

Environmental
Resources
Management

399 Boylston Street, 6th Floor
Boston, MA 02116
(617) 646-7800
(617) 267-6447 (fax)

31 March 2006
Reference: 0043964
BYR 2006-025

Mr. Dave Howland
Special Projects Manager
Western Regional Office
Massachusetts Department of Environmental Protection
436 Dwight Street, 5th floor
Springfield, MA 01103



Re: Notice of Modifications to Phase II Sampling
Former Yankee Nuclear Power Station
Rowe, Massachusetts

Dear Mr. Howland:

On behalf of Yankee Atomic Electric Company (YAEC), Environmental Resources Management (ERM) has prepared this letter to outline the approach that will be used to evaluate exceedances of Reportable Concentrations (RCs) in soil and groundwater.

Department Determinations

On 7 October 2005, YAEC received a letter from the Massachusetts Department of Environmental Protection (Department) in reference to the Department's review of the Phase II - Comprehensive Site Assessment (Phase II) Report for the Yankee Nuclear Power Station (YNPS), dated 28 January 2005. On page 11 of this letter the Department outlined the sampling determinations for RC exceedances, as quoted below:

"2.A.6. In any areas (soil, groundwater, surface water and sediment) where previous data indicates levels of oil and hazardous materials (OHM) greater than applicable reportable concentrations or substantially elevated relative to background for sediment and surface water, and confirmatory sampling (showing reduction to acceptable risk levels as outlined in Condition 5 of this review) following remediation has not yet been performed, the following analyses shall also be performed:

- A. Semi-volatile organic compounds (SVOCs) by EPA Method 8270;*
- B. Polychlorinated biphenyls (PCBs) by EPA Method 8082; and*
- C. Extractable petroleum hydrocarbons/volatile petroleum hydrocarbons (EPH/VPH) by the Department's Office of Research & Standards method."*

Additionally, the Department requested that all future soil samples and all existing groundwater monitoring wells be analyzed for volatile organic compounds (VOCs) and priority pollutant 13 metals (PP13) plus boron (Determinations 2. A. 2 & 3).

Discussions with the Department

On 8 March 2006, representatives from YAEC and ERM, including the Licensed Site Professional (LSP)-of-Record, met at the site in Rowe with yourself and Mr. Lawrence Hanson from the Department. During the meeting, the Department's request for additional Phase II soil and groundwater sampling was discussed with regard to the LSP's opinion that a portion of the requested sampling would not be necessary based on the adequacy of past results and the negligible value of the sampling in meeting Phase II objectives, and should therefore be eliminated. In response, the Department requested that the rationale for reduction in the scope of the sampling program be outlined in a letter. This letter serves to satisfy that request.

Evaluation & Modification of Sampling Program

Soil

Table 1 summarizes sampling locations and analyses corresponding to the Department's request. An evaluation was then performed to determine if the requested analyses were warranted based on consideration of factors such as the degree to which the RC was exceeded, the results of analyses from samples collected in close proximity to the location where the exceedance occurred, the proximity of the sample location to a potential contributing source and whether the location will be within the footprint of a future deed restriction of the site (where exposure is prevented by access controls and clean fill. Locations and parameters to be included in future Phase II soil sampling are identified in Table 1.

As summarized in Table 1, in the majority of the cases, ERM concluded that the existing data would be sufficient to meet Phase II requirements and that additional soil sampling and analysis of soil was not warranted. However, at several locations, ERM concurs that the analyses requested by the Department are reasonable and appropriate and will be included in future sampling events.

Groundwater

Since 2003, comprehensive groundwater sampling events have been completed to characterize site groundwater quality for SVOCs, VOCs, EPH/VPH, PCBs, PP13, and boron. A total of 111 groundwater samples have been collected for VOCs, 87 groundwater samples have been collected for PP13, and 202 groundwater samples have been collected for boron. The analytical results have been validated in accordance with the requirements of a Quality Assurance Project Plan (QAPP). Only two compounds have been detected above RCGW-1 standards for VOCs: acetone in three monitoring wells, a common laboratory contaminant, and 1,1-dichloroethene (DCE) in one monitoring well. Four metals have exceeded the RCGW-1 standards: antimony at one location, arsenic at one location, lead at two locations, and silver at one location.


Groundwater monitoring for non-radiological parameters is planned for at least one additional quarterly sampling event in 2006. A summary of the groundwater monitoring program is provided in Table 2. Monitoring well locations are shown in Figure 2. As requested by the Department, all newly installed wells will be sampled for VOCs, PP13, and boron. In addition, select wells will be sampled for compounds of concern based on prior monitoring results and historic activities (i.e., samples from wells downgradient of the old septic field will be analyzed for SVOCs, EPH/VPH, and PCBs). The groundwater monitoring program includes reanalysis for parameters that exceeded the RC and any parameters requested by the Department that have not been previously analyzed.


The following monitoring wells are not currently planned for additional sampling and analysis because historic results are deemed to provide adequate testing for the parameters of interest (VOCs, PP13, and boron were previously analyzed) and none of the past monitoring results indicated levels that exceed applicable RCs: CB-6, CB-8, CFW-1, CFW-5, CW-2, MW-100A, MW-100B, MW-102A, MW-102B, MW-103A, MW-104B, MW-104C, MW-106A, MW-106B, MW-106C, MW-106D, MW-108A, MW-108C, Visitor Center Water Supply Well, and Sherman Spring.

As we discussed, YAEC is continuing with investigation of soil and groundwater quality this spring in accordance with the Department's Determinations and Approvals outlined in your 28 January 2005 letter, with the exception of locations and parameters noted in this letter. In the absence of Department notification indicating disagreement with the proposed modifications, ERM and YAEC will proceed with sampling

events as outlined herein and accept the Department's lack of response as presumptive approval of these modifications. YAEC and/or ERM will contact the Department to ensure receipt of this letter and the Department's understanding of the modification contained herein prior to initiation of sampling in April.

Sincerely,


John W. McTigue, P.G., LSP
Principal-in-Charge


Gregg Demers, P.E., LSP
Senior Project Manager

Enc: Table 1: Summary of RC Exceedance Soil Sampling
 Table 2: Non-Radiological Groundwater Analytical
 Program (Spring 2006)
 Figure 1: Site Soil Sampling Locations
 Figure 2: Summary of Monitoring Well Status

cc: J. Lynch, YAEC
 K. Dow, YAEC
 J. Bourassa, YAEC
 Justin Desrosiers, ERM
 Dave Merrill, Gradient Corporation
 File

Table 1
Summary of RC Exceedance 9d) Sampling
Hanker Nuclear Power Station
Reno, NV

Station ID	Location	Previously Analyzed Parameters	Component Exceeding	Result	RCS-1	DTP Required Analysis	Response	Justifier / Comment
5803	Industrial Area	DPI/PCB/PP3	C11-C22 Aromatics	26	200	VPI/VOC-SVOC	No further sampling planned.	This sample was collected from 0-6 inches below an asphalt road. The detection of DTP in this sample is likely due to the presence of the underlying road and not a release of DTP. DTP was not detected in the sample interval from 2-3 feet below ground surface at this location.
5802	Industrial Area	PCB-PP3/Dioxin	Dioxin	6.9E-06	4E-06	DPI/VPI/VOC-SVOC	No further sampling planned.	The following samples were collected along the 10th line to the 5802 sample: 5802 (sampled for SVOC/PCB/PP3), 5807 (sampled for PCB/PP3), 5808 (sampled for PCB/PP3), and 5809 (sampled for PCB/PP3). The detection of DTP in this sample is likely due to the presence of the underlying road and not a release of DTP. DTP was not detected in the sample interval from 2-3 feet below ground surface at this location.
5802F	Industrial Area	Dioxin	Dioxin	5.1E-06	4E-06	DPI/VPI/VOC-SVOC/PCB/PP3	No further sampling planned.	This sample was collected along the 10th line to the 5802 sample: 5802 (sampled for SVOC/PCB/PP3), 5807 (sampled for PCB/PP3), 5808 (sampled for PCB/PP3), and 5809 (sampled for PCB/PP3). The detection of DTP in this sample is likely due to the presence of the underlying road and not a release of DTP. DTP was not detected in the sample interval from 2-3 feet below ground surface at this location.
5802G	Industrial Area	Dioxin	Dioxin	7.0E-06	4E-06	DPI/VPI/VOC-SVOC/PCB/PP3	No further sampling planned.	This sample was collected along the 10th line to the 5802 sample: 5802 (sampled for SVOC/PCB/PP3), 5807 (sampled for PCB/PP3), 5808 (sampled for PCB/PP3), and 5809 (sampled for PCB/PP3). The detection of DTP in this sample is likely due to the presence of the underlying road and not a release of DTP. DTP was not detected in the sample interval from 2-3 feet below ground surface at this location.
5802J	Industrial Area	Dioxin	Dioxin	1.1E-08	4E-06	DPI/VPI/VOC-SVOC/PCB/PP3	No further sampling planned.	This sample was collected along the 10th line to the 5802 sample: 5802 (sampled for SVOC/PCB/PP3), 5807 (sampled for PCB/PP3), 5808 (sampled for PCB/PP3), and 5809 (sampled for PCB/PP3). The detection of DTP in this sample is likely due to the presence of the underlying road and not a release of DTP. DTP was not detected in the sample interval from 2-3 feet below ground surface at this location.
5802E	Non-Industrial Area	VPI/VOC/PCB/PP3	VPI	68	200	DPI/VPI/VOC	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. Since DTP/VPI is considered to be a better indication of potential impacts than VPI, no further sampling is warranted.
5803	Non-Industrial Area	VPI/VOC/PCB/PP3	VPI	248	200	DPI/VPI/VOC-VOC	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. Since DTP/VPI is considered to be a better indication of potential impacts than VPI, no further sampling is warranted.
5846	Industrial Area	DPI/VOC-SVOC/PCB/PP3	C11-C22 Aromatics	78	200	VPI	No further sampling planned.	VPI is the only requested analysis that was not performed. Based on VOC results and DTP results, no further sampling is warranted.
5807F	Industrial Area	DPI/VPI/PCB	C11-C22 Aromatics	3.9	200	VPI/VOC-SVOC/PCB	No further sampling planned.	5802F was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
5802H	Industrial Area	DPI/VOC/PCB	C11-C22 Aromatics	7.2	200	VPI/VOC/PCB	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
5807P	Industrial Area	DPI/PCB/PP3	C11-C22 Aromatics	227	200	VPI/VOC-SVOC	No further sampling planned.	This sample location was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard. 5807P is within the industrial footprint, has already been covered by at least 2 feet of clean fill, and access to this location will be limited by a Dred Restriction.
5808 and surrounding samplers	Non-Industrial Area	DPI/VOC/PCB/PP3	9 PAHs	**	**	VPI/VOC	Conduct additional sampling including VPI and VOC analyses.	Further investigation is currently planned in this area.
58105X	Non-Industrial Area	SVOC	2,3,4,5,6,7,8,9 PAHs	4.5	4	VPI/VOC	Conduct additional sampling including VPI and VOC analyses.	Further investigation is currently planned in this area.
58105F	Non-Industrial Area	SVOC	2,3,4,5,6,7,8,9 PAHs	13	4	VPI/VOC	Conduct additional sampling including VPI and VOC analyses.	Further investigation is currently planned in this area.
58116	Non-Industrial Area	SVOC/PCB/PP3	Lead	148	100	DPI/VPI/VOC	Conduct additional sampling including DTP/VPI and VOC analyses.	Further investigation is currently planned in this area.
58144	Non-Industrial Area	VPI/PP3	VPI	330	200	DPI/VPI/VOC-SVOC/PCB	No further sampling planned.	This sample (58144 and 58150) exceeded the RCS-1 standard for VPI and were subsequently resampled. Resample analysis for DTP/VPI were all below the RCS-1 standard. Since DTP/VPI is considered to be a better indication of potential impacts than VPI, no further sampling is warranted.
5835P	Industrial Area	DPI/VPI	C11-C22 Aromatics	30	200	VOC-SVOC/PCB/PP3	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
5835A*	Industrial Area	DPI/VPI/dioxin	C11-C22 Aromatics	2,260	1,600	VOC-SVOC/PCB/PP3	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
587A-23	SCA	DPI/VOC/PCB/PP3	C11-C22 Aromatics	289	200	VPI/VOC/PCB/PP3	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
587B-200	Industrial Area	SVOC	4 PAHs	**	**	DPI/VPI/VOC/PCB/PP3	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
587B-208	Industrial Area	SVOC	4 PAHs	**	**	DPI/VPI/VOC/PCB/PP3	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
587B-209	Industrial Area	SVOC	3 PAHs	**	**	DPI/VPI/VOC/PCB/PP3	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
587B-209	Industrial Area	SVOC	3 PAHs	**	**	DPI/VPI/VOC/PCB/PP3	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
587B-207	Industrial Area	SVOC	3 PAHs	**	**	DPI/VPI/VOC/PCB/PP3	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
587B-207	Industrial Area	DPI/VPI/dioxin, PCB	C11-C22 Aromatics	497	200	VOC-SVOC/PCB	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.
587B-207	Industrial Area	DPI/VPI/dioxin, PCB	C11-C22 Aromatics	431	200	VOC-SVOC/PCB	No further sampling planned.	This sample was collected in proximity to the RCS-1 standard. All constituents were below the RCS-1 standard.

Notes:
 Units in mg/kg
 * Sample is within the industrial footprint, have already been covered by at least 2 feet of clean fill, and access to these locations will be limited by a Dred Restriction.
 ** Saywell PAHs exceeded RCS-1 value
 Samples collected after 4/06 will be compared to the revised RCS-1 standard which became applicable 4/06

Table 2
 Non-Radiological Groundwater Analytical Program (Spring 2006)
 Yankee Nuclear Power Station
 Rowe, MA

Well Designation	Sample ID	Status	Non-Radiological Parameters										PCB		Reason for Sampling		
			VOC	SVOC	ALCOHOL	EPH	VPH	PF13 Metals plus Boron	Total	Disolved							
CB-3	CB-3	Existing	X			X	X				X						Historic TPH > RC
CB-4	CB-4	Existing	X			X	X				X						Historic silver > RC
CFW-3	CFW-3	Replacement Well	X			X	X				X						antimony > RC
CFW-6	CFW-6	Existing	X			X	X				X						cyanide > RC
CFW-7	CFW-7	Replacement Well	X	X		X	X				X						bis(2EH)phthalate > RC
CW-5	CW-5	Replacement Well	X			X	X				X						Proximity to fuel oil line excavation
CW-10	CW-10	Existing	X	X		X	X				X						bis(2EH)phthalate > RC
MW-5	MW-5	Replacement Well	X			X	X				X						C11-C22 (EPH) > RC
MW-101A	MW-101A	Proposed New Well	X			X	X				X						new wall
MW-101B	MW-101B	Existing	X			X	X				X						C11-C22 (EPH) > RC
MW-101C	MW-101C	Existing	X ¹			X	X				X						C5-C8 (VPH) > RC, acetone > RC
MW-102C	MW-102C	Existing	X			X	X				X						Historic lead > RC
MW-102D	MW-102D	Proposed New Well	X			X	X				X						new wall
MW-103B	MW-103B	Existing	X	X		X	X				X						Historic lead, bis(2EH)phthalate > RC
MW-103C	MW-103C	Existing	X ¹	X		X	X				X						acetone, arsenic, bis(2EH)phthalate > RCs
MW-104A	MW-104A	Proposed New Well	X			X	X				X						new wall
MW-105B	MW-105B	Existing	X	X		X	X				X						bis(2EH)phthalate > RC
MW-105C	MW-105C	Existing	X ¹	X		X	X				X						1,1-DCE and Acetone > RCs
MW-107A	MW-107A	Proposed New Well	X			X	X				X						new wall
MW-107B	MW-107B	Existing	X			X	X				X						PCBs > RC
MW-107C	MW-107C	Existing	X	X		X	X				X						X ²
MW-107D	MW-107D	Existing	X	X		X	X				X						X ²
																	pentachlorophenol > RC
																	PCBs > RC

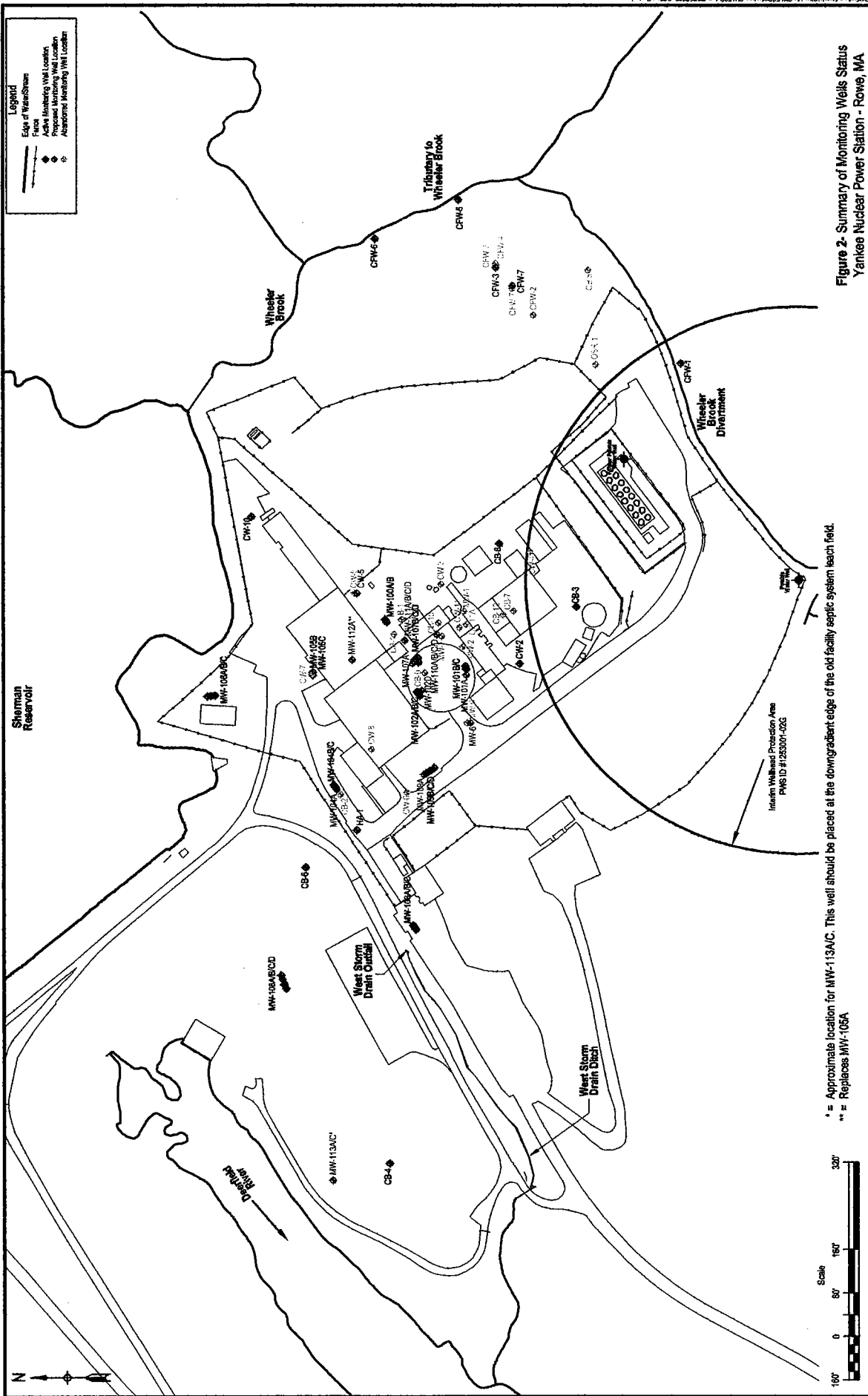
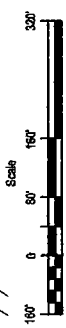


Figure 2- Summary of Monitoring Wells Status
Yankee Nuclear Power Station - Rowe, MA

* = Approximate location for MW-113A/C. This well should be placed at the downstream edge of the old facility septic system leach field.
** = Replaces MW-105A



B:\Yankee\Power\Station - Rowe, MA