Coalition on West Valley Nuclear Wastes

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September 26, 2013

Re: West Valley Nuclear Facility,
Public Participation, Uncertainties,
Subject Matter Expert on Scopes of
Work, PASs, etc.

Dear Moira and Lee,

I am not sure that our instruction to communicate only with you applies to this correspondence, but do trust you will share this missive with Bryan Bower and Paul Bembia.

The Advisory Meeting of August 28, 2013 left with us some serious concerns about the true nature of public participation. Apparently, the implied purpose of the Phase One studies is to resolve EIS disagreements between DOE and NYSERDA. The resulting abject dismissal of our comments and expressed issues related to the Phase One process and, therefore, our perceived and presumed effect the Coalition could have on the decision process at West Valley nuclear facility have been minimized.

Our purpose for this communication is to explain the width and depth of our concerns at the moment within the context of our understandings of issues and to convey to you that we have reasonable expectations, as super-stakeholders, to be able to ask questions and receive answers and/or explanations.

Sincerely,

Joanne E Hameister

Joanne E. Hameister
Steering Committee for CWVNW

Background of the Present Situation

In their joint Record of Decision for the Final Environmental Impact Study (FEIS) on the Long-Term Stewardship of the West Valley Nuclear Facility, the Department of Energy (DOE) and New York Energy Research Development Authority (NYSERDA) supported a Phased-approach.

After more than 26 years of studies and three EISs, these agencies maintain that they need to perform many studies before they could make a decision about the major facilities at the site –namely the high-level waste tanks, and two disposal areas.

Under Phase One, the major contamination targeted for excavation was the source area of the Strontium plume. Phase One studies were alluded to in the FEIS, but not presented with any specificity and/or detail. As a result, the public sought and obtained commitments from both agencies for meaningful public participation in Phase One; however, full and complete public participation continues to be elusive and is the reason for this memo.

Phase One Study Process (P1S)

DOE and NYSERDA will

- evaluate the Potential Areas of Study (PAS) to facilitate the agencies reaching consensus on a Phase Two decommissioning decision.
- assign Subject Matter Experts (SME) for each PAS.
- provide relevant background information on the PAS, including input received from stakeholders, to SME.

SME

- might be assigned to multiple PAS.
- will evaluate their respective PAS and recommend to DOE and NYSERDA Phase One Studies.

If differences of opinion prevent the SME from making a recommendation, the SME might consult with the Independent Scientific Panel (ISP) in an attempt to resolve differences. We also understand that, if the agencies cannot achieve consensus with the recommendation(s), the ISP might be consulted.

Potential Areas of Study (PAS)[1]

- Erosion
- Groundwater flow and contaminant transport
- Catastrophic release of contamination and impact on Lake Erie
- Slope stability and slope failure
- Seismic hazard
- Probabilistic vs. deterministic dose and risk analysis
- **Alternate approaches to, costs of, and risks associated with complete waste and tank exhumation**
- **Viability, cost, and benefit of partial exhumation of waste and removal of contamination**
- **Exhumation uncertainties and benefit of pilot exhumation activities**
- **In-place closure containment technologies**
- Engineered barrier performance
- Additional characterization needs
- Cost discounting and cost benefit analyses over long time periods

Issues and Concerns

Based upon our initial impression of the above PAS list and, specifically as it regards the highlighted items, we recommend the following:

[1] www.WestValleyPhaseOneStudies.org, Phase One Study Process 03/10/2013

- Separate Scopes of Work (SOW) for each of the target areas: HLW Tanks, State-licensed Burial Ground and NRC-licensed Burial Ground
- Full and fair characterization of each of the target areas be provided to the SME that will be guided by the SOW
- The independent Synapse report, The Real Costs of Cleaning Up Nuclear Waste: *A Full Cost Accounting of Cleanup Options for the West Valley Nuclear Waste Site,* November 2008 be included as a reference document to all SMEs. In the interest of being fair and balanced, NYSERDA's critique of said document and any study contributor rebuttals also should be included as a reference document
- Wording that is not biased toward an *a priori* decision to leave the HLW Tanks and both burial grounds *in situ* as predicated in the Proposed Inference Generalities (PIG)[2] for the PASs and (we anticipate) SOWs.
- Access to medical health professionals to evaluate the risks to workers and to the public for all studies planned to be performed on the HLW tanks and the burial grounds.
- SMEs and ISP be provided with Emergency Preparedness/Response Plans of DOE and NYSERDA

Specific Comments

1996-ASER **EXECUTIVE SUMMARY** xxix

The West Valley Demonstration Project was established to demonstrate that technologies could be developed to safely clean up and solidify radioactive waste.

HLW Tanks

Conditions cited in references

The scope of study for High-Level tank lay-up options[3] did not include dismantle and removal of the tanks, in spite of the fact that one report[4] did illustrate that the part of the sludge could be re-suspended and 'homogenized' for sampling accuracy and for inclusion in the vitrification process. Our understanding is that a significant portion of the original radioactive sludge layer remains in tanks that now have lived beyond their design life and are corroding from both the inside and outside surfaces.

> *For various reasons to be discussed later, groundwater has infiltrated the concrete vault and leak detection pan surrounding Tanks 8D- 1 and 8D-2, subjecting the tanks and pans to a mildly corrosive environment for approximately 31 years.* [5]

Dr. Bryan Bower has suggested (in private conversation) that nitrocisn might be used to scour the inside of the tanks. This would be a surface treatment only and would not be effective on material or elements that have become radioactive by exposure. Radioactive by exposure must be considered item in any Scope of Work.

NDA

Status per Source Term Report[6]

The NDA Source Term Report Tables S1, S2 and resulting summary of Activity per volume indicated that the concentration in the NDA is .83 Curies per cubic foot.[7] We believe that this

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[2] We also can create acronyms.

[3] Final Report West Valley High-Level Waste Tank Lay-Up, Pacific Northwest National Laboratory, June 29, 2001

[4] High-Level Waste Tank Modifcat1ons, Installation Of Mobilization Equipment/Check Out, August 31, 1992

[5] Corrosion Control of Carbon Steel Radioactive-Liquid Storage Tanks, Ji Young Chang, May 1997, DOE/NE/44139-74, Page 1.

[6] Estimated Radionuclide Inventory for the NRC-Licensed Disposal Area at the West Valley Demonstration Project, Ralph Wild, URS/Dames & Moore, August 2000

concentration level of almost one full Curie is too dangerous to be confined in simple, plain, dug, unlined, unengineered trenches and holes for any length of time.

The presence of 42 ruptured fuel assemblies[8] in the NDA must be considered an urgency. The burial of such High-level waste never has been considered appropriate, let alone encouraged.

While the risks of exhumation of this level of contamination present significant challenges, DOE already has exhumed from the NDA plutonium-laden kerosene containers that were leaking[9], and, therefore, essentially has done a pilot-based task of the process involved within the configuration of storage in the NDA.

Six plutonium-laden-kerosene tanks were exhumed from Hole #10 in winter of 1986. Two similar tanks were exhumed from Hole #11 in summer 1986.

The recovered solvent, about 429 gallons, from all sources was solidified in cement. The original burial was about 4,000 gallons -- or the unaccounted volume is about 3,600 gallons.[10]

SDA

Status per Source Term Report

Following data is extracted and summarized from multiple spreadsheets in the "SDA Radiological Characterization Report"[11]

The radionuclide inventory in the SDA numbers 61, including transuranic elements of Americium (~150 Ci), Curium (~80 Ci), Neptunium, Plutonium (~43,860 Ci).

Each of the 61 elements exists at some level in each trench and special hole.

Notable other inventory totals as of 2000 Wild Report:

	Curies		**Curies**
Co-58	94,689	Fe-55	347,973
Co-60	510,625	Mn-54	40,474
Cr-51	10,672	Ni-64	73,304
Cs-134	20,621	Sr-90	58,789
Cs-137	57,938		

The Coalition on West Valley Nuclear Wastes long has maintained that the facility was sited and operated before NEPA was enacted and 10CFR61 (low-level waste disposal) regulations were promulgated. We are pleased to see our allegations are supported in the Source Term Report.

> *The facility was operated and these wastes were disposed of prior to the promulgation of 10 CFR 61. The concern was that the presence of long half lived alpha emitting transuranic isotopes in the waste might limit the ability to close the facility in place. ...The isotopic inventory of these disposals, decay corrected to the year 2,000 were used to estimate the gamma radiation field that would exist if an excavation were made to expose the wastes of concern. The results of this analysis indicated that the gamma field from the other disposals would preclude making an excavation using conventional methods. Furthermore, an evaluation of disposal packaging indicated*

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[7] NDA Source Term Report, PDF page 27 indicates a concentration of 29 curies per cubic meter. The originating charts used the measurement of cubic feet, but summary treatment referred to averages and used cubic meters (in small print).

[8] Email from Andrea Mellon, 4/26/2013: Regarding ... the waste packaging /container configuration of ruptured fuel assemblies in the NRC-Licensed Disposal Area, I have verified that the spent fuel assemblies were buried in 3- 30 gallon drums. The void volume of the drums were filled with concrete and these drums were disposed of on a concrete pad at the bottom of a deep hole (Hole No. 48). The concrete pad and drums were then encased in concrete.

[9] 1983, discovered by accident when Dr. R. Fakundiny tried to leave plant with his sample of groundwater.

[10] Carol Mongerson, meeting notes. Robert Steen, DOE project director.

[11] Ralph Wild, URS/Dames & Moore, August 2000

that much of the packing materials would be degraded to a point where the potential for airborne releases would be quite high..[12]

This same document summarized the situations as follows:

Based on the high cost of the removal operation and a comparative pathway analysis (by others) of the long term performance of the facility closed in place with and without the wastes of concern indicated that it was not cost effective to remove these wastes.[13]

The full-cost accounting study,[14] performed by an independent firm, concluded that the cost of exhumation would be cheaper than long-term management and maintenance. Consideration of the fact that these burial trenches contain significant volumes and concentrations of real risk-bearing radionuclides, exhumation must be thoroughly evaluated as the only option to protect downstream environmental resources, including drinking water sources, for current and future generations. This must be regarded as social justice issue, in addition to a proper and prescribed environmental solution.

What We Need

Beginning with the isolated, closed-door approach used with the Core Team deliberations, stakeholders have been disenfranchised. This approach, obviously, has been extended to the key studies and deliberations under Phase One and will have significant impact on the process for Phase Two. We object to this lack of consideration to our time, dedication and effort to guarantee good decision-making for the West Valley nuclear facility.

- Given the fact that SMEs and ISP are bound to a gag order by contract[15], stakeholders are limited severely with exchanging ideas, information and/or suggestions.
  - ✓ One of the responsibilities of the SME is to "consider stakeholder input and provide updates and responses to stakeholder comments and questions" and of the ISP is to "provide opinions, updates and responses to stakeholder questions and comments"[16].
  - ✓ We have to conclude, based on our experience thus far, that the responses are to the agencies only and not to the stakeholders.
  - ✓ Therefore, we would like to have the opportunity for input to the SOWs, PASs and recommendations and assurances that the stakeholder comments are considered.
- We have offered comments on the inadequacies of the SOWs, Climate Change, suggested PASs and received no acknowledgement or evidence of such comments being conveyed to SMEs and/or ISP or considered or even reasons for dismissal.
- We would like to see that the Exhumation SOWs be detailed according to waste unit, i.e., SDA, NDA, Tanks and Groundwater Plume.
- Issues related to Uncertainties (Appendix) must be considered major factors in any discussion/determination of recommendations by the SMEs, ISP and agencies and we need that assurance that uncertainties will be a persistent and significant charge to each SME and ISP.

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[12] SDA Source Term Report; Evaluation of Selective Exhumation of GTCC Waste, *State Licensed Disposal Area* Western New York Nuclear Service Center, Ralph Wild, URS/Dames & Moore, August 2000

[13] ibid

[14] The Real Costs of Cleaning Up Nuclear Waste: *A Full Cost Accounting of Cleanup Options for the West Valley Nuclear Waste Site*, Synapse, November, 2008 (Funded with NYS tax dollars, administered by NYSDEC)

[15] Section 8, "Confidentiality", Subject Matter Expert (SME) Service Agreement, 2012

[16] http://www.westvalleyphaseonestudies.org/index.php/pas-update

Appendix: Uncertainties

SMEs and the ISP must be charged to consider a range of mitigation measures in their deliberations. Modeling, whether deterministic or probabilistic or a hybrid of both, is a massive study of uncertainties. West Valley Project is dealing with a technology without history on a problem without a history of solutions, let alone consideration of the improbabilities for the required thousands of years. As with the case of concrete and grout; we do not have the performance history even to think about using deterministic projections.[17]

Low Level Waste

- Defined as what it is NOT: (Fuel Rods, mine tailings, TRU, reprocessing)
- LLW is everything else, which is 100's of radionuclides and radioactive decay products.
- Is NOT low risk.
- Some will be hazardous and toxic for millions of years.

Waste Management

- Design and performance objectives rely on a plan of estimated **failure**.
- All design models plug into the time **estimates** of container failure, correlated with the amount of radioactivity existing when that happens and
- What the pathway **predictions** are and **might** do with the pollution release.
- Waste management does **not** consider mitigation measures in the event of failure, whether minor or catastrophic.
- Solutions, such as engineered barriers, buffer zones, stabilizations are nothing more than fancy terms for burial. Burial never works and, in essence, simply is legalizing the pollution of future generations of involuntary victims.
- Real-time performance data for stabilizing and solidifying agents (grout, cement, zeolite, etc.) does not exist for the necessary 1000's of years of required safety and containment.

Health Effects

Radiation effects are probabilistic and affected by the lack of range of defensive results

- Uncertainty interval between cause and effect
- Uncertainty of good correlation between dose and response
- Uncertainty of good correlation between dose-response and time
- Uncertainty of **compounding** additions of low level (ex. BRC) exposures
- Uncertainty of the range of estimates that determine the selection of the Conservative case.

EIS & ROD

In defiance of the purpose and intent of EPA's regulations for evaluation of environmental impact, the EIS and ROD do not state the final goal, end-state for the West Valley nuclear site. This fact necessarily affects the missions of the SMEs and ISP and passes on to those groups the uncertainty of what they should be studying and recommending.

> *The studies will be scoped such that study findings will be available within 8 years of the Phase 1 decision described in the April 2010 DOE Record of Decision and the May 2010 NYSERDA Findings Statement.*[18]

The grave uncertainty with the above statement is that scoping could be either broad, incomplete, inconclusive or minimal and, therefore, the study findings would provide a controversial, indefensible basis for Phase Two procedures.

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[17] Final Report of April 25, 2006, Peer Review of *Draft Environmental Impact Statement for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center*

[18] http://www.westvalleyphaseonestudies.org/

The FEIS Alternative choice basically is silent on the process and mechanics of moving through the Phased Decision Making. This fact promotes a strong sense of uncertainty with regard to stakeholder access to studies, results and recommendations and, further, implies to us that our participation in decision building will be foreclosed. This conclusion is strengthened by the lack of commitment by DOE to do an environmental impact statement for Phase Two.

Catastrophes

- Uncertainty as to definition, type and degree of catastrophe
- Uncertainty as to degrees and results of catastrophe
- Uncertainty as to response to and mitigation/action for catastrophe

Climate Disruptions

DOE's "2012 Strategic Sustainability Performance Plan" details its difficulty of predictions and magnitudes that depend on geography and type of facility.

> *Climate Impact Forecasting and Risk Analysis to Support Adaptation Planning*
>
> *To plan for climate change resiliency, it is necessary to understand:*
> - *The timing, location, and character of climate change effects; and,*
> - *Specific vulnerability and the magnitude of program and infrastructure risk, including that associated with broader impacts over time.*
>
> *DOE's mission and operations are faced with differing climate change induced risks and vulnerabilities that vary based on geographic location. Additionally, there is uncertainty as to the exact nature, magnitude and timing of potential impacts at each geographic location where the DOE mission is conducted.*
>
> *Given that the DOE mission occurs at numerous geographic locations it is not appropriate to define a prescriptive "one size fits all" methodology for assessing specific vulnerabilities. Rather, there are some common information resources and approaches that DOE programs and facilities will use to begin assessing their vulnerability, and where appropriate, characterize climate change risk*[19]

ECS conducted a Climate Change workshop in August 2012. ECS Phase One website states:

> "The Climate Scientists' thoughts, observations, and recommendations for a path forward to help DOE, NYSERDA and Subject Matter Experts (SMEs) address the topic of climate change within the scope of Phase One Studies.".:[20] .

Was an official document produced by the Climate Change panelists that detailed the recommendations? There is no mention of such a document on the Phase One site and the presentation slides indicate only the two sentence charge to each panelist, but not responses.

The presentations were informative but based on global/long historical trends and not local meteorological data. This fact is a major uncertainty, given that the Climate Change recommendations/guidance to SMEs would offer or guarantee very little – if any – validity of predictability at West Valley. To have any validity, this portion of the exercise must incorporate regional data, including the August 9-10 derecho event when rainfall intensities of 5" per hour fell in the Cattaraugus Creek drainage and the West Valley site received over 6" of rainfall.

Although this was not the maximum total short-term event total possible for the Cattaraugus Creek watershed, the intensities of these thundercells were quite possibly new maxima for the local area and the associated runoff surges created a new record high flow for Cattaraugus Creek. According to records of The Pennsylvania State Climatologist (a service of Penn State University): "On July 17, 1942, a great flood developed over the Smethport area, resulting in an estimated 34.50" of rain--in just

[19] http://www1.eere.energy.gov/sustainability/pdfs/doe_sspp_2012.pdf, Appendix A, pdf page 26
[20] http://www.westvalleyphaseonestudies.org/index.php/isp?id=5

one day, including 30.60" in only six hours, setting a world record. The official observing site, Smethport Highway Shed, reported only 13.08" for the entire month, because the flood consumed the guage [sic] after 6.68" of rain. The total results from the substitution of the official estimated amount for the amount measured. In July 1947, portions of Erie suffered a twenty-inch one-day deluge, although the reporting site received substantially less precipitation. The most rainfall officially recorded in July at an official reporting site is 17.89" at Wild Creek Reservoir, Carbon County in 1945--also during that same decade." [http://pasc.met.psu.edu/PA Climatologist/fod/paex.html]

Had the one-day 20" 1947 Erie, Pa rainfall event (intensity maxima unknown) or the over 30" that fell in Smethport on July 17, 1942 (with prolonged intensities of at least 5" per hour) occurred in the West Valley vicinity, the onsite erosion resulting from more than three times the volume of runoff of our August event would have been much more severe. The reservoir berms, which experienced damage in the August 2009 event, may not have held, releasing a further massive surge to Buttermilk Creek; the knickpoint advances witnessed on Erdman Brook (multi-stepped lobe just a few yards from and oriented toward the foot of the SDA slope) and Franks Creek (20 feet) would have been much greater; likely cutting into the northerly trenches; the slides on Buttermilk Creek would have further cut back the plateau; and so on.