Alliance for a Green Economy
Citizens' Environmental Coalition
Coalition on West Valley Nuclear Wastes
Concerned Citizens of Cattaraugus County
Nuclear Information and Resource Service
Sierra Club Niagara Group

November 3, 2015

Bryan Bower, US DOE
Moira Maloney, US DOE
Paul Bembia, NYSERDA
Lee Gordon, NYSERDA
Ashford Office Complex
9030 Route 219
West Valley, NY 14171

Re: Comments on PHASE 1 EXHUMATION STUDY PLAN Revision 2, July 2015

Dear Bryan, Moira, Paul and Lee,

Original Comments from the public (Coalition on West Valley Nuclear Wastes, Citizens' Environmental Coalition and Nuclear Information and Resource Service) were submitted to the Agencies regarding the Draft plans for the Erosion and Exhumation Studies on Jan. 15, 2014. A revised version of the Exhumation Study plan was not provided until July 2015. We assume a significant portion of the delay related to the Agencies' stated desire to address scientific uncertainties, the comments of the Independent Scientific Panel and those of the public.

Unfortunately while we have a different document, significant issues have not been addressed in that year and a half.

Comment 1. The Agencies' original scope for the Exhumation Workgroup, while not detailed, did include items that are not adequately addressed in the Exhumation Study Plan as follows:

- Alternate approaches for, costs of, and risks associated with <u>complete waste and tank exhumation.</u>

- Viability, cost and benefit of partial exhumation of waste and removal of contamination.
- Exhumation uncertainties and benefit of pilot exhumation activities.

The July 2015 Exhumation Study Plan contains no plans to study complete waste exhumation, and no further studies at all to further exhumation of the tanks or the huge amount of curies remaining in the sludge within. There is also no plan to undertake pilot exhumation, although that might ultimately be a future recommendation at the end of the study.

Comment 2. There is no plan to integrate the work of the interrelated studies, when the scientific findings could be highly useful to another workgroup. In the January comments, we noted the "obvious relationships between the work of the erosion workgroup and the work of the exhumation workgroup. If the erosion uncertainties are large and containment of radionuclide inventories cannot be guaranteed, then complete exhumation is essential." Yet the July Exhumation study tells us that the "studies are not dependent on the strategies and future results of parallel studies being performed by others."

It is difficult to understand a scientific study designed to exclude new site-specific information, when the whole point is to facilitate better decision-making for Phase 2 site cleanup.

Comment 3. Significance of Landslides at West Valley

We appreciated that the Exhumation workgroup identified landslides as significant to the integrity of the NDA and SDA radioactive waste burial areas and that landslides should be studied. In January 2014 we recommended that this unassigned subject area be addressed in the near future. Unfortunately in the last year and a half, the Agencies have not responded with a recommendation to pursue the evaluation of landslides as a dedicated study—in the context of the existing workgroups or a new study team.

Comment 4. Importance of Climate Change

The January 2014 comments highlighted the significance of climate change and the potential to exacerbate erosion and soil instability leading to loss of containment. Clearly the need for exhumation should be driven by the realities of such processes acting at the West Valley site. Yet there is no indication that climate change will be a serious consideration in the Exhumation Study plan.

Comment 5. Nature of the Study

This is a Study about DIGGING and exhuming radioactive waste, without actually undertaking to dig, such as in a pilot study.

There are 3 individual studies within the Exhumation Study Plan.

Study 1- Review, Evaluation and Updating of Waste Inventories

Study 2 -Primarily a Field Study with testing and sampling of two of the radioactive waste burial areas at West Valley- the NRC disposal area and the State Disposal Area, the NDA and the SDA.

Study 3—Review of exhumation methods, at other radiological sites. This includes the use of a performance assessment contractor.

Comment 6. Three reasons are given for the Exhumation study and its 3 components. The overall Rationale stated is questionable. p.1 *Our comments are italicized below.*

- Ex Study: "The studies carry a likelihood of success toward the goal of increased understanding of the published inventories."
  Comment: We believe the likelihood of success is very low based on the study design. The plan includes writing a new inventory based on highly questionable information.

- Ex Study: "The derived information will support time critical decisions by the agencies regarding full and selective exhumation scenarios, which in turn will help scope later studies by the exhumation working group and other Phase I study groups."
  Comment: This study is more likely to identify the need for future studies, however, full exhumation is not being studied at all. There will be little information of use for the SEIS, Supplemental Environmental Impact Statement.

- Ex Study: "The studies are not dependent on the strategies and future results of parallel studies being performed by others."
  Comment: *Exhumation is the preferred strategy of all involved members of the public chiefly because of the danger of active erosion at the site. The findings of the Erosion Team should definitely be utilized by the Exhumation Team*. Later any findings of the engineered barriers workgroup should also inform the exhumation study.

Comment 7. The Statement of the Problem & Data Quality Objectives are inadequate or missing. A clear comprehensive statement of the problem is essential to derive goals and adequate Data Quality Objectives.

These are the most important elements for launching a Study Plan. We would like to point out that the need for DQOs was raised by the Independent Scientific Panel (ISP) and this was one of the important scientific issues that caused the hiatus in the study process, so that the work groups could address them.

We appreciate that you have now included a section on DQOs, however the Work Group has not addressed this issue adequately. The statement of the problem is inadequate—to "determine what reduction in waste volume, activity or other parameter of interest would be achieved under a variety of selective exhumation scenarios being considered". Note that there are no exhumation scenarios identified in the study plan. Therefore this statement of the problem is not useful. Without a clear comprehensive statement of the problem, you cannot derive goals or adequate DQOs.

Instead of Data Quality Objectives on p. 3, we also have a series of questions. While some of the questions may be useful, we question why there was inability to follow EPA's recommended seven steps, especially given the ISP's emphasis on the importance of DQOs.

<u>A possible statement of the problem</u>:

The problem is that we have very vulnerable surface disposal sites of long lived radionuclides on an unstable and highly erodible plateau. There is no assurance that the plateau can be maintained and that the dangerous radionuclides can be contained in the current disposal sites rather than releasing them to the environment and impacting public health. Climate change particularly threatens to magnify and exacerbate these existing site problems. The exhumation study is geared to investigating and evaluating various exhumation methods and options that completely remove the hazard or reduce it substantially.

Considerable uncertainties exist pertaining to the existing radionuclide inventories, the long time periods over which the hazard exists and the lack of adequate predictive models of erosion processes and rad waste containment to adequately protect the public health and safety far into the future. Other issues contribute additional uncertainties—for example, slope stability, seismic hazards and climate change- which have not been studied to date.

We cannot write the Agencies' problem statement. In the alternative, if as some of the wording in the document suggests, there is a narrower scope, such as to identify the

potential worker exposures in order to plan for needed protective equipment, that problem statement should be clearly presented. It is important that everyone understand the purpose for the study, which a clear problem statement would provide.

In the absence of a clear statement of the problem and DQOs it will be easy for this study to go off-course. Of particular concern is the obvious Agency preference for leaving radioactive waste in place on site, and opposing any exhumation.

Comment 8. The proposed sampling is identified as field confirmation of the Waste Inventory (p. 1), but in fact no waste samples are to be analyzed. Only rigorous, representative and sufficient numbers of waste samples could confirm the waste inventory and that is not the Study Plan. We can understand that you may not want to breach waste containers.

However, we think a more accurate description of what you are trying to accomplish is needed as well as a clear description of the limitations of the field study and sampling program. Attention to the statement of the problem and the DQOs would have avoided the confusion here. Instead words like confirmation and empirical evidence are used. Please answer this question: How can the planned field studies confirm the inventories if the waste is not actually sampled?

Comment 9. Full Exhumation is very different from selective exhumation and should have been thoroughly discussed. Selective exhumation requires knowing exactly what you want to exhume and its precise location. There may be logistical problems related to specific buried equipment and wastes under selective exhumation that would not exist under a full exhumation plan.

Full exhumation should have been discussed more thoroughly related to the advantages and disadvantages. Agencies indicated after our last set of comments that full exhumation would be considered. However, most of the study is geared to discussing selective exhumation and we are concerned that even the review of experience at other sites will not adequately explore full exhumation.

Comment 10. The Waste Tank Farm (WTF) and its huge inventory of radionuclides is not being evaluated at all in this Exhumation Study. It is being ignored or dismissed.

It is not acceptable for this study to be done without inclusion of the Waste Tank Farm. The Failure to study exhumation of the WTF cannot be allowed to be used as a future excuse for not proposing exhumation of this facility.

All of the Buried waste was supposed to be dealt with in this study. It appears that the WTF is largely dismissed.

The discussion regarding the WTF spans over at least 4 pages but is not comprehensive—instead broken up and confusing. Our understanding was that there are only inconclusive studies on the sludge and the distribution of radionuclides in it. There is mention of 2011 results of liquids and solids sampling, but this study is not included in Exhibit 11-1. At p. 13 a difference is noted in the number of radionuclides in 2 studies, 18 versus 17, but there is no clarification regarding which radionuclides are to be included and which ones are being eliminated.

We are told at p. 15 that the WTF will not be included in the Task 1.3 Analysis, which involves applying the inventories to various scenarios. This is largely because this entire study has been constructed around selective exhumation scenarios. Therefore, we are told, since the location of the target radionuclides is known, it would not be of value to selectively target some waste for removal. However, key questions must be answered about the sludge in these tanks and the large amount of curies there, and options for exhumation. Full exhumation should have been evaluated as well as other technically feasible options such as removing the sludge first and the tank as another step. In addition the field study should include additional sampling of the sludge in the waste tanks.

Comment 11. In general the language in the Study plan does not reflect a scientific investigation. The scientific endeavor is overstated or given more credibility than it should have. The study design and plans do not support the findings and conclusions you hope to obtain. There are also vague or contradictory statements. However, it seems that there is a plan for providing more details after the study is launched with the preparation of TIPs, technical implementation plans.

There must be provision for additional public participation, discussion and comment as these TIPS are prepared.

Comment 12. Field Study and Sampling-- Is the Design of the Study adequate to answer the questions posed?

"The hypothesis being investigated is whether the existing inventories are a reliable representation of what is actually buried there." p. 19 The question is whether the field study as designed can reliably answer this question. The answer is No.

Borings are to be done as close as possible to waste units without actually penetrating waste unit. Has there been any assessment of the likelihood that existing containers remain intact and have not been breached?

> Intrusive borings and instruments (10 borings in the NDA and 10 in the SDA) will be used to detect:
>
> Gamma radiation mainly as well as Neutron radiation from spent fuel
>
> Transuranics cannot be evaluated—they are shielded in the burial grounds and not likely to be picked up by these methods.
>
> VOCs will be evaluated in the field with a vapor analyzer, and possibly samples sent for further analysis.
>
> 3 soil samples from the NDA and 3 from the SDA will not be adequate to identify hotspots.
>
> Water samples will be taken if water is present in the waste units.

The instrument methods used are those used for oil and gas wells. Why were these methods chosen? A very small number of physical samples with laboratory analysis will be done of soil and leachate only in the NDA and SDA. All will be analyzed for strontium-90, uranium-238 and uranium-234, metals, VOCs and semi-volatile compounds. We were not provided with the rationale for selecting this particular list of radionuclides. Why was such a limited list of radionuclides chosen for the soil and water sampling, a much shorter list than included in inventories? The entire purpose of soil sampling is to determine if soil is sufficiently contaminated to also need exhumation, yet three soil samples from each of these units cannot possibly answer this question. There will be No samples of waste. At p. 18 mention is made of the WTF in a question, however the Plan already told us that selective removal is not appropriate for the WTF. We believe that this Field Study should include more sampling of the sludge in the tanks to determine how varied the results are from different locations.

There is insufficient detail on the Field study currently. Later TIPs, Technical Implementation Plans, will be prepared with greater detail and these should be made available to the public as soon as they are prepared. We have also not been provided with adequate information to understand the role of the statistician in the field studies.

Given the extraordinary limitation of this study related to no actual waste sampling, it seems that the purpose might be better described as designed to identify potential radiation dose to workers that might be involved in exhumation. The Plan does indicate

that a possible outcome from the exhumation working group would be for additional studies to support the selection of waste exhumation scenarios. So perhaps this study is envisioned as an initial investigation to determine the scope of a more comprehensive study.

Comment 13. The Field Study is problematic and the results should not be used to alter previous inventories.

We are told the purpose of the field study is to establish a statistical relationship between the existing SDA and NDA inventories and field measurements of activity. The explanation of the purpose on p. 17 is vague and confusing. At the end it indicates that "Study 2 will not be extensive enough or precise enough to affect the inventory reports described in Study 1." The goal described at p. 19 is "not to use the measurements to characterize the actual make-up of the inventory in a given waste unit", but rather to "investigate the hypothesis that existing inventories are a reliable representation of what is actually buried there." The plan is to evaluate the magnitude of false positives and false negatives. Field radiological measurements will be compared to values predicted by the Microshield model, based on existing inventories. p. 20.

Given the limitations of the field study and the qualifiers cited above regarding the utility of the inventory, it is inappropriate to apply this exhumation study's results to conclusions about the inventory as a whole including the transuranics. Shielding prevents accurate measurement of transuranics. **The following sentence at p. 20 is of particular concern: "To address long-lived transuranics, it is being assumed that any conclusions regarding inventory utility based on the targeted radiations will coincidentally apply to the inventory as a whole, including the long-lived transuranics."** Obviously this sentence makes no sense and definitely not scientific sense. A primary concern that the public has is the potential for loss of containment of long-lived radionuclides into the environment. The implication here is that a new inventory without the transuranics would be developed. Eliminating a major component of the inventory by such a maneuver is not acceptable. It is the equivalent of waving a magic wand to have the waste disappear.

Comment 14. A secret Performance Assessment will compromise scientific integrity and prevent public participation.

The established Phase One Study scientific process that provided for public participation has been altered in this study. Now there is a consultant hired to perform

secret calculations and modeling as part of a performance assessment. We have expressed serious concerns about the Performance Assessment in a previous letter. The Agencies have selected a Performance Assessment contractor that will be using a proprietary, non-public model. It is important that all of the work associated with this consultant and the input parameters be open and transparent as part of the individual tasks and final reports- otherwise this process will lose the scientific credibility claimed for the process under Phase One that includes Subject Matter Experts and an Independent Scientific Panel. We recommend continued involvement of the ISP in the Exhumation Study.

Comment 15. Comparative Evaluation and Inventory Selection

At p.8 there is an unusual mention of selection of current inventories for the Phase I study process. We thought the entire exercise involved reviewing and evaluating inventory reports to arrive at the best or most accurate inventory for use in future exhumation decisions.

We have too little information about the comparative evaluation of inventories to understand what is being proposed. In addition please explain why an assumption of equilibrium is being made between parent and daughter radionuclides, when there are many different radionuclides and half- lives involved, that are unlikely to be in equilibrium.

We do not see any justification for only dealing with those radionuclides that appear in both inventories.

At p. 13 mention is made of 99% of the activity being due to 17 Principal radionuclides from a 2002 report. What kind of activity do you mean—gamma? Do you expect current activity to be the same? We don't necessarily agree to using Part 61 classification, as a recent proposed NRC rule has not been finalized. Two radionuclides studied by Garrick are not proposed for inclusion, however we see no other isotopes of Curium included, some of which have long half-lives.

Comment 16. Applying Inventories to Selective Removal Scenarios Task 1.3

"Each scenario will be defined by an exhumation target (e.g., radiological activity) and an exhumation standard (e.g., 100% of Greater than Class C waste…)." P. 14. No scenarios are presented. We really need a much more complete presentation regarding the scenarios and what is envisioned in this task and the exhumation targets and standards. . This is where the Performance Assessment contractor is involved. It is not

acceptable for this contractor to be making all the decisions for this task. Is the Performance Assessment contractor involved in other aspects of the exhumation study or only this task 1.3?

Comment 17. Study 3: Review of Precedent Projects at other sites

This study will be reviewing other projects involving exhumation, treatment and volume reduction to evaluate other precedents at other sites to determine methods, worker/public protection, lessons learned and uncertainties encountered. This is largely a literature review.

It is not until Study 3 that we learn that a quantitative DQO process was difficult to apply to Study 3, so they use a qualitative process or expert judgment here. It is surprising to see this in Study 3 since, we really believe DQOs were never produced from the beginning, much less quantitative ones. Questions are not the same as objectives--- although they could be reworded to be objectives. However, a comprehensive statement of the problem is still needed. Apparently the WTF will be considered only in Study 3.

This study will identify exposure control methods as well as decisional risks and uncertainties and how they were addressed at other sites. At p. 27 they identify total removal of waste for the first time as a consideration. They will also consider whether the robust facilities identified in the FEIS will actually be necessary for exhumation. Soil stability is also an issue for evaluation. There will be a literature search and they will be looking at 7 targeted precedent sites. We believe that West Valley also provides a precedent with the kerosene/plutonium project and that this project should also be carefully reviewed.

We support the Coalition on West Valley Nuclear Waste's call to review West Valley's own exhumation history as part of this team's work.

The Beatty, Nevada nuclear waste site received waste similar to that at West Valley. The Exhumation Team should research the October 2015 explosion and fire there for lessons for West Valley.

Since some of the waste at West Valley is transuranic, the team should review transuranic waste problems including the Feb 14, 2014 explosion, at the Waste Isolation Pilot Plant.

Non-precedent conditions. We are told that the collection of critical information is being accelerated, partly to address unique features at West Valley that do not have a

precedent. Experts will be using their expert judgment in these situations. How exactly will the experts proceed in relation to situations with no precedent?

Study 3 will include recommendations for the next round of studies. So what is envisioned are additional studies after the completion of this exhumation study, including pertinent pilot studies.

Comment 18. The Exhumation Study is largely a preliminary document that will be developed as it moves forward via technical implementation plans and task reports.

The study plan lacks sufficient detail, and as it is developed we expect to receive the TIPs, task reports and memoranda as they are prepared, with regular presentations at the QPMs as well.

Comment 19. Documents and Source Materials should be made available to the public. We are interested in ensuring that a complete bibliography of all inventory documents and other pertinent information collected from precedent sites be made accessible to the public – on the web and physically available in a reading room at the Ashford site. The new spreadsheet recently compiled by Dr. Wild should be included in these documents.

Comment 20. Full exhumation should be fully studied. Studying partial or selective exhumation implies it is possible, based on the existing historical information and inventories, to identify and selectively remove extremely long-lasting wastes (defined as thousands and millions of years hazard) while leaving so-called "short-lived" or "short-lasting" wastes in the ground. Technically many of these radionuclides are located in the same containers and it is not possible to separate them. The records may also not be accurate enough to justify leaving some wastes while removing others. Time and resources should not be wasted investigating unrealistic and expensive options, while ignoring the preferred option of full exhumation. Rather the resources should be used to determine what it will take to safely and efficiently remove and containerize all of the radioactive wastes below ground on these rapidly eroding plateaus.

Thank you for your attention.

Respectfully submitted,

Barbara Warren
Citizens' Environmental Coalition

Joanne Hameister
Coalition on West Valley Nuclear Wastes

Kathy Boser
Concerned Citizens of Cattaraugus County

Diane D'Arrigo
Nuclear Information and Resource Service

Lynda Schneekloth
Sierra Club Niagara Group

Jessica Azulay
Alliance for a Green Economy

cc. Independent Science Panel members, Lynnette Bennett, CHBWV