for releasing land requires a review and assessment of the impact on license programs for the site lands remaining within the domain of the Part 50 License. The NRC accepted this approach included in the YNPS LTP via License Amendment 158 on July 28, 2005. The impact of releasing the subject survey areas from the Part 50 License on each of the licensing programs included in Section 1.5 of the LTP is described below. With this submittal, YAEC is not requesting NRC concurrence/approval of any potential changes described herein.

#### **2.3.1 Technical Specifications**

The YNPS Defueled Technical Specifications are not impacted by the release of the subject survey areas, as a size and description of the site are not included in the Technical Specifications. The survey and release processes are consistent with the License Termination Plan and associated License Condition.

The NAC-MPC Technical Specifications, associated with allowable surface contamination on the cask after loading, were based upon limiting the dose at 100 m due to a total mechanistic release of the surface contamination. The partial site release will not affect the basis for this Technical Specification, as the assumed 100 m dose point is within the 300 m owner controlled boundary

that will continue to be maintained for the ISFSI after partial site release has been implemented.

### **2.3.2 Final Safety Analysis Report (FSAR) and Environmental Report**

The Decommissioning Final Safety Analysis Report will require minor changes to Section 300, "Environmental Site Characteristics" and to Figure 300-1, "Site Boundary and Plant Exclusion Area" to describe the reduced site area resulting from the removal of the subject survey area, from the Part 50 License and to identify the new site boundary on Figure 300-1.

During preparation of the License Termination, the impacts on information provided in the Decommissioning Environmental Report and Supplement 1 to NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities" were evaluated. The information contained within the LTP was determined to be consistent or bounded by the information in the Decommissioning Environmental Report and Supplement 1 to NUREG-0586. The process of partial site release was included in the LTP, and this partial site release is being proposed consistent with the process in the LTP. Thus, the Decommissioning Environmental Report and conclusions in Section 8 of the LTP concerning Supplement 1 to NUREG-0586 are not impacted by partial site release.

### **2.3.3 ISFSI Emergency Plan**

As the former nuclear plant has been dismantled and decommissioned, the Emergency Plan for the site has been reduced to address the ISFSI only. The ISFSI Emergency Plan describes the location of the ISFSI, the Radiologically Controlled and Protected Areas, and the 300 m Owner Controlled Area. None of these locations/areas will be affected by the proposed partial site release. Although portions of the owner controlled area are included in the area proposed for partial site release, YAEC will continue to maintain control of this area.

### **2.3.4 Security Plan**

This plan will not be affected by the release of the proposed release area.

### **2.3.5 Off-site Dose Calculation Manual (ODCM)**

Gaseous, liquid, and solid radwaste systems associated with the operation of YNPS have been removed and disposed of. Site decommissioning activities have been concluded for the site (except those required in the future for the ISFSI), and discharges of radioactive material (gaseous or liquid) are no longer made. In addition, the ISFSI casks are considered to be leak tight

under normal and various postulated accident conditions, and thus are not a source of effluent. Recently, the NPDES permit for the site was terminated.

Accordingly, the ODCM was revised to address the ISFSI only. Thus, it no longer includes X/Qs. Monitoring in accordance with the ODCM continues and will not be impacted by the proposed partial site release. Thus, the ODCM will not be affected by release of the proposed areas.

### **2.3.6 Environmental Monitoring Program**

Gaseous, liquid, and solid radwaste systems associated with the operation of YNPS have been removed and disposed of. Site decommissioning activities have been concluded for the site (except those required in the future for the ISFSI), and discharges of radioactive material (gaseous or liquid) are no longer made. In addition, the ISFSI casks are considered to be leak tight under normal and various postulated accident conditions, and thus are not a source of effluent. Accordingly, the Environmental Monitoring Program has been revised to address monitoring associated with the ISFSI only. The Environmental Monitoring Program will not be affected by the release of the proposed areas.

### **2.3.7 Ground Water Monitoring Program**

The Groundwater Monitoring Program is intended to integrate all aspects of groundwater characterization, monitoring and remediation required to support unrestricted release of the YNPS site. The LTP includes a commitment that prior to license termination, YAEC must demonstrate that the maximum tritium concentration in a resident farmer's well (consistent with dose modeling assumptions) is less than the EPA's MCLs (20,000 pCi/L for tritium). As documented in Final Groundwater Closure Report dated February 16, 2007, YAEC has calculated the maximum concentration in the resident farmer's well as of April 2007 to be 8150 pCi/L, well below the 20,000 pCi/L limit.

In addition, License Condition 2.C.11 (e) requires that site-specific derived concentration guideline levels must be developed if any of the levels provided therein are exceeded. These levels were considered in developing satisfactory minimum detection limits for groundwater monitoring. As also documented in the Final Groundwater Condition Report, to date, no plant-related radionuclides, other than tritium, have been consistently detected in groundwater. Cs-137, Sr-90, and Co-60 have been identified sporadically and at low levels in groundwater; however, these instances were investigated and found to be caused by one of three reasons:

1. Intrusion of surface water which had been in contact with contaminated concrete into damaged well heads or road boxes;
2. False positive detections that are expected statistically in five percent of the laboratory analyses, at the 95% confidence level; and
3. Improper on-site laboratory practices that introduced contamination into the sample being analyzed (e.g., lab cross contamination events).

Thus, no site specific groundwater DCGLs are required to be calculated.

YAEC provided an assessment of dose due to a concentration of tritium at the MCL (20,000 pCi/L) in the resident farmer well and concluded the associated dose was 0.77 mrem/yr. This contribution (as well as the 0.5 mrem/yr dose contribution from subsurfaces structures) was subtracted, and soil DCGLs were scaled down accordingly and applied site wide. Thus, the dose contribution from groundwater has been considered in the subject survey areas.

### **2.3.8 Fire Protection Program**

This program will not be affected by the release of the subject survey areas.

### **2.3.9 Training Program**

The training program for the ISFSI SSCs that are important to safety will not be affected by the release of the subject survey areas.

### **2.3.10 Post Shutdown Decommissioning Activities Report (PSDAR)**

The PSDAR has been updated as decommissioning has progressed. The release of the subject survey areas will not impact the current revision of the PSDAR.

### **2.3.11 License Termination Plan (LTP)**

The requested release is consistent with the information in the LTP concerning final status survey and partial site release. A minor revision will be made to the LTP to revise the area of the site still under the Part 50 license.

## **2.4 Consideration of Interaction between the Proposed Partial Site Release and the Previously Released Site and between the Proposed Partial Site Release and Remaining License Site**

Appendix L to NUREG 1757, Volume 2, provides guidance for the licensee to identify and analyze the potential interaction between the potential site release and any on-site or offsite sources. That guidance has been integrated into this partial site release request.

The following sections describe effects of interaction between the proposed site release and previously released site and interaction between the proposed site release and the remaining license site (ISFSI land).

### **2.4.1. Effects on the Proposed Site Release from Previous Land Release**

Prior to the subject proposed release, YAEC proposed and the NRC approved the release of the non-impacted areas of the YNPS site its Part 50 License.

The previously released land, was classified a non-impacted area, in accordance with MARSSIM. As such, this area had no reasonable potential for residual contamination and no radiological impact from site operations. Therefore, there are no dose effects on the proposed site release from the previously released non-impacted area.

### **2.4.2 Dose Effects on ISFSI Land (i.e., Land That Will Remain Under Jurisdiction of Part 50 License)**

The YNPS ISFSI is located within the site boundary of the existing YNPS site. The Controlled Area for an ISFSI as defined in 10 CFR 72.3 as the area immediately surrounding an ISFSI for which the Licensee exercises authority regulating its use and within which ISFSI operations are performed. The 300 meter radius ISFSI Controlled Area will encompass some of the land being requested by this submittal for release from jurisdiction of the license; however, this area will continue to be under the authority and control of YAEC until the spent fuel has been transferred offsite.

As stated previously, certain land around the ISFSI is not the subject of the proposed site release and will remain in YAEC's Part 50 License (Figure 1). A radiological evaluation was performed for the ISFSI in accordance with 10 CFR 72.212 (b)(2)(i)(C) to establish that the requirements of 10 CFR 72.104 have been met. These requirements specify that the annual dose equivalent from normal operation or

any anticipated occurrences at the ISFSI to any real individual who is located beyond the controlled area would not exceed 25 mrem to the whole body, 75 mrem to the thyroid and 25 mrem to any other critical organ as a result of exposure to: (1) planned discharges of radioactive materials, (2) direct radiation from the ISFSI or (3) any other radiation from uranium fuel cycle operations within the region.

The YNPS spent fuel is stored in the NAC-MPC System. The NAC-MPC System is a sealed and leak tight spent fuel storage system. In addition, YAEC completed in-process inspections and tests during fabrication and sealing of the canisters. Consequently, there is no release of radioactive material during normal conditions of storage. The structural analysis of the canister for off-normal and accident conditions of storage, which is presented in Chapter 10 of the NAC-MPC-FSAR, shows that the canister is not breached in any of the evaluated events. Consequently, there is no release of radioactive material during off-normal and accident conditions of storage.

Using conservative assumptions for the contact dose rates for top, sides and air inlet/outlet, NAC determined that the dose at the controlled area would be less than 25 mrem/yr. However, actual measurements at locations within the 300 m controlled area have been determined to be indistinguishable from background. Doses associated with the uranium fuel cycle operations at YNPS no longer exist, and the areas to be released meet the criteria for unrestricted release in 10 CFR 20.1402. Thus this satisfies, with considerable margin, the limit of 25 mrem/year stipulated in 10 CFR 72.104 and 40 CFR 190.

#### **2.4.3 Dose Effect on the Proposed Site Release from the Remaining Decommissioning Activities at the Remaining YNPS Site**

Decommissioning activities have been completed at YNPS. Only activities associated with maintenance and operation of the ISFSI are being conducted. As previously discussed, the casks stored in the ISFSI are sealed and leak-tight such that there is no release of radioactive materials in normal, off-normal or accident conditions.

Also discussed previously, the dose to a member of the public outside the controlled area of the ISFSI will receive less than the 25 mrem/yr dose as stipulated in 10 CFR 72.104

#### **2.5 Additional Areas to be Addressed to Support the Release of the Subject Survey Units**

YAEC will maintain the following records through license termination: 1) a map of the site identifying the facility and site as defined in the original license; 2) a record of the Phase II Survey Units released under this action; and 3) documentation of the radiological conditions of the lands released under this action.

## 2.6 Site-Release Criteria

The site release criteria for the YNPS site correspond to the 10 CFR 20.1402 criteria for unrestricted use. The residual radioactivity, including that from groundwater sources, that is distinguishable from background, must not cause the total effective dose equivalent (TEDE) to an average member of the critical group to exceed 25 mrem/yr. The residual radioactivity must also be reduced to levels that are ALARA.

As discussed in the LTP, dose contributions from contaminated groundwater obtained from a resident farmer's well with a tritium concentration of 20,000 pCi/L resulted in a dose of 0.77 mrem/yr. Buried concrete foundations at levels provided in the LTP contributed 0.5 mrem/yr. The sum of these contributions (1.27 mrem/yr) was subtracted off of the dose limit to scale down the soil DCGLs listed in the LTP. Furthermore, during final status survey activities, a dose limit of 8.73 mrem/yr was used to ensure compliance with Massachusetts Department of Public Health regulations.

## 2.7 Final Status Survey

The YNPS LTP Section 5.2 states the Final Status Survey Plan encompasses the radiological assessment of all affected structures, systems and land areas for the purpose of quantifying the concentrations of any residual activity that exists following all decontamination activities. Final status surveys were performed and reports submitted for the subject survey areas, as indicated in Table 1 of attached letter.

Table 1 of the BYR 2007-019 provides a listing of all survey areas associated with this proposed release and includes their classification and date of associated report submittal.

These reports document the results and conclusions of the final status surveys of survey areas and were prepared in accordance with guidance and requirements contained in the following:

- Yankee Nuclear Power Station License Termination Plan,
- NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), Section 8.6 and
- NUREG-1757, Volume 2, Consolidated NMSS Decommissioning Guidance – Characterization, Survey, and Determination of Radiological Criteria, (Although not referenced in the YNPS LTP, guidance contained in many sections of this NUREG have been utilized).

These reports concluded that the surveys were conducted in a manner consistent with the LTP and that the survey areas passed the survey, indicated that the criteria for unrestricted release have been met.

## **2.8 Conclusion**

The release of the subject survey areas is part of YAEC's overall effort to achieve unrestricted release of the site in accordance with the criteria in Subpart E of 10 CFR 20. This action is also consistent with the approach described in Section 1.5 of the YNPS LTP and is consistent with the approach endorsed by the NRC in their Safety Evaluation that supported approval of the YNPS LTP.

In addition, 10 CFR 50.82(a)(11) establishes the criteria to be used by the NRC for terminating the license of a power reactor facility. These criteria include (1) dismantlement has been performed in accordance with the approved license termination plan, and (2) the final radiation survey and associated documentation demonstrate that the facility and site have met the criteria for decommissioning in 10 CFR 20, Subpart E. All decommissioning and dismantlement activities have been completed in the subject survey areas, and the release of the subject survey areas supports the process of license termination by demonstrating that this portion of the site can be released from the YNPS license. The final status surveys have confirmed that the residual radioactivity in each of the subject survey areas meets the criteria established in the LTP. Thus, the action of the release of the subject survey areas supports the overall goal of unrestricted release of the site in accordance with NRC regulations.

## **3.0 References**

- 3.1 BYR 2005-001, Letter of Intent Concerning the Phased Release of Land from the Part 50 License, dated January 3, 2005, as supplemented by BYR 2005-088 dated October 13, 2005.
- 3.2 Letter Hickman, NRC, to Norton, YAEC, Yankee Nuclear Power Station—Release of Non-Impacted Site Area from Part 50 License, dated November 21, 2005.
- 3.3 Yankee Nuclear Power Station License Termination Plan, Revision 2, dated November 2006.
- 3.4 Yankee Nuclear Power Station – Issuance of Amendment 158 Re: License Termination Plan, dated July 28, 2005.
- 3.5 BYR 2006-074, Groundwater Compliance Plan for License Termination at YNPS, dated August 31, 2006.
- 3.6 Yankee Nuclear Power Station Defueled Technical Specifications
- 3.7 Yankee Nuclear Power Station Final Safety Analysis Report (including Post-Shutdown Decommissioning Activities Report), January 2007 revision.

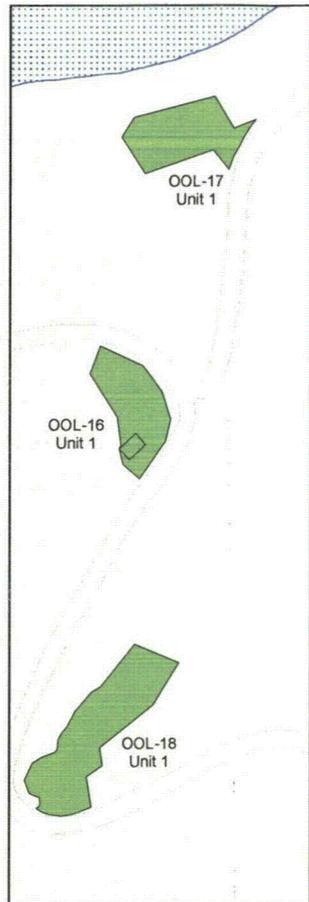
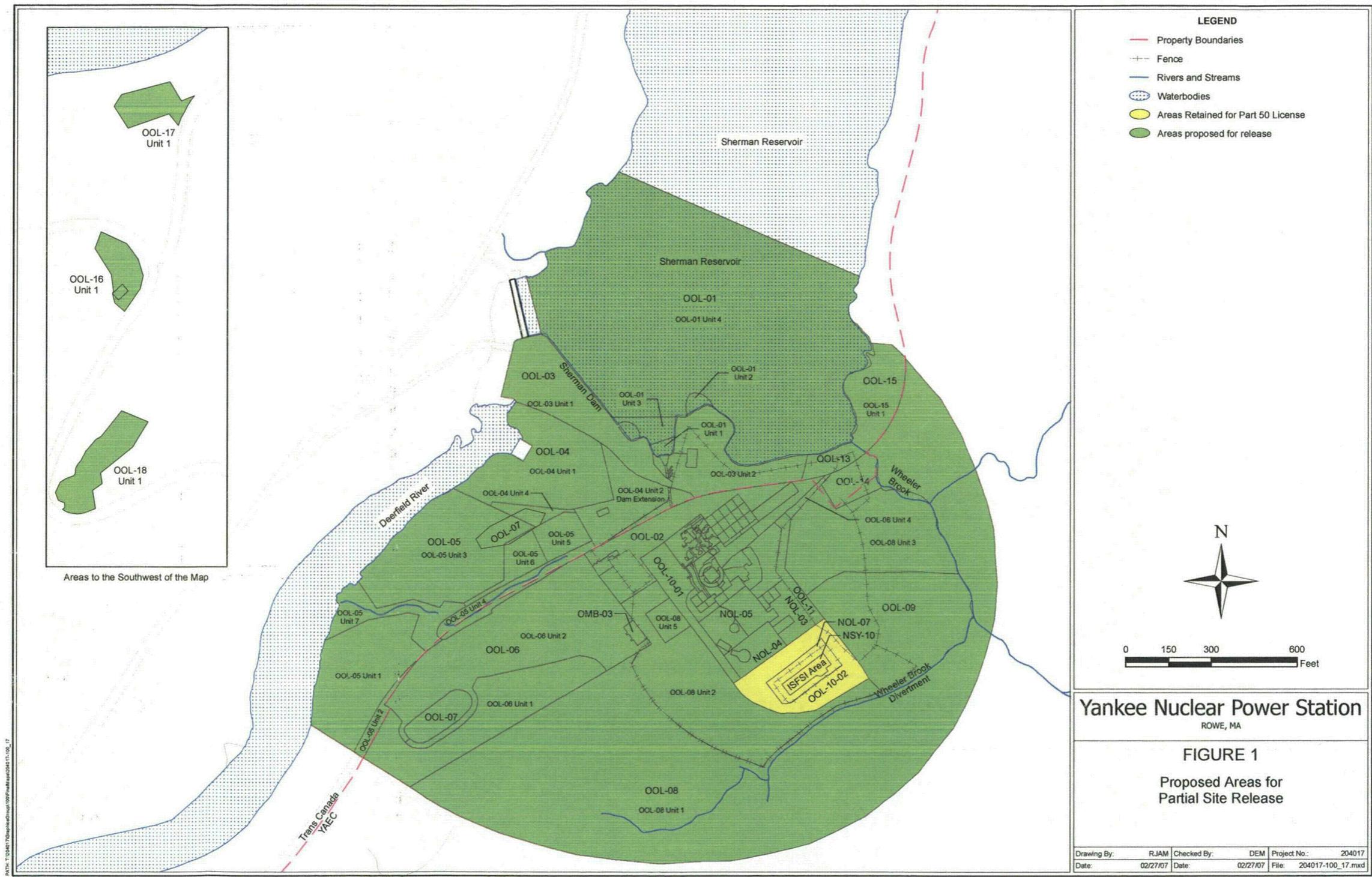
- 3.8 Yankee Nuclear Power Station Independent Spent Fuel Storage Installation 10CFR 72.212 Evaluation.
- 3.9 NAC-MPC Final Safety Analysis Report.
- 3.10 Supplement 1 to NUREG-0856, "Final Generic Environmental Impact Statement," dated November 2002.
- 3.11 Yankee Atomic Electric Company Emergency Plan, Revision 14.
- 3.12 Yankee Nuclear Power Station Independent Spent Fuel Storage Installation Offsite Dose Calculation Manual, Revision 20.
- 3.13 BYR 2007-016, Final Groundwater Condition Report, dated February 12, 2007.
- 3.14 NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), Revision 1, dated August 2000.
- 3.15 NUREG-1757, Consolidated NMSS Decommissioning Guidance—  
Characterization, Survey, and Determination of Radiological Criteria.

**Table 1**  
**2006 Tritium Results for YNPS Wells (in pCi/L)**

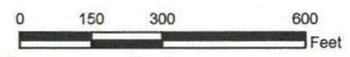
Monitoring Well	Jan-06	Feb-06	Apr-06	May-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
CB-3			ND		ND					
CB-3R								ND		ND
CB-4	ND	ND	ND	ND	ND		4.03E+02			ND
CB-6	1.47E+04	1.21E+04	7.68E+03	4.30E+03	1.91E+03	1.16E+03	9.59E+02			8.69E+02
CB-8				ND	ND		ND			ND
CFW-1			3.32E+02		ND		ND			ND
CWF-5			ND				ND			ND
CWF-6			3.00E+02		1.18E+03		2.65E+03		ND	5.81E+02
CW-2			ND							
CW-5R								ND		
CW-10			ND		ND		ND		ND	ND
DW001			ND		ND		ND			ND
DW002			ND		ND					
MW-6R								4.51E+02		ND
MW-100A			ND		ND		ND			ND
MW-100B			ND		ND		ND			ND
MW-101A			1.69E+04		8.52E+03	7.72E+03	1.01E+04		4.74E+03	3.88E+03
MW-101B			ND	ND	ND		ND			ND
MW-101C							ND			ND
MW-102A			4.49E+03	4.63E+03	4.26E+03		4.47E+03			4.24E+03

Monitoring Well	Jan-06	Feb-06	Apr-06	May-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
MW-102B			ND		ND		ND			ND
MW-102C			4.61E+03	3.92E+03	4.98E+03		4.21E+03			3.52E+03
MW-102D			1.61E+04	6.89E+03	1.11E+04	8.60E+03	6.97E+03			6.53E+03
MW-103A			ND		4.16E+02		ND			ND
MW-103B			ND		ND		ND			ND
MW-103C			ND		ND		2.49E+02			ND
MW-104A		3.32E+03	4.58E+03	2.96E+03	9.33E+02	6.36E+02	1.43E+03			2.85E+03
MW-104B			ND		ND		ND			ND
MW-104C			ND		ND		ND			ND
MW-104D								ND	ND	ND
MW-105A			ND		ND		ND			ND
MW-105B			3.97E+03	4.78E+03	3.86E+03		3.29E+03			2.90E+03
MW-105C			1.99E+03		1.03E+03		1.65E+03			2.75E+03
MW-106A	1.13E+04	1.31E+04	ND	9.81E+03	7.17E+03	6.74E+03	5.28E+03			3.01E+03
MW-106B			ND		ND		5.28E+02		ND	ND
MW-106C			ND		ND		ND			ND
MW-106D			ND		ND		ND			ND
MW-107A			4.91E+03	5.05E+03	5.91E+03	5.60E+03	5.41E+03			4.04E+03
MW-107B			ND	ND	ND		ND			ND
MW-107C			4.13E+04	3.72E+04	3.60E+04	3.47E+04	3.25E+04			2.91E+04
MW-107D			1.19E+04	1.20E+04	1.18E+04	1.16E+04	1.10E+04			9.31E+03
MW-107E				8.13E+03	7.90E+03		5.50E+03			5.70E+03
MW-107F					1.09E+04		9.58E+03	1.10E+04		9.21E+03

Monitoring Well	Jan-06	Feb-06	Apr-06	May-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
MW-108A			ND		ND		ND			ND
MW-108B			ND		ND		ND			ND
MW-108C			ND		ND		ND			ND
MW-109A			ND		ND		ND			ND
MW-109B			ND		ND		ND			ND
MW-109C			ND		ND		ND			ND
MW-109D			ND		ND		ND			ND
MW-110A	7.72E+03		2.93E+03	2.77E+03	2.99E+03		1.68E+03			1.66E+03
MW-110B	2.00E+03		ND		ND		ND			ND
MW-110C			1.16E+03		1.98E+03		1.87E+03			2.59E+03
MW-110D			ND		ND		ND			ND
MW-111A			4.44E+03	3.94E+03	3.05E+03		2.65E+03			1.68E+03
MW-111B			ND		ND		ND			ND
MW-111C			ND		5.16E+03		4.25E+03			ND
MW-112A								ND		ND
MW-113A				ND	ND		ND			ND
MW-113C					6.01E+02		7.66E+02			7.98E+02
SP-1	4.34E+03	4.61E+03	4.67E+03	2.65E+03	1.42E+03	1.51E+03	1.39E+03			1.10E+03



- LEGEND**
- Property Boundaries
  - Fence
  - Rivers and Streams
  - Waterbodies
  - Areas Retained for Part 50 License
  - Areas proposed for release



**Yankee Nuclear Power Station**  
 ROWE, MA

**FIGURE 1**  
 Proposed Areas for  
 Partial Site Release

Drawing By:	RJAM	Checked By:	DEM	Project No.:	204017
Date:	02/27/07	Date:	02/27/07	File:	204017-100_17.mxd

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