



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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West Valley Citizen Task Force
c/o The Logue Group
P.O. Box 270270
West Hartford, CT 06127-0270

SUBJECT: RESPONSE TO WEST VALLEY CITIZEN TASK FORCE QUESTIONS

Dear Mr. Logue:

On March 28, 2007, the West Valley Citizen Task Force (CTF) requested responses to a number of questions related to the regulatory authority of the U.S. Nuclear Regulatory Commission, and the North Plateau Groundwater Plume. The enclosed response attempts to address those questions.

Thank you for the recent opportunity to brief the CTF on the West Valley Policy Statement.

Sincerely,

A handwritten signature in cursive script that reads "Chad Glenn".

Chad Glenn, Senior Project Manager
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Enclosure: Response to WVCTF questions

cc: G. Baker, NYSDOH
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RESPONSE TO WEST VALLEY CITIZENS TASK FORCE QUESTIONS

1. Regarding the U.S. Nuclear Regulatory Commission's (NRC's) apparent "consultative role,"

(A) If the West Valley Demonstration Project (WVDP) Act did not exist, would NRC's role be different and, if so, in what way(s)?

Answer: Yes, NRC's role would be markedly different. If the WVDP Act did not exist, the U.S. Department of Energy (DOE) would not be at the site, and the New York State Energy Research and Development Authority (NYSERDA) license would not be in abeyance. As such, NRC would be conducting licensing and inspection activities, including any necessary enforcement activities, to ensure compliance with regulatory requirements.

NRC's regulatory authority stems primarily from the Atomic Energy Act of 1954, as amended (AEA) and the Energy Reorganization Act of 1974, as amended (ERA). Neither of those Acts provides NRC with regulatory authority over DOE with respect to a reprocessing facility. Therefore, if the WVDP Act did not exist, NRC would still have no regulatory authority over DOE. NRC's only regulatory authority is over NYSERDA as the licensee for the facility.

(B) Does NRC merely monitor compliance at other sites, and issue recommendations with no pressure (or legal authority) to require cleanup?

Answer: No, as indicated above, NRC normally conducts licensing, inspection, and any necessary enforcement activities to ensure compliance with regulatory requirements.

It is unusual for Congress to assign a consultative and monitoring role to NRC rather than a licensing and regulatory role. Under the National Defense Authorization Act of 2005, Congress gave NRC a similar monitoring role with respect to DOE's implementation of waste-incident-to-reprocessing decisions at the Idaho National Laboratory and the Savannah River Site. NRC monitors DOE's disposal actions to assess compliance with the performance objectives of 10 CFR Part 61, Subpart C, and may report any noncompliance to Congress, the affected State and DOE.

2. Regarding regulatory authority,

(A) If the NRC does not have "regulatory" authority over the WVDP site, does NRC have any authority after inspections to enforce its recommendations and/or other laws or rules related to radioactive waste?

Answer: NRC has no enforcement authority over DOE. When NYSERDA's license is taken out of abeyance, NRC will have enforcement authority with respect to NYSERDA.

(B) If the WVDP Act were not in place, would the NRC then have authority to make recommendations and see that they are carried out?

Answer: If the WVDP Act were not in place, NYSERDA's license would not be in abeyance and NRC would have licensing and regulatory authority over NYSERDA.

Enclosure

© Is there any other government entity with authority to supervise radiation issues with power to enforce laws, rules, etc? If so, what/who?

Answer: The West Valley facility is licensed under 10 CFR Part 50. NRC has regulatory authority over 10 CFR Part 50 activities. NRC has not relinquished its authority to Agreement States for radioactive waste from reprocessing of spent reactor fuel. Radioactive releases from NRC-licensed activities, not associated with WVDP Act activities, are within NRC regulatory responsibility. The strontium-90 (Sr-90) plume is a pre-WVDP release from licensed activities. NRC's position on this issue is documented in a March 7, 2002, letter (ML020580080) to Commissioner Crotty (New York State Department of Environmental Conservation).

In regards to the question on the regulatory authority of other agencies relative to radiation issues, we suggest that you direct that question to the other involved agencies. The *Regulators Communication Plan on the Application of Cleanup Requirements for Decommissioning the West Valley Site* (ML031400633) may also provide useful information related to this question. The regulatory agencies involved in the cleanup of the West Valley site participated in the development of this document. Although this document has not been updated since May 2003, it identifies the various state and federal regulatory agencies and their regulatory responsibilities and expectations with respect to decommissioning the West Valley site.

3. Regarding determination of contamination,

(A) At what concentration is contamination of soil or water, e.g. from Sr-90 or Cesium-137 (Cs-137), a concern subject to regulation?

Answer: DOE is responsible for ensuring public health and worker safety with respect to the Project Premises while DOE is conducting the Project. DOE Order 5400.5, Radiation Protection of the Public and the Environment, establishes standards and requirements for DOE operations with respect to protection of members of the public and the environment against undue risk from radiation. This order is similar to 10 CFR Part 20 Subpart D in that it establishes an annual standard of 100 millirem effective dose equivalent to members of the public. Since public access to the NRC-licensed site is controlled, radiological dose is determined based on a maximally exposed individual outside of this site, which is coincident with the boundary of the Western New York Nuclear Service Center (WNYNSC). This boundary is the point of compliance relative to the public dose limit. Therefore, dose levels that meet Subpart D are also compliant with DOE Order 5400.5. Based on the most recent environmental monitoring data, the hypothetical exposure to the most critical member of the public, is conservatively calculated to be less than 1 mrem per year.

Subpart D [Section 10 CFR 20.1301(a)(1)] requires that each licensee conduct operations so that the total effective dose equivalent to individual members of the public from the licensed operations does not exceed 100 mrem in a year. For liquid effluents, licensees can demonstrate compliance with the 100 mrem per year dose standard by not exceeding the concentration values specified in Table 2 of Appendix B to 10 CFR Part 20. These concentration values, if inhaled or ingested over the course of a year, would produce a total effective dose of 50 mrem. The 10 CFR Part 20, Table 2 Appendix B concentrations for Sr-90 and Cs-137 are 500 and 1,000 pCi/L, respectively. Sampling at Buttermilk Creek is routinely conducted at a location near the edge of the 3,345-acre NRC-licensed site just before

Buttermilk Creek flows into Cattaraugus Creek. At this location, the current average concentrations for Sr-90 and Cs-137 are 2.68 and 1.37 pCi/L, respectively (WVDP Annual Site Environmental Report CY 2006, Table C-5B).

Finally, DOE and NRC also apply “as low as is reasonably achievable” (ALARA) to keep releases of radioactive material to unrestricted areas during operations ALARA. ALARA is a radiation safety principal in which every reasonable effort is made to maintain exposures to radiation as far below the dose limits as is practical, taking into account the state of technology and economics. For NRC-licensed nuclear plant operators, ALARA is demonstrated by limiting doses at the site boundary to 3 mrem (3% of the annual public radiation dose limit of 100 mrem).

(B) Does the fact that land is not generally accessible to the public exempt it from a designation for a “contaminated area?”

Answer: The context of this question is not clear. However, the fact that land is not generally accessible to the public does not exempt it as a “contaminated area” per se.

4. Why is NRC generally unconcerned about contamination from the plume reaching areas previously uncontaminated? We are very concerned that New York State land is being contaminated because DOE is not stopping the plume, while NRC issues recommendations time after time, but does not issue enforcement orders.

Answer: NRC is concerned about the Sr-90 plume because it is a source of contamination that would likely require remediation, isolation, or other actions to achieve levels acceptable for unrestricted use. Over the past year, NRC has conducted several monitoring visits at West Valley with a focus on the Sr-90 plume. NRC does not believe the plume represents a current public health risk nor is it projected to be a future public health risk to individuals located offsite. It is important to note that the concentration of Sr-90 in the underground plume on the controlled premises is high due to the proximity of the source. Also, while some radionuclides such as tritium move at the same rate and direction of groundwater, others such as Sr-90 are subject to retardation due to chemical interaction with soil and move slower than groundwater. Therefore any releases off the WNYNSC are expected to remain low because of retardation, dispersion, and decay of the plume as it moves away from the source.

NRC is also participating in the Core Team which is considering issues related to the development of a draft Environmental Impact Statement for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center (EIS).—The core team has made the consideration of remediation options for the Sr-90 plume a high priority, including possible near term actions to mitigate the spread of the leading edge of the plume prior to the EIS record of decision.

5. Which agency will be liable for maintenance/monitoring/ultimate cleanup of the plume?

Answer: In April 2007, NYSDERDA and DOE resumed negotiations in an effort to resolve differences about cleanup responsibilities at West Valley. The results of these negotiations may clarify the cleanup responsibilities of each agency. In the absence of a negotiated settlement, the matter may have to be decided by Congress or a court.

6. NRC's letter from Charles Miller dated February 8, 2007, in response to our letter to Chairman Klein dated December 22, 2006 (regarding continued spread of the strontium-90 groundwater plume at West Valley), mentioned the pre-decisional draft "evaluation of options" which were considered last March by federal and state agencies. What are the options and why is DOE ignoring the obvious one... to clean up the source of the plume?

Answer: NRC is a cooperating agency in the development of the draft EIS. As a cooperating agency, NRC reviewed and provided comments on the pre-decisional draft EIS. NRC is not in a position to elaborate on remediation options discussed in a pre-decisional document, or respond to questions about why DOE may not be taking a particular option for remediating the Sr-90 plume.

Generally, in regard to the Sr-90 plume, the range of alternatives in the pre-decisional draft EIS encompasses release of the site for re-use under unrestricted or restricted conditions as allowed under the License Termination Rule. The alternatives include: a) removal of the plume; b) removal of high-concentration source area of plume coupled with decay; c) in-place closure, with engineered controls, to isolate the plume and allow for radioactive decay, and d) the no action alternative, which involves the continued management and oversight of the site under existing conditions.

7. What recommendations were made to DOE regarding its Sr-90 monitoring program, and have they been implemented?

Answer: NRC's September 1, 2006, monitoring report (ML062440296) offered several points for consideration to enhance the effectiveness of the current Sr-90 monitoring program. Specifically, these recommendations include:

- The 1995 Geoprobe report makes reference to the possibility that the structural support piles beneath the process building could provide a downward path for Sr-90 migration. Although the Kent Recessional Sequence (KRS) in the North Plateau is below the Lavery Till, it is possible that Sr-90 may have reached this unit by preferential flow. An evaluation of previous monitoring activities and associated documentation should be performed to determine if contaminated groundwater may have migrated to the KRS. Based on the outcome of this evaluation a determination regarding whether or not any further monitoring of the KRS is necessary should be conducted.
- The pilot Permeable Treatment Wall (PTW) that was installed in 1999 had numerous monitoring wells installed to evaluate the effectiveness of the pilot project. The PTW was installed to cover a limited portion of the Sr-90 groundwater plume, and the plume has since encircled and migrated past the PTW test area. It appears that sufficient data has been obtained to determine the effectiveness of this project. The scope of the monitoring program should be reduced based on the current situation.
- The screened interval of each monitoring well should be assigned to its appropriate water-bearing unit (i.e., Sand and Gravel Layer, Slack-Water Sequence, Lavery till) so that the Sr-90 or gross beta concentrations can be assigned properly. This would facilitate interpretation of Sr-90 and gross beta concentration data when monitoring results for adjacent wells differ significantly.

- The monitor noted that action levels associated with ground water contamination concentrations are specified in various WVDP procedures, and if exceeded, require an evaluation be performed and appropriate actions implemented as necessary. These actions levels include values for Sr-90 concentrations measured at strategic monitoring locations. The action and possible control measures that could be considered in the event that an action level was exceeded will be reviewed during a future monitoring visit.
- NRC's May 10, 2007 monitoring report (ML071380216) stated the "...[g]roundwater monitoring recommendations based upon changing radiological concentrations should be evaluated to ensure that they are consistent with the intent and objectives of the Groundwater Monitoring Plan..."

8. The phrase "potential dose to an off-site member of the public most likely to receive..." is often used. In relation to the plume, how does that potential differ from doses to workers or visitors on site? Animals on site?

Answer: See URS Report 2002-252, *Evaluation of Estimated Doses to Humans and Biota Potentially Affected by the Strontium-90 Groundwater Plume on the North Plateau of the West Valley Demonstration Project*, July 2003, editorially revised in December, 2006.

The WVDP has processed, packaged, and shipped 100,000s of cubic feet of radioactively contaminated soil, and has in place policies and procedures to ensure worker safety and to meet ALARA goals. In dealing with Sr-90, which is a beta radiation emitter, contamination control is the primary issue rather than exposure. RC-RPO-102 contains procedures for contamination monitoring in the Sr-90 plume.

9. What radioactive elements are involved in the plume and in what concentrations and quantities? What are the readings directly above the plume in sunny and in cloudy weather? How many Curies are in the material below the Process Building and at various points over the plumes's spread?

Answer: See WVDP-220, Rev. 0, *Subsurface Probing Investigation on the North Plateau at the West Valley Demonstration Project*; WVDP-298, *1997 Geoprobe Investigation on the North Plateau at the West Valley Demonstration Project*; and WVDP-346, *1998 Geoprobe Investigation in the Core Area of the North Plateau Groundwater Plume* for detailed information on radioactive contaminants and estimated concentrations.

According to DOE estimates, the curie inventory released below the Process Building was 98 curies of Sr-90 and 0.77 curies of transuranic radionuclides (Westcott 1998, reference year 1972). The current Sr-90 curie content of the plume is approximately 50 curies.

We have no information regarding the question on readings (radioactive exposure rates) directly above the plume in sunny and cloudy conditions. Sunny and cloudy weather conditions should have no impact on radioactive concentrations in the groundwater.

10. Since the plume has been increasing and advancing, at what point does NRC assume that the plume will begin to subside; that is, at what point will the plume be gone? Decay or change in character? Become so dilute as to not be a risk in any scenario? Register below groundwater regulatory limits? How great will the numbers become before that point? If the

peak concentration numbers that are measured on site were measured off site, what would NRC do? Who would be responsible for monitoring, responding to, and/or regulating that scenario?

Answer: As indicated above, NRC does not believe the plume poses a significant risk to an offsite individual. The plume does not need immediate action in order to protect public health and safety, but does need to be addressed if that area is considered for unrestricted use. Prompt action could possibly reduce future decommissioning costs if the site was to be released for unrestricted use without a period of continued control to allow the plume to decay. As stated in our May 1, 2007 letter (ML070790733) to NYSERDA, NYSERDA does still maintain limited authority and responsibility for licensed activities outside the project area and the NRC can still perform licensing actions outside the project area. If NYSERDA would like to establish radiation control measures outside the DOE-controlled WVDP area, before effective measures can be taken under the anticipated decommissioning plan, NRC will consider a NYSERDA proposal.

Based on a recent dose assessment for an onsite receptor assuming exposure scenarios with and without the exhumation of contaminated soil at the plume's source, the plume would need to be monitored for approximately 200 years before the area could be released for unrestricted use.

As indicated above, the long-term responsibility of the plume has been debated by New York State and DOE for years. Ongoing negotiations between NYSERDA and DOE may clarify or resolve long-term responsibility for this plume.

11. In light of New York State's contention that the DOE often has ignored the state's input into the Environmental Impact Statement (EIS) process, what assurance does the public have that the plume will not be allowed to spread ad infinitum while the DOE and NRC claim there is no threat to public health and safety (yet)?

Answer: The DOE/NYSERDA EIS will address remediation of the plume. If the plume posed a potential threat to public health and safety, NRC would be able to order the licensee to take appropriate steps.

12. Would the plume be of concern to NRC or any other agency if it were creeping across New York State land other than that which includes or surrounds the Project, or on private land? Would not the land owners then be held responsible for cleanup, and in that case, who would hold them responsible?

Answer: The plume would be a concern no matter where it is located if people had access to the water in the aquifer for domestic purposes. Groundwater at the plume concentrations represents a significant hazard. However, releases from the aquifer are mixed in the stream system (which on a relative basis has high flow of uncontaminated water, particularly Cattaraugus Creek) resulting in much lower concentrations when the water becomes accessible to the public.

Licensees are responsible for ensuring that quantities and types of radioactive materials released do not exceed the public radiological dose limits. When an unplanned, unmonitored release occurs, licensees are required to survey the contaminated area to assess the impact of

the release to public health.

13. We would also like to know what recommendations were made "for DOE's consideration to enhance the effectiveness of its monitoring program for the Sr-90 plume" and follow-up to date.

Answer: See response to Question 7.

14. Please send a copy of the pre-decisional draft EIS mentioned in the Miller response of February 8, 2007.

Answer: A pre-decisional draft document is normally not made publically available. A request for its release should be directed to DOE.